

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

**Table of Contents/Table des matières**

Part 0: General.....	2
Partie 0 : Général.....	2
Part A: S-294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants.....	11
Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires .....	11
Part B1: S-296, Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills .....	70
Partie B1 : S-296 Politiques, programmes et procédures de protection de l’environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d’uranium.....	70
Part B2: G-296, Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills .....	76
Partie B2 : G-296 Élaboration de politiques, programmes et procédures de protection de l’environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d’uranium .....	76
Part C: G-306, Severe Accident Management Programs for Nuclear Power Plants.....	84
Partie C : G-306 Programme de gestion des accidents graves touchant les centrales nucléaires .....	84
Part D: RD-308, Deterministic Safety Analysis for Small Reactor Facilities .....	108
Partie D : RD-308 Analyse déterministe de sûreté pour les installations dotées de petits réacteurs .....	108
Part E: RD-310, Deterministic Safety Analysis for Nuclear Power Plants .....	116
Partie E : RD-310 Analyses de la sûreté pour les centrales nucléaires.....	116

**Part 0: General**

**Partie 0 : Général**

General Général	Organization/ Organisation	Comments/Commentaires	CNSC Response / Réponse de la CCSN
General	Bruce Power NB Power OPG	Comments were not provided on RD-308, as it is not applicable to our facilities. We have provided detailed comments in the attached Tables on the remaining four documents.	Noted
General	Bruce Power NB Power OPG	<p>Industry members understand that an omnibus process is being used to implement regulatory document changes that the CNSC conclude are essential to address issues arising from the Fukushima event. However, it is noted that:</p> <p>a. Some of the proposed changes are not directly associated with the Fukushima event</p> <p>b. Although the proposed changes have merit, we believe that some of these changes would be better addressed using the normal [public consultation] process associated with CNSC regulatory document revision.</p> <p>c. Some of the proposed changes have the potential to significantly increase and/or modify scope or requirements. These changes are of great concern to us, because of specific licence conditions around compliance with S-294 (and Fukushima Action Item (FAI) 2.1.1 &amp; 2.1.2) and FAI 2.2.1 on RD-310 compliance.</p> <p>d. Some proposed changes are quite detailed and may be better suited for inclusion in a regulatory guide (as opposed to a regulatory document or standard*).</p> <p>[Note: * indicates qualification provided by OPG.]</p>	Noted. These comments will be addressed as applicable to each document included in the project.
Général	Hydro-Québec	Notre compréhension est que ce projet « omnibus » a pour objectif d'implanter des changements essentiels aux documents de réglementation pour résoudre les problématiques découlant des	Noté L'applicabilité des recommandations proposées est examinée pour chaque document de la série.

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		<p>événements de Fukushima. Or nous notons que :</p> <p>a. La plupart des changements proposés ne semblent pas directement reliés aux événements de Fukushima.</p> <p>b. Même si la plupart de ces changements proposés sont pertinents, nous pensons qu'il serait mieux de les traiter dans le processus normal de révision d'un document réglementaire.</p> <p>c. En outre, certains changements proposés pouvant augmenter la portée et les exigences des documents causent des préoccupations reliées à la condition de permis sur la conformité avec la norme S-294 et au plan d'implantation de RD-310.</p> <p>d. Certains changements proposés sont particulièrement détaillés et seraient mieux adressés dans un guide de réglementation associé.</p>	
General	Bruce Power NB Power OPG	Given the issues raised in Item 1 (above), it is suggested that the CNSC defer some of the proposed changes to a later date to allow these regulatory changes to be managed via the normal process with detailed consultation.	Noted. The proposed recommendations for the suite of documents are considered for applicability for each document.
Général	Hydro-Québec	Étant donné le commentaire précédent, nous suggérons que tous les changements non reliés aux événements de Fukushima soient reportés à une date ultérieure et traités via le processus normal de consultation.	Noté. L'applicabilité des recommandations proposées est examinée pour chaque document de la série.
General	Bruce Power NB Power OPG	It is noted that the term "cliff edge effect" is adopted in proposed changes to both RD-310 and S-294. While we recognize that this term has come into wider use post-Fukushima, we see the term as unnecessarily provocative, not fully descriptive of the concerns and not in the best interest of public communication. We suggest that further discussion on this matter would be helpful, with a view to adopting a more descriptive term (e.g. "boundary effect").	No change. The term "cliff-edge effect" is used internationally, and is maintained for consistency of approach. It is one of the key lessons learned from the Fukushima Daiichi event. The term is being used consistently in all documents where used. However, additional guidance is provided in the text of RD-310.
Général	Hydro-Québec	Nous notons que le terme « Effet de falaise » est utilisé dans plusieurs propositions de changements aux documents RD-310 et S-294. On devrait s'assurer d'utiliser une terminologie cohérente pour « Cliff Edge Effect ». On utilise présentement et parfois « effets de falaise » ou encore « effet de précipitation ». Nous croyons cependant que	Aucun changement. Le terme « effet falaise » est utilisé à l'échelle internationale et est maintenu aux fins d'uniformité. Il s'agit d'une des leçons clés tirées de l'événement survenu à la centrale nucléaire Fukushima Daiichi. Le terme est utilisé de manière uniforme dans tous les documents, le cas échéant. Cependant, de l'orientation supplémentaire est fournie dans le

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General Général	Organization/ Organisation	Comments/Commentaires	CNSC Response / Réponse de la CCSN
		« effet de bord » est plus approprié.	texte du document RD-310.
General	Bruce Power NB Power OPG	It is recommended that references to design capabilities or design basis be clarified and limited to the extent practicable to preserve the distinction between design basis (established in the station design documentation) and beyond design basis initiatives such as those presented in the Fukushima task force report. For example, we note that many of the “rationale” section comments contain reference to “design capabilities” which do not seem appropriate. As a specific example, Section 6.1 of G-306 refers to “detailed assessments”, “design capabilities” and “beyond design basis” and although detailed assessments might be appropriate for design basis it is not normally the standard for beyond design basis assessments.	No changes necessary. We believe that the comment refers to the following finding in the FTF Report, which was used as rationale, and is not included in the G-306 document amendment: A separate project and document address design.  <b>“Section 6.4.7 (#1)”</b>  <i>Current assessments do not adequately consider events affecting multiple reactors on the site, events at spent fuel bays, as well as events triggered by extreme external hazards. Having detailed assessments of the severe accident management procedural guidance and design capabilities to cater to beyond-design-basis and severe accidents were shown to be of high priority during the Fukushima event”.</i>
Général	Hydro-Québec	Nous suggérons que les références aux capacités prévues dans la conception et au dimensionnement (fondements de conception) soient clarifiées et utilisées de manière limitée afin de conserver la distinction entre les fondements de conception (établis dans les documents de conception de la centrale), et les initiatives hors dimensionnement telles que celles présentées dans le rapport du groupe de travail de la CCSN. Par exemple, nous notons que plusieurs éléments dans la colonne « Justification » font référence aux capacités de conception, ce qui semble inapproprié. Plus spécifiquement, la section 6.1 des changements proposés au guide G-306 fait référence aux termes « évaluations détaillées », « capacités de conception » et « hors dimensionnement ». Bien que le terme « évaluations détaillées » puisse être adéquat pour le dimensionnement, il ne l’est pas pour les éléments hors dimensionnement.	Aucun changement. Nous sommes d’avis que le commentaire fait référence à la constatation suivante dans le rapport du GTF, qui a servi de base et qui n’est pas inclus dans le document modifié : un projet et un document distincts abordent la conception.  “Section 6.4.7 (#1)”  Les évaluations ne considèrent pas présentement de manière adéquate l’examen des événements affectant plusieurs réacteurs sur le site, les événements touchant les piscines de combustible usé, ainsi que les événements déclenchés par des risques externes extrêmes. Les directives procédurales pour la GAG et les capacités de réagir aux accidents hors dimensionnement at aux accidents graves sont hautement prioritaires à la lumière des leçons tirées de l’accident de Fukushima.
General	Bruce Power NB Power	Further to the above comments, technical comments are provided on the CNSC proposed changes in the attached Tables. The following general comments are offered for consideration:	No change.  The rationales are developed from the Fukushima Task Force recommendations and action plans, whereas FAI numbers were

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Fukushima Omnibus Amendments Project**

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	OPG	<p>a. It would be helpful to provide reference to the appropriate FAI number in the Rationale column.</p> <p>b. The “Introduction/preamble” outlining the basis for the proposed changes for each document also refers to concerns and/or issues which are not related to Fukushima and which in some cases, present significant changes to the existing documents. We assume that this text [is not part of CNSC proposed changes to the text in the associated document and therefore,*] will not be part of the formal revision to the documents.</p> <p>c. On the revised preface which appears in each document, we suggest that the reference to Fukushima (i.e. second paragraph of the preface) would be better located in the revision summary for each document.</p> <p>d. There are no comments on S-296. Comments on G-296 are provided.</p> <p>e. As mentioned above, RD-308 was not reviewed. (Other industry members may provide comments separately.)</p> <p>[Note: * indicates qualification provided by OPG.]</p>	<p>used for industry actions.</p> <p>The introductory preambles provide the linkages to the Fukushima Task Force recommendations, and are not part of the text of the documents.</p> <p>The Prefaces in documents are intended to provide a document history with high level description of what is included, and the changes to address lessons learned from the Fukushima event is the primary purpose of the project. However, the information could also be included in the revision summary.</p>
Général	Hydro-Québec	<p>Mis à part les deux commentaires précédents, l’ensemble des commentaires détaillés d’Hydro-Québec est présenté à l’Annexe A de la présente lettre. Les commentaires suivants vous sont fournis à titre d’information :</p> <p>a. Nous suggérons d’indiquer dans la colonne « Justification » la référence aux actions Fukushima (FAI).</p> <p>b. Nous notons que les « Préfaces », décrivant les bases des changements proposés, réfèrent également à des préoccupations et problèmes non reliés à Fukushima, qui représentent parfois des changements significatifs dans les documents de réglementation. Nous supposons que ce texte ne fera pas partie de la révision officielle des documents.</p> <p>c. Nous n’avons pas de commentaires sur la révision de la préface de chacun des documents de réglementation. Cependant, nous suggérons que le paragraphe qui fait référence à Fukushima soit</p>	<p>Aucun changement. Les justifications découlent des recommandations et des plans d’action du Groupe de travail de la CCSN sur Fukushima, tandis que les numéros des mesures de suivi relatives à Fukushima (MSF) ont servi pour les mesures touchant l’industrie.</p> <p>Les préambules indiquent les liens avec les recommandations du GTF et ne font pas partie du texte des documents.</p> <p>Les préfaces dans les documents ont pour but de présenter l’historique du document avec une description générale des éléments inclus. Les modifications visant à donner suite aux leçons tirées de l’événement de Fukushima constituent l’objectif principal du projet. Cependant, l’information pourrait aussi se retrouver dans le résumé des révisions.</p>

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		<p>déplacé dans un sommaire des révisions de chaque document.</p> <p>d. Nous n'avons pas de commentaire sur le guide G-296.</p> <p>e. Nous n'avons pas de commentaire sur le document d'application de la réglementation RD-308 (les autres membres de l'industrie fourniront éventuellement séparément des commentaires).</p>	
General	CCNB	<p>Please see below CCNB Action's (CCNB) comments and feedback on the Fukushima Omnibus project.</p> <p>Our overriding opinion on nuclear power is that it is inherently unsafe due to the fact that decay heat can't be turned off and that the waste generated has to be managed for essentially forever. CCNB believes the only way to make nuclear power truly safe is to not partake in its use. Until we can convince our elected officials that nuclear power is not safe, we feel it is our duty to take every opportunity to mitigate the possibility of a disaster like Fukushima.</p> <p>CCNB generally agrees with most of the changes proposed, and feel that any strengthening of regulations is Fukushima related. We oppose the industry's notion that not all of these changes are Fukushima related, and we also oppose postponing any of the proposed changes. Our specific comments are on S-294, but as stated above we support any changes to any of the regulatory documents that strengthen regulation, and feel any changes that do so should not be postponed. It would be nice however if the CNSC could have one more consultations after they have commented on the feedback.</p> <p>Our specific comments on the changes are noted below.</p>	<p>Noted.</p> <p>The regulatory framework, and licensing and compliance activities are established to assure adherence to rules for safe nuclear power. This project is one of the CNSC's early commitments to update the regulatory framework from the Fukushima Task Force recommendations.</p> <p>The next round dispositions will be made available prior to the Commission meeting for approvals. Updated draft documents in the new formats and nomenclature are also provided.</p> <p>The items raised will be addressed as applicable for each document included in the project.</p>
General	W. Nolan	<p>I find that although the Commission appears on the surface to be strengthening the protection of public health and safety in its deliberations on the Fukushima Omnibus project, it remains a promoter of nuclear power and refuses to address the fundamental problems presented by the ongoing, unstoppable nuclear disasters at Fukushima, Japan and everywhere else that nuclear power generators are being allowed to operate.</p> <p>In my humble opinion, nuclear power is a failed experiment and this technology must be eradicated as soon as is practicable. The cost,</p>	<p>Noted. The CNSC role is to provide regulatory oversight for nuclear facilities and activities in Canada within its mandate provided by the Nuclear Safety and Control Act, and acts independently in that role from the industry in its mandate to protect the health, safety and security of Canadians and the environment; and to implement Canada's international commitments on the peaceful use of nuclear energy. The documents included in this report form part of the suite of regulatory instruments to fulfill its mandate.</p> <p>The CNSC continues to adhere to government policy on</p>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

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		<p>both in ecological and financial terms, is too high. It was with great hope and optimism that I learned of the recent decisions by Hydro Québec and the Québec government to shut down Gentilly-2 nuclear power plant. Québec clearly understands that the risks are too great and that all humanity now has the ability to produce power without utilizing fuels and technologies that contaminate Earth's ecosystems.</p> <p>The Commission has already heard from numerous members of Aboriginal communities in Canada. All are firmly opposed to the continuance of nuclear power. Indeed, a number have of Aboriginal leaders, nations and groups have officially requested that you respect and honour their right to deny approval of any nuclear power and waste operations in their ancestral territories. Therefore, it is my considered opinion that the CNSC is acting illegally wherever Aboriginal people have spoken against the continuance of these operations and the Commission has ignored or denied their rights and responsibilities to decide in the proliferation of nuclear technologies in their territories.</p> <p>The costs of severe nuclear accidents is beyond calculation and the detrimental effects on all biological ecosystems, including human bodies, persist for countless generations. The same can be said for nuclear waste facilities and for the transport of all fissile materials.</p> <p>Although I agree with the submission from Chris Rouse of CCNB Action (attached) in that I generally support any changes that strengthen nuclear regulations in Canada, I believe that Canada is so far from meeting its responsibility to ensure that regulators act independently and in the interest of public and worker health and safety at present, that nothing less than a complete overhaul of the regulatory regimes governing the presence and use of nuclear technology will give the public any measure of confidence in their intent and ability to keep us safe from industry-caused radioactive exposures.</p> <p>I request that the Commission consider the truths contained in this letter, further consider the mandate of the Fukushima Omnibus project and in the interim, place a moratorium on licensing any nuclear power</p>	<p>aboriginal consultation. The comment appears to reference the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). The Declaration is an aspirational document which must be interpreted in a way that is consistent with Canada's constitutional framework and domestic law. It is not a legally binding instrument. As noted in Canada's Statement of Support, Canada's constitutional and legal framework will continue to be the cornerstone of our efforts to promote and protect the rights of Aboriginal Canadians.</p> <p>Canada supports the principles of the Declaration and believes that they are consistent with the government's approach to working with Aboriginal peoples.</p> <p>As CNSC is a cradle-to-grave regulator that is involved in projects at the early stages of development to post-decommissioning phase, the CNSC engages Aboriginal groups prior to making decisions that may have an adverse impact on a potential or established Aboriginal or treaty rights and continues consulting after its decision, where appropriate.</p> <p>More information can be found on Aboriginal Affairs and Northern Development Canada's (AANDC) website about Canada's endorsement of the UNDRIP at: <a href="http://www.aadnc-aandc.gc.ca/eng/1292354321165/1292354361417">http://www.aadnc-aandc.gc.ca/eng/1292354321165/1292354361417</a></p> <p>In addition, the items raised in the attached referenced table from CCNB will be addressed as applicable for each document included in the project.</p>

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		and waste facilities until it can provide proper independent science and oversight of its activities and the industry itself and secure the approval of the First Peoples of the respective territories.	
General	M.L. Harley	<p>The comments from the industry, that the proposed amendments to strengthen regulations are not Fukushima related and that these changes be postponed, highlight a justified concern that the mindset of the industry indeed is dangerously similar to that mindset that led to the disaster at the Fukushima Daiichi Nuclear Plant.<sup>1</sup> Parallel to the mindset problems noted in the report from the National Diet of Japan, the comments from industry lean toward acceptance of a level of negligence supported by faulty rationales for decisions and actions, and a risk management approach in which the interpretation of issues get stretched to prioritize benefits to the organization at the expense of the public.</p> <p>The mindset underlying the industry's contention that strengthening regulations is not Fukushima related is a chilling indicator for concern in light of the Chairman's statement in the report from the National Diet of Japan:</p> <p><i>Only by grasping this mindset can one understand how Japan's nuclear industry managed to avoid absorbing the critical lessons learned from Three Mile Island and Chernobyl; and how it became accepted practice to resist regulatory pressure and cover up small-scale accidents. It was this mindset that led to the disaster at the Fukushima Daiichi Nuclear Plant.</i></p> <p>In my comments submitted on the NPP 2011 Report, I noted that the NPP 2011 Report did not acknowledge the mindset of the industry and its regulators that were primary factors leading to the disaster at the Fukushima Daiichi Nuclear Plant, nor did it provide any evidence that a similar mindset is not operative in Canada.<sup>2</sup> When this issue was</p>	<p>The CNSC has made an effort to provide recommended amendments for the priority short-term recommendations from the Fukushima Task Force recommendations and its action plans.</p> <p>As an independent regulator, the CNSC has taken a leading role nationally and internationally in dealing with the lessons learned from the event at Fukushima Daiichi. The omnibus amendment project is just the first of many projects that are intended to strengthen the regulatory framework to address lessons learned from the event at Fukushima Daiichi. It is taking into account the event in all future projects in its regulatory framework.</p> <p>The comments received, particularly those concerning S-294 are being addressed below in the comments related to S-294. However just a few points.:</p> <p><i>Level 3 PSA issue</i></p> <p>A level 1 PSA provide and estimate of core damage frequency, a level 2 quantifies the frequencies of radioactive releases and a level 3 quantifies the frequencies of harmful effects of these releases (such as doses to public )</p> <p>Each level of PSA builds on the previous one and each level of PSA contains more uncertainties associated with it.</p> <p>The CNSC position is that the compliance with the Safety Goals should be checked in a way that:</p>

<sup>1</sup> The National Diet of Japan official report of The Fukushima Nuclear Accident Independent Investigation Commission, 2012

<sup>2</sup> 12-M40.10 2012-07-24 Edocs # 3976423



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Fukushima Omnibus Amendments Project**

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Projet omnibus de modifications relatives à Fukushima**

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		<p>raised at the August 14 -15 meeting of the Commission, CNSC staff gave general assurance of a different regulatory philosophy in Canada.</p> <p><i>91. The Commission, noting the intervenor's concern about the relationship between the Japanese regulator and nuclear industry contributing to the Fukushima accident, asked CNSC staff to comment on the regulatory process in Canada. CNSC staff responded that there is a different regulatory philosophy in Canada based on continuous safety improvement, including the implementation of new standards and regulatory documents, as well as design upgrades. CNSC staff noted that the CNSC also shares information in an open and transparent manner.<sup>3</sup></i></p> <p>I urge the Commission to act on the stated CNSC regulatory philosophy, including sharing of information, and proceed with strengthening the regulations without postponement. Specifically, I suggest that</p> <ul style="list-style-type: none"> <li>• all proposed amendments proceed except the proposed time change for updating under section 5.4 which should remain at 3 years because an extension to 5 years is counter to the lessons learned from Fukushima</li> <li>• a Level 3 PSA be a requirement with respect to section 5.1</li> <li>• requirements for review of PSA's be included in section 5.13 in S-294 as there are in RD-310</li> <li>• section 9(b) of the NSCA be noted as relevant legislation to the S-294 standard</li> </ul>	<p>-Is not dependent on the reactor power; -Allows verification of compliance at design stage (no site-specific data required); -Minimizes uncertainties.</p> <p>Therefore, the decision has been made to set the Safety Goals such that compliance can be checked with a Level 2 PSA results, i.e., the amount of the radioactive release.</p> <p><i>RD-152 issue</i></p> <p>The main purpose of the draft RD-152 was to blend between "Deterministic Safety Analysis" and the "Probabilistic Safety Assessment" in risk informed decision making.</p> <p>Draft RD-152 included the safety goal for existing as well as for the new builds and addressed the acceptance criteria for the PSA applications.</p> <p>Based on public input, it was decided that the document was not necessary as it provided mainly guidance for the blending of requirements that already resided elsewhere. It was decided to convert it into staff guidance material for the following reasons:</p> <ol style="list-style-type: none"> <li>1) Safety goals for existing reactors are included in the Licensing basis</li> <li>2) Safety goals for new builds are included in RD-337</li> </ol> <p><i>Requirement for review of PSA's</i></p> <p>Clause 5.2 requires the PSA to be done in accordance with proper QA management standard which ensures acceptable</p>

(2011 NPP Report) – Written submission from Mary Lou Harley

<sup>3</sup> Minutes of Commission (CNSC) meeting August 14-15, 2012

[www.nuclearsafety.gc.ca/eng/commission/pdf/2012-08-14-15-Minutes-e-Edocs4007516.pdf](http://www.nuclearsafety.gc.ca/eng/commission/pdf/2012-08-14-15-Minutes-e-Edocs4007516.pdf)

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		<ul style="list-style-type: none"> <li>RD-152 be finalized and referenced in the S-294 standard</li> </ul>	quality of PSA and processes
General	AECL	<p>The purpose of this letter is to submit AECL's feedback on public comments received on Draft Omnibus Amendments to Regulatory Documents Addressing Lessons learned from the Fukushima Daiichi Event as posted in Information Bulletin 12-47, on 2012 October 23.</p> <p>AECL is supportive of the comments on the draft omnibus amendments and in particular notes that the comments on the amendments to RD-310 are equally applicable to the amendments proposed for RD-308, and requests that they be considered in the proposed revision of this document.</p>	<p>Noted. RD-310 proposals and comments are also considered for inclusion in RD-308.</p> <p>This amendment was included to support the recommendations from the CNSC External Advisory Committee to consider facilities other than NPPs and the Update to the Staff Action Plan to the Commission. However, the requirements are expected to be considered for application in a graded manner for the particular type of facility and activity.</p>

**Part A: S-294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants**

**Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires**

(Now REGDOC-2.4.2, Probabilistic Safety Analysis : Probabilistic Safety Assessment (PSA) for Nuclear Power Plants / Maintenant REGDOC 2.4.2, Analyse probabiliste de la sûreté : Études probabilistes de sûreté (EPS) pour les centrales nucléaires)

Part A: S.294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
Preface	Candu Energy	<p><b>Preface</b>  <b>This regulatory document sets out the requirements of the Canadian Nuclear Safety Commission (CNSC) with respect to the probabilistic safety assessment (PSA). When published, this document will amend/supersede S-294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants. This document has been amended to clarify or add criteria reflecting lessons learned from the Fukushima nuclear event of March 2011. The amendments were made to address findings from INFO-0824, CNSC Fukushima Task Force Report, as applicable to S-294.</b></p> <p>-----</p> <p>This document may be used as part of the licensing basis for a regulated facility or activity, including when referenced in a licence, either directly or indirectly (through licensee reference documents).</p> <p>The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity, and thus establishes the basis for the CNSC's compliance program in respect of that regulated facility or activity.</p>	Candu Energy agrees with the proposed change.	<p>Noted. The preface is updated to align with standardized text for all regulatory documents, for inclusion in the published documents.</p> <p>This provides the administrative history of the amended document, the legal basis, and an explanation of the mandatory language in regulatory and guidance documents. The rationale for the amendment, as related to the CNSC response to the Fukushima event is also provided.</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>The licensing basis for a regulated facility or activity is a set of requirements and documents comprising:</p> <ul style="list-style-type: none"> <li>(i) the regulatory requirements set out in the applicable laws and regulations</li> <li>(ii) the conditions and the safety and control measures described in the facility's or activity's licence, along with the documents directly referenced in that licence</li> <li>(iii) the safety and control measures described in the licence application, and the documents needed to support that licence application</li> </ul> <p>In this document, “shall” is used to express a requirement – i.e., a provision that a licensee or licence applicant is obliged to satisfy, in order to comply with the requirements of this regulatory document. “Should” is used to express guidance, or that which is advised. “May” is used to express an option, or that which is permissible within the limits of this regulatory document. “Can” is used to express possibility or capability.</p> <p>Nothing contained in this document is to be construed as relieving any licensee from any other pertinent requirements. It is the licensee's responsibility to identify and comply with all applicable regulations and licence conditions.</p>		
Préface	Hydro-Québec	<p><b>Préface</b>  <b>Ce document d'application de la réglementation énonce les exigences de la Commission canadienne de sûreté nucléaire (CCSN) à l'égard des études probabilistes de la sûreté (EPS). Une fois publié, le présent document modifiera ou</b></p>	Pas de commentaires	Noté. La préface est mise à jour pour l'aligner sur le texte normalisé inséré dans tous les documents d'application de la réglementation et qui sera ajouté dans les documents publiés.

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p><b>remplacera la norme d'application de la réglementation S-294, Études probabilistes de sûreté (EPS) pour les centrales nucléaires. Le présent document a été révisé pour tenir compte d'un besoin de clarification ou d'ajout de critères inspirés des leçons tirées de l'accident nucléaire de Fukushima survenu en mars 2011. Les modifications ont été apportées pour donner suite aux conclusions d'INFO-0824, Rapport du Groupe de travail de la CCSN sur Fukushima, qui s'applique au document S-294.</b></p> <p>-----</p> <p>Le présent document peut faire partie du fondement d'autorisation d'une installation ou d'une activité réglementée, y compris sous forme de renvoi dans un permis, directement ou indirectement (par l'intermédiaire des documents de référence du titulaire de permis).</p> <p>Le fondement d'autorisation établit les conditions limites du rendement acceptable pour une installation ou une activité réglementée, et jette ainsi les bases du programme de conformité de la CCSN à l'égard de cette installation ou activité réglementée.</p> <p>Le fondement d'autorisation pour une installation ou une activité réglementée est un ensemble d'exigences et de documents qui comprend :</p> <ul style="list-style-type: none"> <li>i) les exigences réglementaires stipulées dans les lois et règlements applicables;</li> <li>ii) les conditions et les mesures de sûreté et de contrôle décrites dans le permis pour l'installation</li> </ul>		<p>Présenter l'historique administratif du document modifié, le fondement juridique et une explication du libellé obligatoire des documents d'orientation et d'application de la réglementation. La justification de la modification relativement à l'accident nucléaire de Fukushima est présentée.</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>ou l'activité et les documents cités en référence directement dans ce permis;</p> <p>iii) les mesures de sûreté et de contrôle décrites dans la demande de permis et les documents soumis à l'appui de cette demande.</p> <p>Aux fins du présent document, « doit » est employé pour exprimer une exigence, c'est-à-dire une disposition qu'un titulaire ou demandeur de permis est tenu de respecter pour se conformer aux exigences du présent document d'application de la réglementation. « Devrait » dénote une orientation ou une mesure conseillée. « Pourrait » exprime une option ou un élément acceptable dans les limites du présent document d'application de la réglementation. « Peut » exprime une possibilité ou une capacité.</p> <p>Aucun élément dans ce document ne doit être interprété par le titulaire de permis comme une autorisation de déroger aux exigences pertinentes. Il appartient au titulaire de permis d'identifier tous les règlements et conditions de permis applicables et de s'y conformer.</p>		
1. (1.1)	Bruce Power NB Power OPG Industry	<p><b>Purpose</b></p> <p>The purpose of this <b>regulatory document</b>, when incorporated into a licence to construct or operate a nuclear power plant (NPP) or other legally enforceable instrument, is to assure that the licensee conducts a "probabilistic safety assessment (PSA)" in accordance with defined requirements.</p>	No Comments.	Noted

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
1 (1.1)	Candu Energy		Candu Energy agrees with the proposed change.	Noted
1 (1.1)	Hydro-Québec	<p><b>Objet</b></p> <p>Le but de <b>ce document d'application de la réglementation</b> est, lorsqu'il est cité dans un permis de construction ou d'exploitation d'une centrale nucléaire, ou dans tout autre instrument de réglementation, de s'assurer que le titulaire de permis réalise une étude probabiliste de sûreté (EPS) en conformité avec les exigences définies dans la norme.</p>	Pas de commentaires	Noté
2.0 (1.2)	Bruce Power NB Power OPG Industry	<p><b>Scope</b></p> <p>This <b>regulatory document</b> sets out the requirements for the PSA that a licensee who constructs or operates a NPP shall conduct, when required by the applicable licence or other legally enforceable instrument.</p>	No Comments	Noted
2.0 (1.2)	Candu Energy		Candu Energy agrees with the proposed change.	Noted
2.0 (1.2)	Hydro-Québec	<p><b>Portée</b></p> <p><b>Ce document</b> fixe les exigences relatives à l'EPS qu'un titulaire de permis de construction ou d'exploitation d'une centrale nucléaire doit réaliser lorsque le permis, ou tout autre instrument de réglementation, l'exige.</p>	Pas de commentaires	Noté
4.0 (2)	Bruce Power NB Power	<p><b>Background</b></p> <p>The following International Atomic Energy Agency (IAEA) safety <b>standards</b> documents <b>or updated</b></p>	<p>This is not a Fukushima related change.</p> <p>The impact of this proposal requires</p>	No change. The documents listed are provided for general guidance in the Background section. The previous documents listed in S-294 are

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
	OPG Industry	<p><b>versions</b>, provide general guidance for conducting quality PSAs:</p> <p><b>1. IAEA safety standard SSG-3, Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants, and</b></p> <p><b>2. IAEA safety standard SSG-4, Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants</b></p>	<p>further evaluation, particularly in light of the S-294 work and projects in progress to meet PROL requirements.</p> <p>This level of detail may be better suited to a regulatory guide, particularly since these documents are IAEA guides, not standards.</p> <p>It is recommended that this proposed change be deferred to a future revision of the document, where the normal CNSC regulatory document revision process can be used.</p>	<p>superseded and replaced by SSG-3 and SSG-4. Therefore the amended S-294 should refer to the current documents. There is also a need to specify IAEA and international standards for the determination of the quality of the PSA.</p> <p>The updating of IAEA references will partly address the following related to the FTF recommendations:</p> <p>The PSA methodology and computer codes are required to be accepted by CNSC, and two IAEA procedures are mentioned for background. A purpose is provided for the acceptance, and the means by which it may be achieved.</p>
4 (2)	Candu Energy		<p>This is not a Fukushima related change. If this change is retained it should be recognized as a change that is not driven by the Fukushima lessons learned.</p>	<p>The documents listed are provided for general guidance in the Background section. The previous documents listed in S-294 are superseded and replaced by SSG-3 and SSG-4. Therefore the amended S-294 should refer to the current documents</p>
4 (2)	Hydro-Québec	<p><b>Contexte</b></p> <p>Les <b>normes</b> de sûreté suivantes de l'Agence internationale de l'énergie atomique (AIEA) <b>ou leurs versions mises à jour</b> présentent des principes généraux pour produire une EPS de bonne qualité :</p> <p><b>1 AIEA, norme de sûreté SSG-3, Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants.</b></p>	<p>Le caractère normatif de l'ajout des documents de l'AIEA devrait être précisé. Ces documents ont traditionnellement été considérés comme des guides. Le texte dans la colonne justification semble indiquer que ces documents de l'AIEA sont plus que des guides.</p> <p>Le texte dans la colonne justification indique que la méthodologie et les</p>	<p>Aucun changement. Les documents précédemment énumérés dans le document S-294 sont remplacés par les normes SSG-3 et SSG-4. Par conséquent, le document S-294 modifié devrait faire référence à ces documents en vigueur.</p> <p>Les normes données en référence dans le document S-294 original sont dépassées et ont été remplacées par une</p>



Part A: S.294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<b>2 AIEA, norme de sûreté SSG-4, Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants.</b>	<p>codes doivent être acceptés par la CCSN et que la façon de l'obtenir est précisée; ceci n'est pas directement précisé dans la clause.</p> <p>Enfin, un avis légal devrait être obtenu pour l'acceptation d'inclure comme normes des documents qui ne sont pas dans les 2 langues officielles.</p> <p>De façon plus générale, ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre d'une révision ultérieure du document.</p>	<p>nouvelle série de normes de sûreté de l'AIEA.</p> <p>Il faut également préciser les normes internationales et de l'AIEA servant à établir la qualité de l'EPS.</p> <p>La mise à jour des deux références à l'AIEA donnera suite partiellement à l'aspect suivant en lien avec les recommandations du Groupe de travail sur Fukushima (GTF) :</p> <p>La méthodologie et les codes informatiques de l'EPS doivent être acceptés par la CCSN et deux procédures de l'AIEA sont mentionnées en référence. L'objet de l'acceptation ainsi que la façon de l'obtenir sont précisés.</p>
5.0 (4)	Bruce Power NB Power OPG Industry	The licensee shall carry out the following activities:		
5.0 (4)	Hydro-Québec	Le titulaire de permis doit réaliser les activités suivantes :	Pas de commentaires	Noté
5.1 (4.1)	Bruce Power NB Power OPG	Perform a <b>Level 1</b> and Level 2 PSA for each NPP. <b>Radioactive sources other than the reactor core, such as the irradiated fuel bay, shall be considered. Multi-unit impacts, if applicable,</b>	<p>The scope of changes presented in section 5.1 is extensive and some are not Fukushima related changes.</p> <p>The impact of this proposal requires further evaluation, particularly in light</p>	<p>It is agreed that the item 1 to 8 constitutes general objectives of the PSA and therefore is now included in a separate section (3) on objectives.</p> <p>In enunciating these objectives in RD-294</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
	Industry	<p><b>shall be included.</b></p> <p><b>The PSA shall include:</b></p> <ol style="list-style-type: none"> <li><b>1. a systematic analysis, to give confidence that the design will comply with the general safety objectives</b></li> <li><b>2. demonstration that a balanced design has been achieved</b></li> <li><b>3. confidence that small deviations in plant parameters that could give rise to severely abnormal plant behaviour (“cliff-edge effects”) will be prevented;</b></li> <li><b>4. assessments of the probabilities of occurrence for severe core damage states, and assessments of the risks of major radioactive releases to the environment.</b></li> <li><b>5. site-specific assessments of the probabilities of occurrence, and the consequences of external hazards</b></li> <li><b>6. identification of plant vulnerabilities and systems for which design improvements or modifications to operational procedures could reduce the probabilities of severe accidents, or mitigate their consequences</b></li> <li><b>7. assessment of the adequacy of emergency procedures</b></li> <li><b>8. assessment of insights into the severe accident management program</b></li> </ol>	<p>of the S-294 work and projects in progress to meet PROL requirements.</p> <p>Several of the proposed changes are quite detailed and may be better suited to a regulatory guide.</p> <p>Therefore, we suggest that only the first two statements be used with point 6, and revised as follows:</p> <p>“Perform a <b>Level 1</b> and Level 2 PSA for each NPP.</p> <p><b>Radioactive sources including the reactor core and the irradiated fuel bay shall be considered. Multi-unit impacts, if applicable, shall be included.</b></p> <p><b>The PSA shall include identification of plant vulnerabilities and systems for which design improvements or modifications to operational procedures could reduce the probabilities of severe accidents, or mitigate their consequences.”</b></p> <p>It is recommended that the other proposed changes be deferred to a future revision of the document, where the normal CNSC regulatory document revision process can be used.</p>	<p>we ensure that PSA can support the lessons learned from Fukushima and that the PSA results provide insights that should be used to strengthen plant safety against all kinds of events (e.g. Severe Accident Management, External Hazards, etc). This is also consistent with the format used for RD-310.</p> <p>These objectives were taken from the international energy agency standard on PSA (IAEA safety standard SSG-3, Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants.)</p> <p>Section 5.1 now reads: “Perform a <b>Level 1</b> and Level 2 PSA for each NPP.</p> <p><b>Radioactive sources other than the reactor core – such as the spent fuel pool (also called irradiated fuel bay) – shall be considered. Multi-unit impacts, if applicable, shall be included.</b></p> <p>A new Section <b>3 on Probabilistic Safety Assessment Objectives</b> now reads: “</p> <p><b>The objectives of the Probabilistic Safety Assessment are:</b></p> <ol style="list-style-type: none"> <li><b>a.to provide a systematic analysis, to give confidence that the design will comply with the fundamental safety objective</b></li> </ol>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>-----</p> <p>Our technical comments on the proposed changes are as follows:</p> <p>The document needs to provide clarity on the “the radioactive sources that <b>shall be considered</b>” per the wording in the second paragraph. We anticipate that the G-294 Guide (that will accompany the S-294 document) will provide further clarification with regard to radioactive sources (other than the reactor core) that need to be included in the Level 1 and Level 2 PSA. We do not believe that other on-site facilities such as the Tritium Removal Facility at Darlington and Used Fuel Storage Facilities at all plants require detailed PRA studies because the existing Safety Report assessments consider external hazards and are sufficient to characterize public risk arising from operation of these facilities.</p> <p>The document needs to provide clarity that alternative methods should be allowed regarding the requirement to include the IFB in the Level 1 PRA scope i.e. IFB events should be considered to the extent necessary to demonstrate that the safety impact to the plant is acceptable. It should be</p>	<p>(This is the new terminology used IAEA SSR 2/1 and is defined in IAEA N-SF-1)</p> <p><b>b. to demonstrate that a balanced design has been achieved</b></p> <p><b>c. to provide confidence that small change of conditions which may lead to a catastrophic increase in the severity of consequences (cliff-edge effects) will be prevented.</b></p> <p><b>d. to provide assessments of the probabilities of occurrence for severe core damage states, and assessments of the risks of major radioactive releases to the environment.</b></p> <p><b>e. to provide site-specific assessments of the probabilities of occurrence, and the consequences of external hazards</b></p> <p><b>f. to identify plant vulnerabilities and systems for which design improvements or modifications to operational procedures could reduce the probabilities of severe accidents, or mitigate their consequences</b></p> <p><b>g. to assess the adequacy of plant emergency procedures.</b></p> <p><b>h. to provide insights into the severe accident management program.</b></p> <p>Clarification on how to demonstrate these objectives will be provided in a guidance</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>possible to leverage work already ongoing as part of Fukushima action items to demonstrate acceptable risk.</p> <p>In general terms for nuclear facilities, safety objectives include preventing accidents with harmful consequences resulting from a loss of control over the reactor core or other sources of radiation, and to mitigate the consequences of any accidents that do occur. Full detailed event tree/fault tree modeling may or may not be required depending on the likelihood, radioactive source levels and displacement mechanisms.</p> <p>Item 1: The term <b>“general safety objective”</b> requires clarification. Although the utilities strive to meet the <u>guidance</u> in SSG-3 and SSG-4, caution should be exercised that prescribed safety goals do not inadvertently become a regulatory requirement for existing facilities as this would contradict INSAG-10 guidance, which states “quantitative probabilistic targets are generally not viewed as regulatory requirements. They are intended as a guide for checking and evaluating the design, but not as the only criteria for evaluating a plant.</p> <p>Item 2: The term <b>“a balanced</b></p>	<p>document that is in planning and preparation.. However brief descriptions are provided below for information.</p> <p>Item 1: The general safety objective is being replaced with the “fundamental safety objective” of IAEA Nuclear Safety Fundamentals N-SF-1. This is the new terminology that replace the previous general safety objective of the IAEA .</p> <p>The fundamental safety objective of N-SF-1 is “The fundamental safety objective is to protect people and the environment from harmful effect of ionizing radiation”.</p> <p>Item 2: Agreed that the term will need further clarification in guidance. In general this is intended so that no particular component, event or accident sequence dominates the risk.</p> <p>Item 3: Cliff edge effects are the focus of international attention following Fukushima. The intent is for the PSA to support the fact that cliff edge effect would be of very low probability, by the fact that the design is robust. Further information will be provided in a guidance document that is in planning and preparation. It is also provided in guidance for RD-310, <i>Deterministic safety analysis for nuclear power plants.</i></p> <p>Item 4: Severe core damage and major radioactive release are metrics used in</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p><b>design</b>” requires clarification. An overall NPP design objective is to ensure that no single component dominates overall risk and this is consistent with relative importance measures required by Section 5.10 of S-294. However, further effort to define the criteria for “balanced design” is required.</p> <p>Item 3: Please see our general comment on the use of the term “cliff edge effects”. The requirements around “Cliff-edge effects” will result in further work and potentially some methodology development. Some effort (with the CNSC) to better characterize the scope of work to address the “cliff-edge effects” will be required. It is worthwhile noting that sensitivity analysis is already part of the PRA scope, and it is not clear what additional work this requirement will entail, and what additional value this incremental work will add.</p> <p>Item 4: The terms “severe core damage states” and “major radioactive releases” require clarification. We note that from a nuclear safety risk communication perspective, the probabilities of occurrence (or final risk estimates) are not the only metrics of interest</p>	<p>Level 1 and Level 2 PSA. Severe core damage for existing reactors involve core degradation while major radioactive releases would include small and large release frequencies in accordance with existing facilities Licensing Basis or RD 337, <i>Design of new nuclear power plants</i>.</p> <p>Item 5: The probabilistic safety assessment is a tool that uses probability and consequences to evaluate the risk. Therefore we retain the term. As for which external hazards will be evaluated, this is subject to the screening analysis criteria which are consistent to international guidance. Guidance will provide details on this topic.</p> <p>Item 6: No comments</p> <p>Item 7: This is the intent, that the emergency operating procedures support the PSA (use to develop human reliability assessment) and as well that the PSA provides insights into the adequacy of the operating procedures</p> <p>Item 8. Again, this is the intent that the SAMG implementation draws on the PSA results.</p> <p>To explicitly specify:</p> <ul style="list-style-type: none"> <li>• Level 1 and Level 2</li> <li>• scope of initiating events to be considered</li> </ul>

Part A: S.294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>and should be placed in the context of our comments to item 1.</p> <p>Item 5: Similar comment to Item 4. Place less emphasis on “probabilities”. Suggest wording “<b>5. site specific assessment of credible external hazards</b>”</p> <p>Item 7 requires further clarification. The PRA already takes human reliability into account, and this assessment is partly based on emergency operating procedures.</p> <p>Item 8 Clarification regarding the purpose of this item is required. G-306 (section 6.1) currently requires the use of the PSA in SAMG development and the Industry SAMG implementation already draws from PRA results.</p>	<ul style="list-style-type: none"> <li>• radioactive sources to be considered</li> <li>• multi-unit effect</li> </ul> <p>This will address the following related to the FTF recommendations:</p> <p>A Level 1 and 2 PSA is required to cover irradiated fuel bay events and multi-unit considerations, as well as plant-wide internal fires, internal floods, seismic events and other external events.</p> <p>The purpose of the PSA is taken from IAEA SSG-3, and lists in a very clear manner the purpose for conducting a PSA, which will address the following related to the FTF recommendations:</p> <p>It is now expressly stated that the PSA methodology is required to identify dominant contributors to risk, plant vulnerabilities and provide insights into the management of severe accidents.</p> <p>It is expected that the PSA methodology will verify that the safety goals in design (RD-337) are met, and this is now stated.</p>
5.1 (4.1)	Candu Energy		<p>Although Candu Energy agrees with the intent, the scope of this change goes beyond the Fukushima lessons learned.</p> <p>Cliff-edge effects can be covered by sensitivity analysis; the term “sensitivity analysis” is preferred.</p>	<p>The key changes for this document in the project address the lessons learned from the Fukushima event, including those that assure the basis and integrity of analysis. Some changes that capture current industry good practice or those already included in licensing basis. This includes</p>

Part A: S.294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>Further clarification is required regarding item 3, and this clarification should be included in a future revision to GD-310.</p> <p>Candu Energy suggest that the text for Item 3 be changed to:</p> <p><b>“confidence that small deviations in plant parameters that could give rise to severely abnormal plant behaviour (“sensitivity analysis”) will be prevented;”</b></p>	<p>those that would not immediately or significantly impact the current implementation of S-294 are included..</p> <p>No change for “cliff-edge effect”.. The term “cliff-edge effect” is used internationally, and is maintained for consistency of approach. It is one of the key lessons learned from the Fukushima Daiichi event. The term is being used consistently in all documents where used. However, additional guidance is provided in the text of RD-310.</p> <p>However, a common definition for the term “cliff-edge effect” that is consistent with the other related documents in the omnibus amendment project is added to the Glossary as provided below.</p>
5.1 (4.1)	Hydro-Québec	<p>Effectuer une EPS de <b>niveau 1</b> et de niveau 2 pour chaque centrale.</p> <p><b>Les sources radioactives autres que le cœur d’un réacteur, comme la piscine de stockage du combustible usé, doivent être prises en compte. S’il y a lieu, les impacts liés aux tranches multiples doivent être pris en compte. L’EPS doit comprendre :</b></p> <p><b>1. une analyse systématique permettant d’établir avec confiance que la conception sera conforme aux objectifs de sûreté généraux;</b></p> <p><b>2. la démonstration que l’on a produit une conception équilibrée;</b></p> <p><b>3. la démonstration de la prévention de situations dans lesquelles de petits écarts dans</b></p>	<p>La justification fait référence à RD-337. Ceci ne s’applique pas aux centrales existantes.</p> <p>Item 5. On devrait ici indiquer « voir également clause 5.8 ». En effet la clause 5.8 permet d'utiliser d'autres méthodes pour les événements externes.</p> <p>Item 7. Il semble que cet aspect devrait être inclus dans la réglementation sur le PMU (ex. G-225) plutôt que dans l'ÉPS.</p> <p>Item 8. Au lieu de dire « une</p>	<p>Le document RD-294 va aussi être applicable pour les nouvelles centrales.</p> <p>Item 5 indique que des évaluations spécifiques au site sur les probabilités d’occurrence et les conséquences. Ceci n’empêche pas, selon 5.8, que d’autres méthodes, au lieu d’une évaluation probabiliste détaillée, pourraient être utilisées pour évaluer les risques.</p> <p>Item 7. Il est important que le lien soit fait avec l’EPS et que les objectifs de l’EPS soient énoncés.</p> <p>Item 8. CNSC accepte la terminologie</p>

Part A: S.294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p><b>les paramètres de la centrale pourraient entraîner de graves anomalies de comportement de la centrale (« effet de précipitation »);</b>  <b>4. des évaluations des probabilités d'occurrence d'états graves d'endommagement du coeur et des évaluations des risques de rejets radioactifs importants dans l'environnement;</b>  <b>5. des évaluations spécifiques au site concernant la probabilité d'occurrence et les conséquences de dangers externes;</b>  <b>6. l'identification des vulnérabilités de la centrale et des systèmes pour lesquels des améliorations de conception ou des modifications aux procédures d'exploitation pourraient réduire la probabilité d'un accident grave ou en atténuer les conséquences;</b>  <b>7. une évaluation du caractère adéquat des procédures d'urgence;</b>  <b>8. une évaluation permettant de soutenir le programme de gestion des accidents graves.</b></p>	<p>évaluation permettant de soutenir », il est suggéré de dire « les informations requises pour soutenir ». L'évaluation des programmes de PMU et DAG doit se faire dans le cadre de ces programmes pour montrer qu'ils tiennent compte de l'EPS.</p> <p>Les modifications proposées sont particulièrement détaillées et seraient mieux présentées dans un guide séparé. Nous suggérons donc d'utiliser seulement les deux premiers paragraphes ainsi que le sixième item dans la clause. Nous proposons alors la reformulation suivante :</p> <p><i>Effectuer une EPS de <b>niveau 1</b> et de <b>niveau 2</b> pour chaque centrale.</i></p> <p><b><i>Les sources radioactives, incluant le coeur du réacteur et la piscine de stockage du combustible usé, doivent être prises en compte. S'il y a lieu, les impacts liés aux tranches multiples doivent être pris en compte.</i></b></p> <p><b><i>L'EPS doit comprendre l'identification des vulnérabilités de la centrale et des systèmes pour lesquels des améliorations de conception ou des modifications aux procédures d'exploitation pourraient réduire la probabilité</i></b></p>	<p>proposée et la clause stipulera « Les informations requises pour soutenir »</p> <p>Comme démontré au commentaire précédent, tous ces objectifs proviennent du guide de l'AIEA (1 AIEA, norme de sûreté SSG-3, Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants) et sont nécessaire pour s'assurer que toutes les leçons sont tirées de l'accident de Fukushima. En particulier que les résultats de l'EPS soient utilisés pour renforcer la sûreté des centrales contre toutes sortes d'événements incluant des événements externes.</p> <p>Un guide en planification et préparation donnera des clarifications sur comment démontrer ces objectifs. Cependant, de brèves descriptions sont fournies ci-dessous à titre informatif.</p> <p>Point 1 : On remplace les objectifs de sûreté généraux par « l'objectif fondamental de sûreté » tiré des Principes fondamentaux de sûreté no SF-1 de l'AIEA. Il s'agit de la nouvelle terminologie qui remplace l'ancien objectif de sûreté général de l'AIEA. L'objectif fondamental de sûreté de la norme SF-1 « est de protéger les personnes et l'environnement contre les effets nocifs des rayonnements</p>



Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p><b><i>d'un accident grave ou en atténuer les conséquences</i></b></p> <p>De façon plus générale, ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre d'une révision ultérieure du document.</p>	<p>ionisants ».</p> <p>Point 2 : On convient qu'il faudra préciser le terme davantage dans le document d'orientation. De manière générale, l'objectif est qu'aucun composant ou événement particulier ne domine le risque. Par exemple, aucun événement initiateur ne devrait indûment dominer le risque de dommage au cœur ou de rejet dans l'environnement.</p> <p>Point 3 : Les effets falaise font l'objet d'une attention internationale depuis Fukushima. L'objectif est que l'EPS soutienne le fait que l'effet falaise serait de très faible probabilité en confirmant que la conception est robuste. D'autres renseignements seront fournis dans le document d'orientation qui est à l'étape de la planification et de la préparation. Cette information est également fournie dans le document GD-310.</p> <p>Point 4 : Les dommages graves au cœur et les émissions radioactives importantes sont des mesures utilisées dans les EPS de niveau 1 et de niveau 2. Les dommages graves au cœur pour les réacteurs existants concernent la dégradation du cœur, tandis que les émissions radioactives importantes incluraient les fréquences des grandes et des petites émissions radioactives, conformément au Fondement</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<p>d'autorisation des installations existantes ou au document RD-337 (maintenant le REGDOC 2.5, Conception des nouvelles centrales nucléaires).</p> <p>Point 5 : L'étude probabiliste de sûreté est un outil qui utilise la probabilité comme élément majeur pour évaluer le risque. Par conséquent, nous conservons ce point. En ce qui concerne les dangers externes qui doivent être évalués, cet aspect est assujéti aux critères de sélection et d'analyse qui sont conformes à l'orientation internationale. Le document d'orientation fournira des détails sur ce sujet.</p> <p>Point 6 : Aucun commentaire</p> <p>Point 7 : L'objectif est que les procédures d'exploitation en cas d'urgence appuient l'EPS (utilisé pour établir l'évaluation de la fiabilité humaine) et que l'EPS fournisse des informations sur le caractère adéquat des procédures d'exploitation.</p> <p>Point 8. Encore une fois, l'objectif est que la mise en œuvre du PGAG s'appuie sur les résultats de l'EPS.</p> <p>Énoncer explicitement :</p> <ul style="list-style-type: none"> <li>• le niveau 1 et le niveau 2;</li> <li>• la portée des événements déclencheurs à prendre en compte;</li> </ul>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<ul style="list-style-type: none"> <li>• les sources radioactives à prendre en compte;</li> <li>• l'effet de tranches multiples.</li> </ul> <p>Cela donnera suite à l'aspect suivant des recommandations du GTF :</p> <p>Une EPS de niveaux 1 et 2 est requise pour les événements impliquant la piscine de stockage du combustible usé et les considérations touchant les centrales à tranches multiples, ainsi que les incendies internes affectant toute la centrale, les inondations internes, les séismes et autres événements externes.</p> <p>L'objet de l'EPS provient de la norme SSG-3 de l'AIEA, qui énumère très clairement les motifs d'exécution d'une EPS, ce qui donnera suite aux aspects suivants en lien avec les recommandations du GTF :</p> <p>Il est maintenant énoncé explicitement que la méthodologie de l'EPS doit définir les facteurs dominants contribuant au risque et les vulnérabilités de la centrale, et indiquer les principes de gestion des accidents graves.</p> <p>On s'attend à ce que la méthodologie de l'EPS vérifie l'atteinte des objectifs de sûreté dans la conception (RD-337) (maintenant REGDOC 2.5, <i>Conception des nouvelles centrales nucléaires</i>), et</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				cette exigence est maintenant énoncée.
5.2 (4.2)	Bruce Power NB Power OPG Industry	Establish and apply a formal <b>management system or quality assurance program</b> for conducting a PSA, such as the Canadian Standards Association (CSA) <b>Standard N286-05, Management system requirements for Nuclear Power Plants. The computer codes used for the PSA models shall comply with CSA N286.7-99, Quality Assurance of Analytical, Scientific and Design Computer Programs for Nuclear Power Plants.</b>	<p>This is not a Fukushima related change.</p> <p>The impact of this proposal requires further evaluation, particularly in light of the S-294 work and projects in progress to meet PROL requirements</p> <p>We agree with revising the reference from "CSA N-286.2 to N-286-05", and suggest the following:</p> <p>"Establish and apply a formal <b>management system or quality assurance program</b> for conducting a PSA, such as the Canadian Standards Association (CSA) <b>Standard N286-05, Management system requirements for Nuclear Power Plants.</b>"</p> <p>It is recommended that the other proposed changes (i.e. reference to CSA N-286.7) be deferred to a future revision of the document, where the normal CNSC regulatory document revision process can be used.</p>	<p>This clause is revised to now read</p> <p><b>The licensee shall conduct the PSA under the management system or quality assurance program established in the licence basis.</b></p> <p>Management systems are already a requirement in the licensing basis so the text is refined to provide clarification of what would be normally included. CSA N286-05 for management systems includes life cycle life phase activities such as design and safety analysis.</p> <p>The second part of the clause on N286.7 is being deleted because it is already included in licensing basis.</p> <p>CSA N286.2 is withdrawn. CSA standard N286-05 supersedes N286.0 as well as the associated sub-tiers N286.1 through N286.6.</p>
5.2 (4.2)	Candu Energy		Candu Energy agrees with the proposed change.	Noted
5.2 (4.2)	Hydro-Québec	Établir et appliquer <b>un système de gestion ou un programme d'assurance de la qualité</b> officiel pour réaliser l'EPS, comme la norme de l'Association canadienne de normalisation (CSA) <b>N286-05,</b>	Ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre	Cette clause a été révisée et ce lit maintenant comme suit : <b>Le titulaire de permis doit réaliser</b>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<b>Exigences relatives au système de gestion des centrales nucléaires. Les codes informatiques employés pour les modèles d'EPS doivent être conformes à la norme CSA N286.7-99, Assurance de la qualité des programmes informatiques scientifiques, d'analyse et de conception des centrales nucléaires.</b>	d'une révision ultérieure du document.	<b>l'EPS en fonction du système de gestion ou du programme d'assurance de la qualité établi dans le fondement d'autorisation.</b>  Les systèmes de gestion forment déjà une exigence du fondement d'autorisation dont le texte est peaufiné pour clarifier ce qui devrait normalement être inclus. La norme de la CSA N286- 05 qui concerne les systèmes de gestion inclut les activités du cycle de vie, comme l'analyse de la conception et de la sûreté.  La norme CSA N286.2 est retirée.  La norme CSA N286-05 remplace la N286.0, ainsi que les sous-échelons connexes N286.1 à N286.6.
5.3 (4.3)	Bruce Power NB Power OPG Industry	The PSA models reflect the plant as built and operated ( <b>including multi-unit impacts</b> ), as closely as reasonably achievable within the limitations of PSA technology, and consistent with the risk impact;	No comments.	Noted
5.3 (4.3)	Candu Energy		Candu Energy suggest changing "including multi-unit impacts" to "including impacts for multiple units at a site"  Candu Energy suggest that the text be changed to:  "The PSA models reflect the plant as built and operated ( <b>including</b>	No change. To clarify that multi-unit effects have to be considered. The proposed wording is adequate, and this is current practice in assessments. The guidance will provide clarity that the following aspects that will need to be considered:  - consequences of common systems

Part A: S.294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<i>impacts for multiple units at a site), as closely as reasonably achievable within the limitations of PSA technology, and consistent with the risk impact;”</i>	failures on all the units and; - impacts of multiple core damage on site - impacts of one unit on another.
5.3 (4.3)	Hydro-Québec	Les modèles de l'EPS représentent aussi fidèlement que possible la centrale telle que construite et exploitée ( <b>y compris les impacts de tranches multiples</b> ), dans les limites de la technologie de l'EPS et conformément à l'impact du risque.	Pas de commentaires	Noté.
5.4 (4.4)	Bruce Power NB Power OPG Industry	Update the PSA models every <b>five</b> years or sooner if major changes occur in the facility.	No comments.	Noted.
5.4 (4.4)	Candu Energy		Although Candu Energy agrees with the intent, this is not a Fukushima related change.	Noted. To align the PSA update with the safety analysis report update in S-99/RD-99.1 and with licence renewal. This has minimal impact on stakeholder and ensures that our requirements on safety analysis updates are consistent throughout.
5.4 (4.4)	Hydro-Québec	Mettre à jour les modèles de l'EPS tous les <b>cinq</b> ans ou plus tôt si des changements significatifs ont eu lieu dans la centrale.	Ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre d'une révision ultérieure du	Noté. Faire concorder la mise à jour de l'EPS avec la mise à jour du rapport sur l'analyse de sûreté du document S-99/RD-99.1 et avec le renouvellement du permis. Cette modification a un impact

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			document.	minimum sur les parties intéressées et fait en sorte que les exigences de la CCSN sur les analyses de sûreté soient cohérentes dans tous les domaines.
5.5 (4.5)	Bruce Power NB Power OPG Industry	Ensure that the PSA models are developed using assumptions and data that are realistic and practical. <b>Supporting deterministic safety analysis shall be provided.</b>	<p>This is not a Fukushima related change.</p> <p>The impact of this proposal requires further evaluation, particularly in light of the S-294 work and projects in progress to meet PROL requirements.</p> <p>Therefore, we suggest that this clause remain unchanged in this revision and that the proposed change(s) be deferred to a future revision of the document, where the normal CNSC regulatory document revision process can be used.</p> <p>-----</p> <p>Technical comments on the proposed changes are as follows:</p> <p>It is unclear what scope of deterministic analysis is being referred to by <b>Supporting deterministic safety analysis shall be provided.</b> The wording is sufficiently vague that it could be interpreted to mean that all event sequences in a PSA must have</p>	<p>Agreed to modify this statement to include engineering assessment. The clause would read <b>“Ensure that PSA models are developed using assumptions and data that are realistic and practical. Supporting deterministic safety analysis or engineering assessments shall be provided”</b></p> <p>To provide the supporting analysis for the specification of the success criteria, assumption etc. It is not the intent to request that “all event sequences in a PSA must have supporting deterministic analysis”</p> <p>Guidance in this aspect is offered in IAEA SSG 3 and will be part of guidance that is being planned and prepared.</p> <p>This clause ensures that the PSA follows international best practice which will address industry action items FAI 2.1 and 2.2. Providing the supporting analysis enhances confidence in the validity of the PSA results which can then be used to assess or improve plant safety against events and hazards.</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>supporting deterministic analysis, which is not feasible given the internal events PSA can include thousands of sequences. Therefore, suggest the wording be modified to state  <b>“Supporting deterministic safety analyses or engineering assessments shall be provided as required.”</b></p>	
5.5 (4.5)	Candu Energy		<p>This is not a Fukushima related change.</p> <p>In addition, further clarification is required on the CNSC expectations for “Supporting deterministic safety analysis shall be provided”. This is vague and general statement that could be easily misinterpreted. Therefore, it would be helpful to include further clarification in a future revision to GD-310.</p>	<p>Agreed to modify this statement to include engineering assessment. The clause would read <b>“Ensure that PSA models are developed using assumptions and data that are realistic and practical. Supporting deterministic safety analysis or engineering assessments shall be provided”</b></p> <p>To provide the supporting analysis for the specification of the success criteria, assumption etc. It is not the intent to request that “all event sequences in a PSA must have supporting deterministic analysis” .</p> <p>Guidance in this aspect is offered in IAEA SSG 3 and will be part of guidance that is being planned and prepared..</p> <p>This clause ensures that the PSA follows international best practice which will address industry action items. Providing the supporting deterministic or engineering analysis enhances</p>



Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				confidence in the validity of the PSA results which can then be used to assess or improve plant safety against events and hazards.
5.5 (4.5)	Hydro-Québec	S'assurer que les hypothèses et les données utilisées dans les modèles de l'EPS sont réalistes et pratiques. <b>Des analyses déterministes de sûreté doivent être produites à l'appui.</b>	Ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre d'une révision ultérieure du document.	<p>On convient de modifier cet énoncé pour y inclure l'évaluation technique. La phrase devrait se lire comme suit :</p> <p><b>Des analyses déterministes de sûreté ou des évaluations techniques doivent être produites à l'appui.</b></p> <p>Fournir l'analyse à l'appui pour définir les critères de réussite, les hypothèses, etc. L'objectif n'est pas de demander que « toutes les séquences d'événements dans une EPS soient appuyées par une analyse déterministe ».</p> <p>On trouvera de l'orientation à cet effet dans le document SSG-3 de l'AIEA. Cette information fera partie du document d'orientation en cours de planification et de préparation.</p> <p>Cette clause garantit que l'EPS adhère à la meilleure pratique internationale qui tiendra compte des mesures de suivi touchant l'industrie. Le fait de fournir l'analyse déterministe ou l'évaluation technique à l'appui renforce la confiance dans la validité des résultats de l'EPS, et peut ensuite servir à évaluer ou à améliorer la sûreté de la centrale par rapport aux événements et aux dangers.</p>

Part A: S.294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
5.6 (4.6)	Bruce Power NB Power OPG Industry	The level of detail of the PSA is consistent with the <b>facility testing, maintenance</b> and configuration management programs, <b>and with the intended uses of the PSA.</b>	No comments.	Noted.
5.6 (4.6)	Candu Energy		Candu Energy agrees with the proposed change.	Noted.
5.6 (4.6)	Hydro-Québec	Le degré de détail de l'EPS est conforme aux programmes d'essais, d' <b>entretien</b> et de gestion de la configuration <b>de l'installation, ainsi qu'aux usages prévus de l'EPS.</b>	Pas de commentaires	Noté.
5.7 (4.7)	Bruce Power NB Power OPG Industry	Seek CNSC acceptance of the methodology and computer codes to be used for the PSA, <b>prior to using them for the purpose of this document.</b>  <ul style="list-style-type: none"> <li>• <b>The methodology shall state the intended PSA applications.</b></li> <li>• <b>The methodology shall be suitable for the intended PSA applications.</b></li> <li>• <b>The computer codes used for PSA and for the supporting deterministic safety analyses shall be developed, validated, and used in accordance with a quality assurance program that meets the requirements of CSA N286.7-99.</b></li> </ul>	This is not a Fukushima related change.  The impact of this proposal requires further evaluation, particularly in light of the S-294 work and projects in progress to meet PROL requirements.  Therefore, we suggest that this clause remain unchanged in this revision and that the proposed change(s) be deferred to a future revision of the document, where the normal CNSC regulatory document revision process can be used.  -----  Our technical comments on the proposed changes are as follows:	The clause will read as follow: <b>Seek CNSC acceptance of the methodology and computer codes to be used for the PSA, prior to using them for the purpose of this document. The methodology shall be suitable to support the objectives of the PSA set forth in section 3 and to support the intended PSA applications.</b>  The PSA methodology and computer codes are required to be accepted by CNSC, and two IAEA procedures are mentioned for background. A purpose for the acceptance, and the means by which it may be achieved, are provided. This rephrasing will ensure that, as a minimum, the methodology can support the objectives in 5.1 (to become a new section)

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>The underlying purpose and rationale of the proposed changes is not clear to us and we foresee that the revised clause may impose impediments to the usefulness of the PSA. For example:</p> <ul style="list-style-type: none"> <li>• Are there a minimum set of uses to meet regulatory requirements?</li> <li>• Are new uses of the PSA limited?</li> <li>• Are there “links” to other standards, e.g. the ASME PRA standard?).</li> </ul> <p>The inclusion of the last bullet appears unnecessary: Per the PROL computer codes must be in compliance with CSA standard N286.7-99 and the CNSC may audit licensees against this requirement. We recommend that the requirement for CNSC acceptance of software be deleted.</p> <p>Section 5.7 requires CNSC acceptance of methodology and computer codes. The extent of these requirements is not clear and requires clarification. For example:</p> <ul style="list-style-type: none"> <li>• Do the methodologies have to be updated and resubmitted for acceptance at the routine 5-year PSA updates?</li> <li>• Do the computer codes have to be</li> </ul>	<p>The last clause on the requirement for computer codes meeting CSA N286.7 will be removed since this requirement is already part of the licensing basis.</p> <p>Additionally, the need for prior acceptance of the methodology reflects current good practice used to minimize significant delays in licensing and compliance assessments from unforeseen information or situations that need to be considered.. Minimal immediate implementation impacts are expected.</p> <p>The questions raised will be addressed in the upcoming guidance.</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>resubmitted for acceptance at the routine 5-year PSA updates?</p> <ul style="list-style-type: none"> <li>• If one utility has gained acceptance for a computer code, do other utilities also have to gain acceptance?</li> </ul> <p>What is the range of computer codes that require CNSC acceptance? For example, does it include only PSA specific codes and exclude design codes and safety analysis codes?</p> <ul style="list-style-type: none"> <li>• The reference to CSA N286.7-99 is not required. See our comment on section 5.2</li> </ul>	
5.7 (4.7)	Candu Energy		<p>Although Candu Energy agrees with the intent, the proposed changes are not all related to the Fukushima lessons learned.</p>	<p>The clause will read as follow:  <b>Seek CNSC acceptance of the methodology and computer codes to be used for the PSA, prior to using them for the purpose of this document. The methodology shall be suitable to support the objectives of the PSA set forth in section 3 and to support the intended PSA applications.</b>                      The PSA methodology and computer codes are required to be accepted by CNSC, and two IAEA procedures are mentioned for background. A purpose for the acceptance, and the means by which it may be achieved, are provided. This rephrasing will ensure that, as a minimum, the methodology can support the objectives in 5.1 (to become a new</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<p>section)</p> <p>The last clause on the requirement for computer codes meeting CSA N286.7 will be removed since this requirement is already part of the licensing basis.</p> <p>Additionally, the need for prior acceptance of the methodology reflects current good practice used to minimize significant delays in licensing and compliance assessments from unforeseen information or situations that need to be considered.. Minimal immediate implementation impacts are expected.</p> <p>The questions raised will be addressed in the upcoming guidance.</p>
5.7 (4.7)	Hydro-Québec	<p>Demander l'approbation de la CCSN concernant la méthodologie et les codes informatiques à utiliser pour l'EPS <b>avant de les utiliser aux fins du présent document.</b></p> <ul style="list-style-type: none"> <li>• <b>La méthodologie doit indiquer les applications prévues pour l'EPS.</b></li> <li>• <b>La méthodologie doit correspondre aux applications prévues pour l'EPS.</b></li> <li>• <b>Les codes informatiques utilisés pour l'EPS et les analyses déterministes de sûreté connexes doivent être conçus, validés et utilisés en conformité avec un programme d'assurance de la qualité respectant les exigences de la norme CSA N286.7-99.</b></li> </ul>	<p>Concernant le premier point, les applications prévues pour l'ÉPS devraient être incluses dans le plan qualité du développement de l'ÉPS.</p> <p>Concernant le dernier paragraphe de la colonne justification, cette clause ne fait pas cette distinction, mais bien au contraire précise qu'il n'y en a pas.</p> <p>De façon plus générale, ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre d'une révision ultérieure du</p>	<p>Cette clause a été révisée et ce lit maintenant comme suit :</p> <p><b>Demander l'approbation de la CCSN concernant la méthodologie et les codes informatiques à utiliser pour l'EPS avant de les utiliser aux fins du présent document.</b></p> <p><b>La méthodologie doit être appropriée pour soutenir les objectifs de l'EPS établis à la section 3 et correspondre aux applications prévues pour l'EPS.</b></p> <p>La méthodologie et les codes informatiques de l'EPS doivent être acceptés par la CCSN, et deux</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			document.	<p>procédures de l'AIEA sont mentionnées en référence. L'objet de l'acceptation ainsi que la façon de l'obtenir sont précisés. Cette nouvelle formulation assure que la méthodologie peut, au moins, appuyer les objectifs de la section 5.1 (deviendra une nouvelle section).</p> <p>La dernière clause sur l'obligation pour les codes informatiques de répondre aux exigences de la norme CSA N286.7 sera supprimée, car cette exigence fait déjà partie du fondement d'autorisation.</p> <p>De plus, la nécessité d'obtenir une acceptation préalable pour la méthodologie reflète la bonne pratique actuellement en vigueur visant à réduire au minimum les délais importants dans l'évaluation de l'autorisation et de la conformité pour les situations ou renseignements imprévus qui doivent être pris en compte. On s'attend à ce que les incidences immédiates de la mise en œuvre soient minimales.</p> <p>Les questions soulevées seront traitées dans le document d'orientation à venir.</p>
5.8 (4.8)	Bruce Power NB Power OPG Industry	<b>Include all potential site-specific initiating events and potential hazards, namely: (a) internal initiating events caused by random component failures and human error; (b) internal hazards (e.g., internal fires and floods, turbine missiles) and (c) external hazards, both</b>	<p>The changes proposed here are not all directly related to Fukushima.</p> <p>The impact of these changes require further evaluation, particularly in light of the S-294 work and projects in</p>	<p>Reword the clause as</p> <p><b>Include all potential site-specific initiating events and potential hazards, namely:</b></p> <p><b>(a) internal initiating events and</b></p>

Part A: S.294, Probabilistic Safety Assessment (PSA) for Nuclear Power Plants / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p><b>natural (e.g., earthquakes, high winds, external floods) and human-induced, but non-malevolent (e.g., airplane crashes, accidents at nearby industrial facilities).</b></p> <p><b>Also, include potential combinations of external hazards. Examples include seismic, floods, or fire.</b></p> <p><b>The screening criteria of hazards shall be acceptable to the CNSC.</b></p> <p>The licensee may, with the agreement of “persons authorized” by the Commission Tribunal, choose an alternative analysis method to conduct the assessment <b>of external events (internal hazards and external hazards).</b></p>	<p>progress to meet PROL requirements</p> <p>Several of the proposed changes are quite detailed and may be better suited to a regulatory guide.</p> <p>Therefore, we suggest the following:</p> <p><b>“ Include all potential site-specific initiating events and potential hazards, namely:</b></p> <p><b>(a) internal initiating events and internal hazards and</b></p> <p><b>(b) external hazards, both natural and human-induced, but non-malevolent</b></p> <p><b>Also, include credible combinations of external hazards when they have a common origin or other dependency. Examples include seismic-induced floods or seismic-induced fire.</b></p> <p><b>The screening criteria of hazards shall be acceptable to the CNSC.”</b></p>	<p><b>internal hazards and</b></p> <p><b>(b) external hazards, both natural and human-induced, but non-malevolent`</b></p> <p><b>Also include potential combinations of external hazards.</b></p> <p><b>The screening criteria of hazards shall be acceptable to the CNSC.</b></p> <p><b>The Licensee may, with the agreement of “persons authorized” by the Commission, choose an alternative analysis method to conduct the assessment of the external events (internal hazards and external hazards).</b></p> <p>This clause is rewritten to provide clarity and reflect current industry good practice, and to ensure that potential combinations of external hazards are considered, such as earthquakes and tsunami, if applicable.</p> <p>The clause also states at a high level that “potential combinations of external hazards” shall be considered. Guidance will be provided on what potential combination to consider</p> <p>A Level 1 and 2 PSA is required to cover irradiated fuel bay events and multi-unit considerations, as well as plant wide internal fires, internal floods, seismic</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				events and other external events.
5.8 (4.8)	Candu Energy		<p>Although Candu Energy agrees with the intent, the proposed changes are not all related to the Fukushima lessons learned. Furthermore, some of the text should be included in a regulatory guide, rather than in a regulatory requirements document.</p> <p>Candu Energy suggest that the text be changed to:</p> <p><b>“Include all potential site-specific initiating events and potential hazards, namely:</b></p> <p><b>(a) internal initiating events and internal hazards and</b></p> <p><b>(b) external hazards, both natural and human-induced, but non-malevolent.</b></p> <p><b>Also, include credible combinations of external hazards. Examples include seismic, floods, or fire. The screening criteria of hazards shall be acceptable to the CNSC.”</b></p>	<p>Reword the clause as</p> <p><b>Include all potential site-specific initiating events and potential hazards, namely:</b></p> <p><b>(a) internal initiating events and internal hazards and</b></p> <p><b>(b) external hazards, both natural and human-induced, but non-malevolent`</b></p> <p><b>Also, include potential combinations of external hazards.</b></p> <p><b>The screening criteria of hazards shall be acceptable to the CNSC.</b></p> <p><b>The Licensee may, with the agreement of “persons authorized” by the Commission, choose an alternative analysis method to conduct the assessment of the external events (internal hazards and external hazards).</b></p> <p>This clause is rewritten to provide clarity and reflect current industry good practice, and to ensure that potential combinations of external hazards are considered, such as earthquakes and tsunami, if applicable.</p>



Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<p>The clause also states at a high level that “potential combinations of external hazards” shall be considered. Guidance will be provided on what potential combination to consider</p> <p>A Level 1 and 2 PSA is required to cover irradiated fuel bay events and multi-unit considerations, as well as plant wide internal fires, internal floods, seismic events and other external events.</p> <p>Definitions for external events, internal hazards, and external hazards are added to the glossary for clarity and inclusion of the examples.</p>
5.8 (4.8)	Hydro-Québec	<p><b>Inclure tous les événements initiateurs potentiels propres au site et les dangers potentiels, notamment : a) événements initiateurs internes causés par des défaillances aléatoires de composants et des erreurs humaines; b) dangers internes (p. ex. incendie ou inondation à l’intérieur, missiles de turbine) et c) dangers externes, qu’ils soient naturels (p. ex. séismes, vents violents, inondations externes) ou d’origine humaine, mais non malveillante (p. ex. écrasements d’avion, accidents dans des installations industrielles à proximité).</b></p> <p><b>Inclure également des combinaisons possibles de dangers externes. Les séismes, inondations ou incendies en sont des exemples.</b></p> <p><b>Les critères de sélection des dangers doivent</b></p>	<p>Les modifications proposées sont particulièrement détaillées et seraient mieux présentées dans un guide séparé. Nous proposons alors la reformulation suivante :</p> <p><b><i>Inclure tous les événements initiateurs potentiels propres au site et les dangers potentiels, notamment : a) événements initiateurs internes et dangers internes et b) dangers externes, qu’ils soient naturels ou d’origine humaine, mais non malveillante.</i></b></p> <p><b><i>Inclure également des combinaisons crédibles de dangers externes lorsqu’ils ont une origine commune ou une</i></b></p>	<p>Reformulation de la clause</p> <p><b>Inclure tous les événements initiateurs potentiels propres au site et les dangers potentiels, notamment :</b></p> <p><b>a) événements initiateurs internes et dangers internes et</b></p> <p><b>b) dangers externes, qu’ils soient naturels ou d’origine humaine mais non malveillante.</b></p> <p><b>Inclure également des combinaisons crédibles de dangers externes..</b></p> <p><b>Les critères de sélection des dangers doivent être acceptables pour la CCSN.</b></p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p><b>être acceptables pour la CCSN.</b></p> <p>Le titulaire de permis peut, avec l'accord de la ou des « personnes autorisées » par le tribunal de la Commission, choisir une autre méthode d'analyse <b>pour évaluer les événements externes (dangers internes et dangers externes).</b></p>	<p><b>dépendance quelconque. Les inondations causées par des séismes ou les incendies causés par des séismes en sont des exemples.</b></p> <p><b>Les critères de sélection des dangers doivent être acceptables pour la CCSN.</b></p>	<p><b>Le titulaire de permis peut, avec l'accord de la ou des « personnes autorisées » par le tribunal de la Commission, choisir une autre méthode d'analyse pour évaluer les événements externes (dangers internes et dangers externes).</b></p> <p>Cette clause a été reformulée pour apporter des précisions et tenir compte des bonnes pratiques actuelles dans l'industrie, et pour s'assurer que les combinaisons possibles de dangers externes sont prises en compte, comme un séisme et un tsunami, s'il y a lieu.</p> <p>La clause énonce également de manière générale que « les combinaisons possibles de dangers externes » doivent être prises en compte. De l'orientation sera fournie quant aux combinaisons possibles à examiner.</p> <p>Une EPS de niveaux 1 et 2 est requise pour les événements impliquant la piscine de stockage du combustible usé et les considérations touchant les centrales à tranches multiples, ainsi que les incendies internes affectant toute la centrale, les inondations internes, les séismes et autres événements externes.</p> <p>Les définitions des événements externes, des dangers internes et des dangers</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				externes ont été ajoutées au glossaire aux fins de clarté et pour inclure des exemples.
5.9 (4.9)	Bruce Power NB Power OPG Industry	<b>Include all operational states of the NPP (full power, low power, and shutdown).</b>	<p>This is not a Fukushima related change.</p> <p>The impact of this proposal requires further evaluation, particularly in light of the S-294 work and projects in progress to meet PROL requirements.</p> <p>Therefore, we suggest that this clause remain unchanged in this revision and that the proposed change(s) be deferred to a future revision of the document, where the normal CNSC regulatory document revision process can be used.</p>	<p>No change. As noted in the original rationale, it is important to primarily address potential new build designs that can operate on an extended basis at lower power level states. It is also to address extended operating states not previously considered.</p> <p>Existing Reactors do not generally operate at low power.</p>
5.9 (4.9)	Candu Energy		The proposed change is not related to the Fukushima lessons learned.	<p>No change. As noted in the original rationale, it is important to primarily address potential new build designs that can operate on an extended basis at lower power level states. It is also to address extended operating states not previously considered. It is written at high level to be inclusive of potential new build designs.</p> <p>Existing Reactors do not generally operate at low power.</p>
5.9 (4.9)	Hydro-Québec	<b>Inclure dans l'EPS tous les états d'exploitation de la centrale (pleine puissance, faible</b>	L'état faible puissance devrait être précisé. Le texte devrait être revu pour être cohérent avec les états	Aucun changement. Tel que mentionné dans la justification originale, il est important de traiter d'abord des nouvelles

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<b>puissance et arrêt).</b>	reconnus dans les documents d'exploitation.  De façon plus générale, ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre d'une révision ultérieure du document.	conceptions possibles qui peuvent être exploitées pendant une période de temps prolongée à des niveaux de puissance plus faibles. Cette clause vise aussi à aborder les états de fonctionnement qui n'étaient pas pris en compte auparavant. La formulation est générale pour inclure toutes les nouvelles conceptions possibles.  Les réacteurs existants ne fonctionnent pas habituellement à de faibles puissances.
5.10 (4.10)	OPG	No change	No comment.	Noted
5.10 (4.10)	Hydro-Québec	Aucun changement.	Pas de commentaires	Noté
5.11 (n/a)	Bruce Power NB Power OPG Industry	<b>The PSA results may be repeated and reaffirmed.</b>	This is not a Fukushima related change.  The impact of this proposal requires further evaluation, particularly in light of the S-294 work and projects in progress to meet PROL requirements.  Therefore, we suggest that the proposed change be deferred to a future revision of the document, where the normal CNSC regulatory document revision process can be used.	The requirement from this clause is being deleted as it is already part of the licensing basis. As part of the requirement for quality and management systems, it is considered verification for regulatory oversight.  However, a renumbering will be addressed as necessary for the publication of the document.

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>-----</p> <p>Our technical comments on the proposed changes are as follows:</p> <p>The underlying purpose and rationale of the proposed changes is not clear to us. Ensuring analysis “repeatability” is part of the QA process and PSA quality is already addressed via Section 5.2.</p> <p>It is not clear who will repeat and reaffirm the PSA results or how this will be achieved.</p>	
<b>5.11 (n/a)</b>	Candu Energy		<p>The proposed change is not related to the Fukushima lessons learned.</p> <p>In addition, further clarification is required on the CNSC expectations for this requirement in the context of ensuring PSA quality. This clarification should be included in a future guidance document.</p>	<p>The requirement from this clause is being deleted as it is already part of the licensing basis. As part of the requirement for quality and management systems, it is considered verification for regulatory oversight.</p> <p>However, a renumbering will be addressed as necessary for the publication of the document.</p>
<b>5.11 (s.o.)</b>	Hydro-Québec	<b>Les résultats de l'EPS peuvent être répétés et confirmés.</b>	<p>Ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre d'une révision ultérieure du document.</p>	<p>L'exigence contenue dans cette clause est supprimée, car elle fait déjà partie du fondement d'autorisation. En ce qui concerne l'exigence relative aux systèmes de gestion et d'assurance de la qualité, elle est vérifiée dans le cadre de la surveillance réglementaire.</p> <p>Cependant, on procédera à une renumérotation en vue de la publication</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				du document.
<b>5.12</b> <b>(n/a)</b>	Bruce Power NB Power OPG Industry	<p><b>Documentation</b></p> <p><b>The licensee shall provide comprehensive and detailed documentation of the PSA, including assumptions, methodology, simplifications and results. It should include significant contributors and vulnerabilities, which would support the regulatory review and assessment of the PSA.</b></p>	<p>This is not a Fukushima related change.</p> <p>The impact of this proposal requires further evaluation, particularly in light of the S-294 work and projects in progress to meet PROL requirements.</p> <p>Therefore, we suggest that the proposed change be deferred to a future revision of the document, where the normal CNSC regulatory document revision process can be used.</p> <p>It is worthwhile noting that the proposed wording for section 5.1 will address the FTF recommendation. The following is the proposed wording for Section 5.1:</p> <p>“Perform a <b>Level 1</b> and Level 2 PSA for each NPP.</p> <p><b>Radioactive sources including the reactor core and the irradiated fuel bay shall be considered. Multi-unit impacts, if applicable, shall be included.</b></p> <p><b>The PSA shall include identification of plant vulnerabilities and systems for which design improvements or</b></p>	<p>This clause is deleted as the requirement is already part of the licensing basis and current good industry practice. Records and documentation are requirements within the N286-05 Standard for management systems.</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p><b>modifications to operational procedures could reduce the probabilities of severe accidents, or mitigate their consequences.”</b></p> <p>The requirements for comprehensive and detailed documentation is already required in section 5.2 as part of quality program requirements and as part of the CSA standards.</p>	
<b>5.12 (n/a)</b>	Candu Energy		The proposed change is not related to the Fukushima lessons learned.	This clause is deleted as the requirement is already part of the licensing basis, and current good industry practice. Records and documentation are requirements within the N286-05 Standard for management systems.
<b>5.12 (s.o)</b>	Hydro-Québec	<p><b>Documentation</b></p> <p><b>Le titulaire de permis doit fournir une documentation complète et détaillée de l'EPS, y compris les hypothèses, la méthodologie, les simplifications et les résultats. Cette documentation devrait inclure les facteurs dominants contribuant aux risques et les vulnérabilités, afin d'appuyer l'examen réglementaire et l'évaluation de l'EPS.</b></p>	Ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre d'une révision ultérieure du document.	Cette clause est supprimée, car l'exigence fait déjà partie du fondement d'autorisation et constitue déjà une bonne pratique de l'industrie. La fourniture des documents est une exigence de la norme N286-05 sur les systèmes de gestion.
<b>Glossary</b>				<p>A modified definition for “cliff-edge effect” is provided to better explain the Canadian application, and its intent.</p> <p><b>Cliff-edge effect-</b></p> <p><b>A small change of conditions which</b></p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<p><b>may lead to a catastrophic increase in the severity of consequences.. Note: cliff edge effects can be caused by changes in the characteristics of the environment, the event or changes in the plant response.</b></p> <p>The definition for licensing basis adapted from CNSC INFO-0828 is provided to support the updated Preface as follows</p> <p><b>licensing basis</b></p> <p><b>A set of requirements and documents for a regulated facility or activity comprising:</b></p> <ul style="list-style-type: none"> <li><b>-the regulatory requirements set out in the applicable laws and regulations</b></li> <li><b>-the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence</b></li> <li><b>-the safety and control measures described in the licence application and the documents needed to support that licence application</b></li> </ul> <p>Les définitions suivantes apportent des précisions à la section 4.8</p> <p><b>événement externe</b></p> <p><b>Événements non liés à l'exploitation</b></p>



Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<p><b>d'une installation ou à l'exécution d'une activité qui pourraient avoir une incidence sur la sûreté d'une installation ou d'une activité. Les événements externes englobent les dangers internes et externes.</b></p> <p><b>External Events:</b></p> <p><b>Events unconnected with the operation of a facility or the conduct of inactivity that could have an effect on the safety of the facility or activity. External Events includes internal hazards and external hazards</b></p> <p><b>dangers internes</b></p> <p><b>Dangers qui proviennent de sources situées sur le site de la centrale nucléaire, tant à l'intérieur qu'à l'extérieur des bâtiments de la centrale. Les exemples de dangers internes sont les incendies, les inondations, les missiles de la turbine, les accidents de transport sur le site et les rejets de substances toxiques des installations de stockage situées sur le site.</b></p> <p><b>Internal hazards :</b></p> <p><b>Hazards that originate from the sources located on the site of the nuclear power plant, both inside and</b></p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<p><b>outside plant buildings. Examples of internal hazards are internal fires, internal floods, turbine missiles, on-site transportation accidents and releases of toxic substances from on-site storage facilities.</b></p> <p><b>dangers externes</b></p> <p><b>Dangers qui proviennent de sources situées à l'extérieur du site de la centrale nucléaire. Les exemples de dangers externes sont les dangers sismiques, les incendies externes (p. ex. des incendies qui touchent le site et proviennent de feux de forêts avoisinants), les inondations externes, les vents violents et les missiles causés par les vents, les accidents de transport à l'extérieur du site, les rejets de substances toxiques d'installations de stockage situées à l'extérieur du site et les mauvaises conditions météorologiques.External hazards:</b></p> <p><b>Hazards that originate from the sources located outside the site of the nuclear power plant. Examples of external hazards are seismic hazards, external fires (e.g. fires affecting the site and originating from nearby forest fires), external floods, high winds and</b></p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<b>wind induced missiles, off-site transportation accidents, releases of toxic substances from off-site storage facilities and severe weather conditions.</b>
Feedback round comments received (below)				
<b>S-294 General</b>	M.L.Harley		RD-152 be finalized and referenced in the S-294 standard	<p>The main purpose of the draft RD-152 was to blend between “Deterministic Safety Analysis” and the “Probabilistic Safety Assessment” in risk informed decision making.</p> <p>Draft RD-152 included the safety goal for existing as well as for the new builds and addressed the acceptance criteria for the PSA applications.</p> <p>Based on public input, it was decided that the document was not necessary as it provided mainly guidance for the blending of requirements that already resided elsewhere. It was decided to convert it into staff guidance material for the following reasons:</p> <ol style="list-style-type: none"> <li>1) Safety goals for existing reactors are included in the Licensing basis</li> <li>2) Safety goals for new builds are included in RD-337</li> </ol>
<b>3 (1.3)</b>	CCNB W.Nolan		Section 9(b) of the NSCA should be introduced as relevant legislation to the S-294 standard. Section 9(b)	Comments noted. The RD-294 omnibus amendment deals mainly with requirements for PSA analysis.

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>states:</p> <p>9. The objects of the Commission are (b) to disseminate objective scientific, technical and regulatory information to the public concerning the activities of the Commission and the effects, on the environment and on the health and safety of persons, of the development, production, possession and use referred to in paragraph (a).</p> <p>We feel that this should be added because we ask that the PSA's, their methodologies, and screening criteria be made available to the public under the licensee's public information program. These things are all part of license conditions imposed on the licensee, and are therefore regulatory information.</p> <p>We cannot currently review the PSA's and methodologies for the PSA's from Point Lepreau because they were written by AECL who will not release them. These studies are used by NB Power to ensure that they have taken adequate provision for the public's safety under the NSCA. The Fukushima accident and its cause, collusion between the government, regulator and the licensee, have spread much distrust of the nuclear</p>	<p>The requirement for communication of the results is already dealt with separately in the regulatory framework, and in licensing and compliance.</p>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			industry. Making the documents, used to make the licensee's safety case, available for public scrutiny and not kept secret will go a long way in gaining the trust of the public. Being more transparent will help prevent complacency as well as promote a healthy safety culture, if the public can scrutinize regulatory information.	
<b>3 (1.3)</b>	M.L.Harley		section 9(b) of the NSCA be noted as relevant legislation to the S-294 standard	Comments noted. The RD-294 omnibus amendment deals mainly with requirements for PSA analysis.  The requirement for communication of the results is already dealt with separately in the regulatory framework, and in licensing and compliance.
<b>4 (2)</b>	CCNB W.Nolan		We disagree with the industry that this is not Fukushima related. If Tepco followed these international guidelines the accident could have been prevented. We disagree with putting this into a guidance document. We support using the most up to date standards.	We generally maintained our amendments suggestions on RD-294. The exceptions are requirements that are unnecessary additions because they are already covered elsewhere in the licensing basis and reflect current industry good practice.
<b>5.1 (4.1)</b>	CCNB W.Nolan		We ask that a Level 3 PSA be included as a requirement for the licensee's, so that the consequences of a severe accident can be determined. The CNSC can't limit to a	<b>Level 3 PSA issue</b>  A level 1 PSA provide and estimate of core damage frequency, a level 2 quantifies the frequencies of radioactive releases and a level 3 quantifies the

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>reasonable level, the risk to the health and safety of the public and the environment without this information.</p> <p>Item 1</p> <p>We strongly support the “requirement” of meeting the safety goals referenced in RD-337. We recommend that the wording of item 1 be changed to the following for clarity.</p> <p>1. a systematic analysis, to give confidence that the design is compliant with the general safety objectives of RD-337</p> <p>The rationale for our support of this change comes from Section 3 Relevant Legislation in S-294 which it cites section 3 of the NSCA which states:</p> <p>3. The purpose of this Act is to provide for</p> <p>(a) the limitation, to a reasonable level and in a manner that is consistent with Canada’s international obligations, of the risks to national security, the health and safety of persons and the environment that are associated with the development, production and use of nuclear energy and the production, possession and</p>	<p>frequencies of harmful effects of these releases (such as doses to public )</p> <p>Each level of PSA builds on the previous one and each level of PSA contains more uncertainties associated with it.</p> <p>The CNSC position is that the compliance with the Safety Goals should be checked in a way that:</p> <ul style="list-style-type: none"> <li>-Is not dependent on the reactor power;</li> <li>-Allows verification of compliance at design stage (no site-specific data required);</li> <li>-Minimizes uncertainties.</li> </ul> <p>Therefore, the decision has been made to set the Safety Goals such that compliance can be checked with a Level 2 PSA results, i.e., the amount of the radioactive release.</p> <p><b>RD-152 issue</b></p> <p>The main purpose of the draft RD-152 was to blend between “Deterministic Safety Analysis” and the “Probabilistic Safety Assessment” in risk informed decision making.</p> <p>Draft RD-152 included the safety goal for existing as well as for the new builds and addressed the acceptance criteria for the PSA applications.</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>use of nuclear substances, prescribed equipment and prescribed information; and</p> <p>There is no relevance to this legislation in the S-294 standard, if there are no required safety goals or limits that “limit to a reasonable level” the safety of persons and the environment associated with the production and use of nuclear energy. Simply requiring a licensee to perform a safety study without establishing clearly defined safety goals to be compliant with, does not limit to reasonable level the health and safety of persons and the environment. In order for this section of the NSCA to be relevant, clearly defined safety goals, that the licensee shall be compliant with, for the level 1 and level 2 PSA’s should be stated.</p> <p>This would also hold true for section 24(4) (b) of the NSCA which states:</p> <p>(4) No licence may be issued, renewed, amended or replaced unless, in the opinion of the Commission, the applicant</p> <p>(b) will, in carrying on that activity, make adequate provision for the protection of the environment, the health and safety of persons and the</p>	<p>Based on public input, it was decided that the document was not necessary as it provided mainly guidance for the blending of requirements that already resided elsewhere. It was decided to convert it into staff guidance material for the following reasons:</p> <ol style="list-style-type: none"> <li>1) Safety goals for existing reactors are included in the Licensing basis</li> <li>2) Safety goals for new builds are included in RD-337</li> </ol> <p><b>Requirement for review of PSA’s</b></p> <p>Clause 5.2 requires the PSA to be done in accordance with proper QA management standard which ensures acceptable quality of PSA and processes. Additionally, CSA N286-05 for management systems includes verification.</p> <p>Item 2 of PSA objectives. Agreed that the term will need further clarification in guidance. In general this is intended so that no particular component, event or accident sequence dominates the risk.</p> <p>Items 3, 4, 5, 6, 7 and 8. Noted.</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>maintenance of national security and measures required to implement international obligations to which Canada has agreed.</p> <p>Section 24(4) (b) is also not relevant legislation if there is no “adequate provisions” taken by the licensee without clearly defined safety goals that the licensee shall be compliant with for the Level 1 and Level 2 PSA’s</p> <p>We also request that the draft RD-152 “Guidance on the Use of Deterministic and Probabilistic Criteria in Decision-making for Class I Nuclear Facilities” continue with public consultation, and be referenced in the S-294 standard.</p> <p>This would legally enforce the licensee’s to not be complacent. Also many of the Action Items from the Fukushima Action Plan state “to the extent practicable”. If RD-152 was finalized and implemented into the licenses of the Class 1 nuclear facilities, it would legally enforce “to the extent practicable” or the ALARP principle.</p> <p>The commission made a decision in an April 29 2009 public meeting to proceed with public consultation for RD-152. Its decision on this item</p>	



Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>directed the staff to proceed with the consultation process for RD-152.  <a href="http://nuclearsafety.gc.ca/eng/pdf/Notice-RD-152-CommissionMeeting-2009-04-29-EDOCS-3373004-e.pdf">http://nuclearsafety.gc.ca/eng/pdf/Notice-RD-152-CommissionMeeting-2009-04-29-EDOCS-3373004-e.pdf</a></p> <p>On July 17 2012 we wrote to the CNSC asking them the status of the draft version of RD-152. We were told that there was no plan to finalize RD-152 and that from a Dec 10 2009 public meeting, new regulatory framework was presented to the commission, and that based on that, RD-152 was going to become a staff review guide. We have not found anything in any public meeting documents informing the commission of this decision to make RD-152 a staff review guide instead of a regulatory document. Since the commission's decision is final and can only be reviewed by the Supreme Court, the CNSC staff should proceed with the consultation of RD-152 as directed by the commission.</p> <p>We asked for a copy of the staff review guide and were told it was in production and not yet available. We then followed up on the Dec 10 2009 public meeting and found no mention of this updated regulatory framework.</p>	

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>This is a link to the agenda  <a href="http://nuclearsafety.gc.ca/eng/commission/pdf/2009-12-09-10-MeetingAgendaUpdate-09-M46C.pdf">http://nuclearsafety.gc.ca/eng/commission/pdf/2009-12-09-10-MeetingAgendaUpdate-09-M46C.pdf</a>                      and this is a link to the minutes of the meeting  <a href="http://nuclearsafety.gc.ca/eng/commission/pdf/2009-12-09-10-Minutes-e-Edocs3486980-Final.pdf">http://nuclearsafety.gc.ca/eng/commission/pdf/2009-12-09-10-Minutes-e-Edocs3486980-Final.pdf</a></p> <p>We followed up with why there was no mention of this updated regulatory framework in the Dec 10 2009 public meeting. We were told that the decision to make it into a staff review guide was made in a January 2010 meeting by senior management rather than the commission. We were also told that we would have to get the minutes that detailed the decision through the ATIP office.</p> <p>We have concerns that the nuclear industry and not nuclear safety played a role in this becoming a "Draft" staff review guide instead of Regulatory Document. RD-152 did go out for the first round of consultation and all of the industry comments were the same, opposing much of the content of RD-152 and the need for it.</p> <p>In the 2009 IAEA IRRS mission it notes                      The PSA focuses on evaluating the</p>	

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>risk arising from various events to confirm that safety goals are met whereas the deterministic safety analysis focuses on evaluating the consequence of various events to confirm that the dose acceptance criteria are met. The CNSC is currently developing a guide “Guidance on the Use of Deterministic and Probabilistic Criteria in Decision-making for Class I Nuclear Facilities (RD-152)”. This shows that the international community agrees that there is a need for such guidance.</p> <p>Item 2 CCNB supports this change. We agree with the industry that “balanced design” needs clarification. We suggest using Robert Kennedy’s approach in RSP-0255 Independent Review of Staff Review Guides Related to Engineering Aspects of Protections Against Malevolent Acts, Seismic Hazard, External Hazards Other Than Seismic, and Internal Hazards, R. P. Kennedy, Structural Mechanics Consulting. We also agree with Robert Kennedy that it should be stated that the results be mean risk and not median risk. It is our understanding that this is the case, but it is not being explicitly stated, and</p>	

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>has led to some confusion with NB Power's technical assessments to give confidence to the CNSC that their PSA based SMA methodology is compliant with its safety limits and goals. This should be cleared up in this revision of S-294.</p> <p>Item 3 We support the use of "cliff-edge effects". It is used in both SSG-3 and SSG-4, and is internationally supported.</p> <p>Item 4 We support this change.</p> <p>Item 5 We support this change.</p> <p>Item 6 We support this change.</p> <p>Item 7 We support this change.</p> <p>Item 8 We support this change.</p>	
5.1 (4.1)	M.L.Harley		a Level 3 PSA be a requirement with respect to section 5.1	<p><b>Level 3 PSA issue</b></p> <p>A level 1 PSA provide and estimate of core damage frequency, a level 2 quantifies the frequencies of radioactive releases and a level 3 quantifies the</p>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<p>frequencies of harmful effects of these releases (such as doses to public )</p> <p>Each level of PSA builds on the previous one and each level of PSA contains more uncertainties associated with it.</p> <p>The CNSC position is that the compliance with the Safety Goals should be checked in a way that:</p> <ul style="list-style-type: none"> <li>-Is not dependent on the reactor power;</li> <li>-Allows verification of compliance at design stage (no site-specific data required);</li> <li>-Minimizes uncertainties.</li> </ul> <p>Therefore, decision has been made to set the Safety Goals such that compliance can be checked with a Level 2 PSA results, i.e., the amount of the radioactive release.</p>
5.2 (4.2)	CCNB W.Nolan		We support this change. Licensee's should have to be compliant with all of the latest safety standards, to prevent complacency.	Noted
5.3 (4.3)	CCNB W.Nolan		We support this change.	Noted
5.4 (4.4)	CCNB W.Nolan		In our opinion this is the only change that is not Fukushima related. The change from 3 years to 5 years for updating is unacceptable. PSA's, according to SSG-3, is supposed to be a living PSA, therefore always up	<p>No change required. These requirements will put the PSA updates timeline requirement in line with other safety analysis.</p> <p>It should also be noted that this is not the</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>to date. This change promotes complacency which was one of the main lessons learned from the Fukushima accident, and the Commission has made public pledges to not be complacent. To make this change in the guise of lessons learned from the ongoing Fukushima accident is immoral. A lot of the industry comments state that most of the changes to S-294 are not Fukushima related, but not one of them mentions this as being not Fukushima related, which in our opinion is the only change not related to Fukushima. Due to Canada's aging fleet of reactors and age related degradation of mechanisms, waiting 5 years for an update is not safe.</p> <p>This section also needs more clarification for the triggers of updating. We request bringing S-294 in line with RD-310 triggers. Please see a modified excerpt below from RD-310.</p> <p><b>5.6.2 Update of Safety Analysis</b> The safety analysis shall be periodically reviewed and updated to account for changes in NPP configuration, conditions (including those due to aging), operating parameters and procedures, research</p>	<p>only update requirement. In addition, the PSA must be updated more frequently if major changes to the facility are done.</p> <p>Newly identified research or information that affects the licensing basis also may trigger reporting and further action.</p> <p>The clarification on the triggers of the updates will be included in the guidance document that is in planning and preparation.</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>findings, and advances in knowledge and understanding of physical phenomena, in accordance with CNSC regulatory standard S-99, <i>Reporting Requirements for Operating Nuclear Power Plants</i>.</p> <p>In addition to periodic updates, the safety analysis shall also be updated following the discovery of information that may reveal a hazard that is different in nature, greater in probability, or greater in magnitude than was previously presented to the CNSC.</p> <p>We took out that it had to be presented in licensing documents. Anything that reveals a hazard that is different in nature, greater in probability or greater in magnitude should have to be considered even if it is not in a licensing document. Just because it wasn't previously in a licensing document does not mean that it does not impose a greater risk, and needs to be considered.</p> <p>This should also state that the methodologies and screening criteria should also be updated to take into account any new state of the art methodologies, and knowledge. It should also state that the CNSC will again have to review and accept the</p>	

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			updated methodologies and screening criteria. This should be put into place to protect the public from complacency of the regulator and licensee.	
5.4 (4.4)	M.L.Harley		... all proposed amendments proceed except the proposed time change for updating under section 5.4 which should remain at 3 years because an extension to 5 years is counter to the lessons learned from Fukushima	Noted. No change required. These requirements will put the PSA updates timeline requirement in line with other safety analysis.  It should also be noted that this is not the only update requirement. In addition, the PSA must be updated more frequently if major changes to the facility are done.  The clarification on the triggers of the updates will be included in the guidance that is in planning and preparation.  Newly identified research or information that affects the licensing basis also triggers reporting and further analysis.
5.5 (4.5)	CCNB W.Nolan		We support this change.	Noted
5.6 (4.6)	CCNB W.Nolan		We support this change.	Noted
5.7 (4.7)	CCNB W.Nolan		We agree with the industry that some things need clarification. The industry asked for clarification on the following things. We have provided our comments on these clarifications underneath.  <i>Do the methodologies for acceptance</i>	Noted. Information will be provided in guidance that is in planning and preparation. Additional rationales are provided in the dispositions, and that will be included in the guidance.



Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p><i>at the routine 5-year PSA updates?</i></p> <p>Yes they should have to update the methodologies to prevent complacency and promote a good safety culture.</p> <p><i>Do the computer codes have to be resubmitted for acceptance at the routine 5-year PSA updates?</i></p> <p>Yes they should have to resubmit computer codes to prevent complacency and promote a good safety culture.</p> <p><i>If one utility has gained acceptance for a computer code, do other utilities also have to gain acceptance?</i></p> <p>Yes</p> <p><i>What is the range of computer codes that require CNSC acceptance? For example, does it include only PSA specific codes and exclude design codes and safety analysis codes?</i></p> <p>We agree this should be clarified.</p> <p><i>The reference to CSA N286.7-99 is not required. See our comment on section 5.2</i></p> <p>We disagree with the industry and think the reference is required.</p>	
5.8 (4.8)	CCNB W.Nolan		We agree with the changes except that if an alternate analysis method is	Noted. Guidance on appropriate alternative methods will be provided in a

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			chosen, it should be reviewed using Independent calculations using alternate tools and methods to the extent practicable to verify a balanced design and that safety goals are met. An example of this would be using Robert Kennedy's Simplified Hybrid Methodology to verify PSA based SMA methodologies ensure safety goals are met.	future guidance document that is in planning and preparation.
5.9 (4.9)	CCNB W.Nolan		We agree with the proposed change.	Noted
5.10 (4.10)	CCNB W.Nolan		We agree with the proposed change.	Noted
5.11 (n/a)	CCNB W.Nolan		We agree with the proposed change.	Noted
5.12 (n/a)	CCNB W.Nolan		We agree with the proposed change, but feel that it should also include that the PSA's, methodologies, and screening material be made public through the licensee's public information system.	The communication process is independent of the RD-294 omnibus amendment. Requirements for management systems that include records and documentation, and reporting and public information are provided in other regulatory documents and Standards that are part of the licensing basis.
5.13 (n/a)	CCNB W.Nolan		There are currently no requirements for review of the PSA's as there are in RD-310. We consider this to be a huge gap in S-294. It is well known in the nuclear industry that truly independent reviews of safety studies	Comment noted.  Section 5.2 requires that the PSA are performed in accordance with a Management System compliant with CSA N286. This ensures quality of the process. In addition the licensees use

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>are needed. Please see below for our suggestion.</p> <p>The licensee shall systematically review the safety analysis results to ensure that they are correct and meet the objectives set for the analysis. The results shall be assessed against the relevant requirements, applicable experimental data, expert judgment, and comparison with similar calculations and sensitivity analyses.</p> <p>The licensee shall review the analysis results using one or more of the following techniques, depending on the objectives of the analysis:</p> <ol style="list-style-type: none"> <li>1. Independent review by qualified individuals; and</li> <li>2. Independent calculations using alternate tools and methods to the extent practicable.</li> </ol> <p>To support this below is an excerpt from a Document called <i>“Potential Areas for Enhancement of the PSA Methodology based on Lessons Learned from the Fukushima Accident</i> by A. Lyubarskiy, I. Kuzmina, M. El-Shanawany International Atomic Energy Agency”</p> <p><b>THE ROLE OF INDEPENDENT PSA REVIEW</b></p>	<p>expert contractors to independently review and the CNSC also performs an independent review. Management systems are already a requirement in the licensing basis. CSA N286-05 for management systems also includes verification.</p> <p>Future guidance will be provided in this respect</p>

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>PSAs can provide useful insights on safety-related issues dealing with plant design and operation. It is important that PSA quality is provided in terms of its technical consistency of the data and assumptions, comprehensiveness of the analysis, correctness of the results and insights, etc. The main instrument for PSA quality provision is a comprehensive, truly independent peer review, and its role should be re-emphasized.</p> <p>When I sent a copy of this to Dr. Greg Rzentkowski his reply was "I couldn't agree more with the recommendations of this discussion paper which is consistent with the Canadian practice. Dr. M. El-Shanawany , a co-author of the paper, is a former employee of the CNSC." Dr. Rzentkowski also supports independent review of the PSA's.</p>	
<b>5.13 (n/a)</b>	M.L.Harley		requirements for review of PSA's be included in section 5.13 in S-294 as there are in RD-310	Comment noted. Section 5.2 requires that the PSA are performed in accordance with a management system compliant with CSA N286. This ensures quality of the process. In addition the licensees use expert contractors to independently review and the CNSC also performs an independent review.

Part A: S.294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants* / Partie A : S-294 Études probabilistes de sûreté (EPS) pour les centrales nucléaires

S-294 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<p>Management systems are already a requirement as part of the licensing basis. CSA N286-05 also includes verification.</p> <p>Future guidance will be provided to include this information.</p>

**Part B1: S-296, Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills**

**Partie B1 : S-296 Politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium**

(Now REGDOC-2.9.1, *Environmental Protection: Environmental Protection Policies, Programs and Procedures* /  
Maintenant REGDOC 2.9.1, *Protection de l'environnement : Politiques, programmes et procédures de protection de l'environnement*)

Part B1: S-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B1 : S-296  
Politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

S-296 Section # / No de Section	Organization Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
General	Bruce Power NB Power OPG		There are no comments on S-296. Comments on G-296 are provided.	Noted
Preface	Candu Energy	<p><b>Preface</b></p> <p><b>This regulatory document sets out the requirements of the Canadian Nuclear Safety Commission (CNSC) with respect to the environmental protection policies, programs and procedures.</b></p> <p><b>When published, this document will amend/supersede S-296, <i>Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills</i>. The document has been amended to clarify or add criteria reflecting lessons learned from the Fukushima nuclear event of March 2011. Amendments to the accompanying guidance document address findings from</b></p>	Candu Energy agrees with the proposed change.	<p>Noted. The preface is updated to align with standardized text for all regulatory documents, for inclusion in the published documents.</p> <p>To provide the administrative history of the amended document, the legal basis, and an explanation of the mandatory language in regulatory and guidance documents. The rationale for the amendment, as related to the CNSC Fukushima Task Force Report, is also provided.</p>

Part B1: S-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B1 : S-296  
Politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

S-296 Section # / No de Section	Organization Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p><b>INFO-0824, CNSC Fukushima Task Force Report.</b></p> <p>-----</p> <p>This document may be used as part of the licensing basis for nuclear facilities and regulated activities, including when referenced in a licence, either directly or indirectly (through licensee reference documents).</p> <p>The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity, and thus establishes the basis for the CNSC's compliance program in respect of that regulated facility or activity.</p> <p>The licensing basis for a regulated facility or activity is a set of requirements and documents comprising:</p> <ul style="list-style-type: none"> <li>(i) the regulatory requirements set out in the applicable laws and regulations</li> <li>(ii) the conditions and the safety and control measures described in the facility's or activity's licence, along with the documents directly referenced in that licence</li> <li>(iii) the safety and control measures described in the licence application, and the documents needed to support that licence application</li> </ul> <p>In this document, "shall" is used to express a requirement – i.e., a provision that a licensee or licence applicant is obliged to satisfy, in order to comply with the requirements of this regulatory</p>		

Part B1: S-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B1 : S-296  
Politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

S-296 Section # / No de Section	Organization Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>document. "Should" is used to express guidance, or that which is advised. "May" is used to express an option, or that which is permissible within the limits of this regulatory document. "Can" is used to express possibility or capability.</p> <p>Nothing contained in this document is to be construed as relieving any licensee from any other pertinent requirements. It is the licensee's responsibility to identify and comply with all applicable regulations and licence conditions.</p>		
Préface	Hydro-Québec	<p><b>Préface</b></p> <p><b>Ce document d'application de la réglementation énonce les exigences de la Commission canadienne de sûreté nucléaire (CCSN) à l'égard des politiques, programmes et procédures de protection de l'environnement.</b></p> <p><b>Une fois publié, le présent document modifiera ou remplacera le document S-296, <i>Politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium.</i></b></p> <p><b>Le présent document a été révisé pour tenir compte d'un besoin de clarification ou d'ajout de critères inspirés des leçons tirées de l'accident nucléaire de Fukushima survenu en mars 2011. Les modifications au document d'orientation qui accompagne ce document découlent des recommandations du document INFO-0824, <i>Rapport du Groupe de travail de la</i></b></p>	<p>Est-ce qu'il y aura émission d'un document RD-296? Le texte est un peu confondant puisque dans les faits il n'y a pas de modifications aux exigences.</p>	<p>Un document nouvellement révisé est publié selon la nouvelle identification et nomenclature du présent projet.</p> <p>La Préface est mise à jour pour l'aligner sur le texte normalisé inséré dans tous les documents d'application de la réglementation et qui sera ajouté dans les documents publiés.</p> <p>Présenter l'historique administratif du document modifié, le fondement juridique et une explication du libellé obligatoire des documents d'orientation et d'application de la réglementation. La justification de la modification relativement au <i>Rapport du Groupe de travail de la CCSN sur Fukushima</i> est également présentée.</p>



Part B1: S-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B1 : S-296  
Politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

S-296 Section # / No de Section	Organization Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p><b><i>CCSN sur Fukushima.</i></b></p> <p>-----</p> <p>Le présent document peut faire partie du fondement d'autorisation des installations nucléaires et des activités réglementées, y compris sous forme de renvoi dans un permis, directement ou indirectement (par l'intermédiaire des documents de référence du titulaire de permis).</p> <p>Le fondement d'autorisation établit les conditions limites du rendement acceptable pour une installation ou une activité réglementée et jette ainsi les bases du programme de conformité de la CCSN à l'égard de cette installation ou activité réglementée.</p> <p>Le fondement d'autorisation pour une installation ou une activité réglementée est un ensemble d'exigences et de documents qui comprend :</p> <ul style="list-style-type: none"> <li>i) les exigences réglementaires stipulées dans les lois et règlements applicables;</li> <li>ii) les conditions et les mesures de sûreté et de contrôle décrites dans le permis pour l'installation ou l'activité et les documents cités en référence directement dans ce permis;</li> <li>iii) les mesures de sûreté et de contrôle décrites dans la demande de permis et les documents soumis à l'appui de cette demande.</li> </ul> <p>Aux fins du présent document, « doit » est employé pour exprimer une exigence, c'est-à-dire une</p>		

Part B1: S-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B1 : S-296  
Politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

S-296 Section # / No de Section	Organization Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>disposition qu'un titulaire ou demandeur de permis est tenu de respecter pour se conformer aux exigences du présent document d'application de la réglementation. « Devrait » dénote une orientation ou une mesure conseillée. « Pourrait » exprime une option ou un élément acceptable dans les limites du présent document d'application de la réglementation. « Peut » exprime une possibilité ou une capacité.</p> <p>Aucun élément dans ce document ne doit être interprété par le titulaire de permis comme une autorisation de déroger aux exigences pertinentes. Il appartient au titulaire de permis d'identifier tous les règlements et conditions de permis applicables et de s'y conformer</p>		
Général	Hydro-Québec	<p>Aucune modification.</p> <p>Le texte pertinent de la norme ISO-14001 donnée en référence, section 4.4.7, se présente comme suit :</p> <p><i>4.4.7 Prévention des situations d'urgence et capacité d'intervention</i></p> <p><i>L'organisme doit établir, mettre en œuvre et tenir à jour une (des) procédure(s) pour identifier les situations d'urgence potentielles et les accidents potentiels qui peuvent avoir un (des) impact(s) sur l'environnement, et comment y répondre...</i></p> <p><i>L'organisme doit examiner périodiquement et revoir, lorsque cela est nécessaire, ses procédures concernant la préparation et la réponse aux</i></p>	Pas de commentaires	Noté

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

Part B1: S-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B1 : S-296  
Politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

S-296 Section # / No de Section	Organization Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<i>situations d'urgence, en particulier après l'occurrence d'accidents ou de situations d'urgence.</i>		

**Part B2: G-296, Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills**

**Partie B2 : G-296 Élaboration de politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium**

(Now issued as a part of REGDOC-2.9.1 above / Fait maintenant partie du REGDOC 2.9.1 susmentionné)

Part B2: G-296, Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills / Partie B2 : G-296 Élaboration de politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

G-296 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposes	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
Preface	Candu Energy	<p><b>Preface</b></p> <p><b>This regulatory document sets out the expectations and guidance of the Canadian Nuclear Safety Commission (CNSC) with respect to the environmental protection policies, programs and procedures.</b></p> <p><b>When published, this document will amend/supersede G-296, Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills.</b></p> <p><b>This document has been amended to clarify or add criteria reflecting lessons learned from the Fukushima nuclear event of March 2011. The amendments were made to address findings from INFO-0824, CNSC Fukushima Task Force Report, as applicable to G-296.</b></p> <p>-----</p> <p>This document may be used as part of the licensing basis for nuclear facilities and regulated activities, including when referenced in a licence, either</p>	Candu Energy agrees with the proposed change.	<p>Noted. The preface is updated to align with standardized text for all regulatory documents, for inclusion in the published documents.</p> <p>To provide the administrative history of the amended document, the legal basis, and an explanation of the mandatory language in regulatory and guidance documents. The rationale for the amendment, as related to the CNSC Fukushima Task Force Report, is also provided.</p>

Part B2: G-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B2 : G-296  
Élaboration de politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

G-296 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposes	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		<p>directly or indirectly (through licensee reference documents).</p> <p>The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity, and thus establishes the basis for the CNSC's compliance program in respect of that regulated facility or activity.</p> <p>The licensing basis for a regulated facility or activity is a set of requirements and documents comprising:</p> <ul style="list-style-type: none"> <li>(i) the regulatory requirements set out in the applicable laws and regulations</li> <li>(ii) the conditions and the safety and control measures described in the facility's or activity's licence, along with the documents directly referenced in that licence</li> <li>(iii) the safety and control measures described in the licence application, and the documents needed to support that licence application</li> </ul> <p>In this document, "shall" is used to express a requirement – i.e., a provision that a licensee or licence applicant is obliged to satisfy, in order to comply with the requirements of this regulatory document. "Should" is used to express guidance, or that which is advised. "May" is used to express an option, or that which is permissible within the limits of this regulatory document. "Can" is used to express possibility or capability.</p> <p>Nothing contained in this document is to be</p>		

Part B2: G-296, <i>Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills</i> / Partie B2 : G-296 Élaboration de politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium				
G-296 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposes	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		construed as relieving any licensee from any other pertinent requirements. It is the licensee's responsibility to identify and comply with all applicable regulations and licence conditions.		
Préface	Hydro-Québec	<p><b>Préface</b></p> <p><b>Ce document d'application de la réglementation énonce les exigences de la Commission canadienne de sûreté nucléaire (CCSN) à l'égard des politiques, programmes et procédures de protection de l'environnement.</b></p> <p><b>Une fois publié, le présent document modifiera ou remplacera le document S-296, <i>Politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium</i>.</b></p> <p><b>Le présent document a été révisé pour tenir compte d'un besoin de clarification ou d'ajout de critères inspirés des leçons tirées de l'accident nucléaire de Fukushima survenu en mars 2011. Les modifications au document d'orientation qui accompagne ce document découlent des recommandations du document INFO-0824, <i>Rapport du Groupe de travail de la CCSN sur Fukushima</i>.</b></p> <p>-----</p> <p>Le présent document peut faire partie du fondement d'autorisation des installations nucléaires et des activités réglementées, y compris sous forme de</p>	S.O.	<p>Noté. La Préface est mise à jour pour l'aligner sur le texte normalisé inséré dans tous les documents d'application de la réglementation et qui sera ajouté dans les documents publiés.</p> <p>Présenter l'historique administratif du document modifié, le fondement juridique et une explication du libellé obligatoire des documents d'orientation et d'application de la réglementation. La justification de la modification relativement au Rapport du Groupe de travail de la CCSN sur Fukushima est également présentée.</p>

Part B2: G-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B2 : G-296  
Élaboration de politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

G-296 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposes	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		<p>renvoi dans un permis, directement ou indirectement (par l'intermédiaire des documents de référence du titulaire de permis).</p> <p>Le fondement d'autorisation établit les conditions limites du rendement acceptable pour une installation ou une activité réglementée et jette ainsi les bases du programme de conformité de la CCSN à l'égard de cette installation ou activité réglementée.</p> <p>Le fondement d'autorisation pour une installation ou une activité réglementée est un ensemble d'exigences et de documents qui comprend :</p> <ul style="list-style-type: none"> <li>i) les exigences réglementaires stipulées dans les lois et règlements applicables;</li> <li>ii) les conditions et les mesures de sûreté et de contrôle décrites dans le permis pour l'installation ou l'activité et les documents cités en référence directement dans ce permis;</li> <li>iii) les mesures de sûreté et de contrôle décrites dans la demande de permis et les documents soumis à l'appui de cette demande.</li> </ul> <p>Aux fins du présent document, « doit » est employé pour exprimer une exigence, c'est-à-dire une disposition qu'un titulaire ou demandeur de permis est tenu de respecter pour se conformer aux exigences du présent document d'application de la réglementation. « Devrait » dénote une orientation ou une mesure conseillée. « Pourrait » exprime une option ou un élément acceptable dans les limites du</p>		

Part B2: G-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B2 : G-296  
Élaboration de politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

G-296 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposes	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		<p>présent document d'application de la réglementation. « Peut » exprime une possibilité ou une capacité.</p> <p>Aucun élément dans ce document ne doit être interprété par le titulaire de permis comme une autorisation de déroger aux exigences pertinentes. Il appartient au titulaire de permis d'identifier tous les règlements et conditions de permis applicables et de s'y conformer</p>		
5.3.3 <b>(3.3.3)</b>	Bruce Power NB Power OPG Industry	<p><b>Other Considerations</b></p> <p>As a further consideration, the EMS should address environmental emergency preparedness and response in terms of:</p> <ol style="list-style-type: none"> <li>1. the proposed measures to prevent or mitigate the effects of accidental releases of nuclear substances and hazardous substances on the environment</li> <li><b>2. the proposed measures to ensure the availability and accessibility of environmental monitoring instrumentation during emergency situations</b></li> <li><b>3. the inclusion of environmental monitoring instrumentation and equipment layouts in emergency plans</b></li> <li>2.4. the health and safety of persons</li> </ol>	<p>Some clarification around the type (fixed or portable) of instrumentation to meet these requirements will be helpful.</p> <p>Domestic NPPs use a variety of fixed and portable instruments as well as survey teams to achieve the results required and believes that the current approach is well optimized.</p> <p>Given this, we suggest combining the proposed items 2 and 3 as follows:</p> <p><b>“2. The provisions for environmental monitoring instrumentation and contingency protocols to ensure these are adequately robust against severe situations.”</b></p>	<p>No change. The originally proposed text provides greater clarity for the guidance.</p> <p>The simpler text proposed by industry loses the nuances. The wording addresses both fixed and portable equipment and how they are truly available and fit for purpose, regardless of circumstances.</p> <p>The guidance provided in ISO-14001, as quoted in S-296 on environmental monitoring for “emergency situations and potential accidents”, is minimal. This indicates the need to provide some “lessons learned” guidance in section 5.3.3 of G-296 (accompanying S-296), related to the task force’s recommendations.</p> <p>Specifically, this addresses the following related to the FTF recommendations:</p> <p>Establish and reinforce criteria and guidelines for environmental monitoring in</p>



Part B2: G-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B2 : G-296  
Élaboration de politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

G-296 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposes	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
				<p>emergency situations.</p> <p>Review the provisions of and enhance environmental monitoring instrumentation to ensure it is adequately robust against severe situations.</p> <p>Review the environmental monitoring layouts of equipment provisions for adequacy against severe situations.</p> <p>The CNSC is applying international guidance for environmental monitoring for emergency situations, and will continue to do so in the near-term. The need to establish future Canadian criteria and guidance will nevertheless be taken into consideration, pending further developments internationally in response to the Fukushima event.</p> <p>It is planned that relevant information will be incorporated in other emergency-specific procedural guidance being prepared by the CNSC, and not just exclusively in the context of environmental management systems guidance.</p>
5.3.3 <b>(3.3.3)</b>	Candu Energy		<p>For items 2 and 3, additional clarification and guidance around the type (fixed or portable) of instrumentation to meet these requirements will be helpful.</p> <p>Since emergency preparedness and</p>	<p>No change. The originally proposed text provides greater clarity for the guidance.</p> <p>The simpler text proposed by industry loses the nuances. The wording addresses both fixed and portable equipment and how they are truly available and fit for purpose,</p>

Part B2: G-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B2 : G-296  
Élaboration de politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

G-296 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposes	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
			<p>response requires flexibility,, an optimized approach should be based on a combination of fixed and portable environmental monitoring instrumentation. Use of portable environmental monitoring would be based on survey teams to achieve the required results.</p> <p>Given this, it is suggested that the proposed items 2 and 3 be combined as follows:</p> <p><b>“2. The provisions for environmental monitoring instrumentation are included in emergency plans to ensure these are adequately robust against severe situations.”</b></p>	<p>regardless of circumstances.</p> <p>The guidance provided in ISO-14001, as quoted in S-296 on environmental monitoring for “emergency situations and potential accidents”, is minimal. This indicates the need to provide some “lessons learned” guidance in section 5.3.3 of G-296 (accompanying S-296), related to the task force’s recommendations.</p> <p>Specifically, this addresses the following related to the FTF recommendations:</p> <p>Establish and reinforce criteria and guidelines for environmental monitoring in emergency situations.</p> <p>Review the provisions of and enhance environmental monitoring instrumentation to ensure it is adequately robust against severe situations.</p> <p>Review the environmental monitoring layouts of equipment provisions for adequacy against severe situations.</p> <p>The CNSC is applying international guidance for environmental monitoring for emergency situations, and will continue to do so in the near-term. The need to establish future Canadian criteria and guidance will nevertheless be taken into consideration, pending further developments internationally in response to</p>

Part B2: G-296, *Developing Environmental Protection Policies, Programs and Procedures at Class I Nuclear Facilities and Uranium Mines and Mills* / Partie B2 : G-296  
Élaboration de politiques, programmes et procédures de protection de l'environnement aux installations nucléaires de catégorie I et aux mines et usines de concentration d'uranium

G-296 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposes	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
				<p>the Fukushima event.</p> <p>It is planned that relevant information will be incorporated in other emergency-specific procedural guidance being prepared by the CNSC, and not just exclusively in the context of environmental management systems guidance.</p>
5.3.3 <b>(3.3.3)</b>	Hydro-Québec	<p><b>Autres considérations</b></p> <p>Le SME doit également traiter des préparatifs et mesures d'intervention d'urgence environnementale en ce qui concerne :</p> <ol style="list-style-type: none"> <li>1. les mesures proposées pour éviter ou atténuer les effets des rejets accidentels de substances nucléaires et de substances dangereuses sur l'environnement;</li> <li><b>2. les mesures proposées pour assurer la disponibilité et l'accessibilité de l'instrumentation de surveillance environnementale lors des situations d'urgence;</b></li> <li><b>3. l'inclusion des plans d'aménagement de l'instrumentation et de l'équipement de surveillance environnementale dans les plans d'urgence;</b></li> <li>4. la santé et la sécurité des personnes.</li> </ol>	S.O.	Noté.

**Part C: G-306, Severe Accident Management Programs for Nuclear Power Plants**

**Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires**

(Now REGDOC-2.3.2, *Accident Management : Severe Accident Management Programs for Nuclear Reactors* / Maintenant REGDOC-2.3.2, *Gestion des accidents : Programme de gestion des accidents graves touchant les réacteurs nucléaires*)

Part C: G-306, Severe Accident Management Programs for Nuclear Power Plants / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires				
G-306 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
Preface	<b>Candu Energy</b>	<p><b>Preface</b></p> <p><b>This regulatory document sets out the expectations and guidance of the Canadian Nuclear Safety Commission (CNSC) with respect to severe accident management programs.</b></p> <p><b>When published, this document will amend/supersede G-306, Severe Accident Management Programs for Nuclear Reactors. This document has been amended to clarify or add criteria reflecting lessons learned from the Fukushima nuclear event of March 2011. The amendments were made to address findings from INFO-0824, CNSC Fukushima Task Force Report, as applicable to G-306.</b></p> <p>-----</p> <p>This document may be used as part of the licensing basis for nuclear facilities and regulated activities, including when referenced in a licence, either directly or indirectly (through licensee reference documents).</p> <p>The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity, and thus establishes the basis for the</p>	Candu Energy agrees with the proposed change.	<p>Noted. The preface is updated to align with standardized text for all regulatory documents, for inclusion in the published documents</p> <p>To provide the administrative history of the amended document, the legal basis, and an explanation of the mandatory language in regulatory and guidance documents. The rationale for the amendment, as related to the CNSC Fukushima Task Force Report, is also provided.</p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		<p>CNSC's compliance program in respect of that regulated facility or activity.</p> <p>The licensing basis for a regulated facility or activity is a set of requirements and documents comprising:</p> <ul style="list-style-type: none"> <li>(i) the regulatory requirements set out in the applicable laws and regulations</li> <li>(ii) the conditions and the safety and control measures described in the facility's or activity's licence, along with the documents directly referenced in that licence</li> <li>(iii) the safety and control measures described in the licence application, and the documents needed to support that licence application</li> </ul> <p>In this document, “shall” is used to express a requirement – i.e., a provision that a licensee or licence applicant is obliged to satisfy, in order to comply with the requirements of this regulatory document. “Should” is used to express guidance, or that which is advised. “May” is used to express an option, or that which is permissible within the limits of this regulatory document. “Can” is used to express possibility or capability.</p> <p>Nothing contained in this document is to be construed as relieving any licensee from any other pertinent requirements. It is the licensee’s responsibility to identify and comply with all applicable regulations and licence conditions.</p>		
Préface	Hydro-	<b>Préface</b>	Pas de commentaires	Noté. La Préface est mise à jour pour l'aligner sur le texte normalisé inséré dans

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
	Québec	<p><b>Le présent document d'application de la réglementation énonce les attentes et l'orientation de la Commission canadienne de sûreté nucléaire (CCSN) à l'égard des programmes de gestion des accidents graves. Une fois publié, le présent document modifiera ou remplacera le document G-306, Programme de gestion des accidents graves touchant les réacteurs nucléaires. Le présent document a été révisé pour tenir compte d'un besoin de clarification ou d'ajout de critères inspirés des leçons tirées de l'accident nucléaire de Fukushima survenu en mars 2011. Les modifications ont été apportées pour donner suite aux conclusions d'INFO-0824, Rapport du Groupe de travail de la CCSN sur Fukushima, qui s'appliquent au document G-306.</b></p> <p>-----</p> <p>Le présent document peut faire partie du fondement d'autorisation des installations nucléaires et des activités réglementées, y compris sous forme de renvoi dans un permis, directement ou indirectement (par l'intermédiaire des documents de référence du titulaire de permis).</p> <p>Le fondement d'autorisation pour une installation ou une activité réglementée est un ensemble d'exigences et de documents qui comprend :</p> <p>i) les exigences réglementaires stipulées dans les lois et règlements applicables;</p> <p>ii) les conditions et les mesures de sûreté et de</p>		<p>tous les documents d'application de la réglementation et qui sera ajouté dans les documents publiés.</p> <p>Présenter l'historique administratif du document modifié, le fondement juridique et une explication du libellé obligatoire des documents d'orientation et d'application de la réglementation. La justification de la modification relativement au Rapport du Groupe de travail de la CCSN sur Fukushima est également présentée.</p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		<p>contrôle décrites dans le permis pour l'installation ou l'activité et les documents cités en référence directement dans ce permis;</p> <p>iii) les mesures de sûreté et de contrôle décrites dans la demande de permis et les documents soumis à l'appui de cette demande.</p> <p>Aux fins du présent document, « doit » est employé pour exprimer une exigence, c'est-à-dire une disposition qu'un titulaire ou demandeur de permis est tenu de respecter pour se conformer aux exigences du présent document d'application de la réglementation. « Devrait » dénote une orientation ou une mesure conseillée. « Pourrait » exprime une option ou un élément acceptable dans les limites du présent document d'application de la réglementation. « Peut » exprime une possibilité ou une capacité.</p> <p>Aucun élément dans ce document ne doit être interprété par le titulaire de permis comme une autorisation de déroger aux exigences pertinentes. Il appartient au titulaire de permis d'identifier tous les règlements et conditions de permis applicables et de s'y conformer</p>		
6.1 (4.1)	Bruce Power NB Power OPG Industry	<p><b>Risk Assessment</b></p> <p>The results of probabilistic risk assessment should assist the licensee to:</p> <p>Verify that SAM would be effective for <b>representative severe accident sequences, including multi-unit events, events triggered by</b> natural and human-induced external hazards, <b>and extended station</b></p>	<p>We agree with the changes presented here, but have the following comments:</p> <p>Clarification on what "<b>extended station blackout</b>" means would be helpful. We recommend re-phrasing this <b>to "events involving an</b></p>	<p>1. The duration for an "extended station blackout" accident is correlated with the provisions in Section 7.10 <i>Safety Support Systems</i> and in Section 8.10.4 <i>Equipment requirements for accident conditions</i> of REGDOC 2.5, <i>Design of New NPPs</i> (formerly, RD-337 Version 2, and respectively GD-337.</p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		<p><b>blackout accidents;</b></p>	<p><b>Extended Loss of All AC Power".</b></p> <p>As noted in our comments on section 10 (below), we believe that issues related to minimum staff complement are covered by other regulatory documents, and need not be discussed here (in the Rationale section).</p>	<p>The paragraph now reads:</p> <p><b>1. “Verify that SAM would be effective for representative severe accident sequences, including multi-unit events, events triggered by natural and human-induced external hazards, and for accidents where station blackout lasts for at least 72 hours. (station blackout is also known as “extended loss of alternating current [AC] power”)</b></p> <p>2. The CNSC G-323 “Ensuring the Presence of Sufficient Qualified Staff at Class I Nuclear Facilities – Minimum Staff Complement”, does not explicitly refer to minimum staff complement needs during accidents beyond design basis. In order to ensure that this aspect is not overlooked in the development and implementation of severe accident management programs, the reference to the staff complement is maintained.</p> <p>See also disposition of the comment to Section 10, below.</p> <p>Amends the text to address the following related to the FTF recommendations:</p> <p>To ensure that SAM is effective for multi-unit events and events triggered by external events.</p> <p>Considers events affecting multiple reactors</p>



Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
				<p>on the site, events at spent fuel bays, as well as events triggered by extreme external hazards. Detailed assessments of the severe accident management procedural guidance and design capabilities include beyond-design-basis and severe accidents are a high priority.</p> <p>To demonstrate that revised emergency plans in regard to multi-unit accidents and severe external events, minimum complements, and emergency response organizations are capable and effective. It is currently demonstrated that emergency response organizations are capable of responding to single unit, beyond design basis events</p>
6.1 (4.1)	Candu Energy		<p>Additional clarification on the meaning of “extended station blackout accidents” versus “station blackout accidents” is needed.</p> <p>The assumptions that need to be considered for a station blackout event should be further clarified and include:</p> <ol style="list-style-type: none"> <li>1. the loss of offsite power resulting from a switchyard-related or grid-related event due to random faults, or an external event, such as a grid disturbance, or weather events such as high winds, snow, and ice loading</li> </ol>	<p>The duration for an “extended station blackout” accident is correlated with the provisions in Section 7.10 Safety Support Systems and in Section 8.10.4 Equipment requirements for accident conditions of REGDOC 2.5, <i>Design of New NPPs</i> (formerly RD-337 Version 2, and respectively GD-337).</p> <p>The paragraph in Section 6.1 now reads:  <b>“Verify that SAM would be effective for representative severe accident sequences, including multi-unit events, events triggered by natural and human-induced external hazards, and for</b></p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
			<p>that affects the offsite power system either throughout the grid or at the plant, and</p> <p>2. the loss of offsite power resulting from a fire, flood, or seismic activity.</p> <p>A duration for the station blackout event should be established to differentiate between a “station blackout event” and an “extended station blackout event”. The requirement for a duration for SBO versus extended SBO can then be related to guidance on minimum time periods before crediting use of onsite alternate AC power sources and offsite alternate AC power sources. Candu Energy recommends further discussion with the nuclear industry before including guidance on durations for SBO and extended SBO in G-306.</p>	<p><b>accidents where station blackout lasts for at least 72 hours. (station blackout is also known as “extended loss of alternating current [AC] power”);</b></p>
6.1 (4.1)	Hydro-Québec	<p><b>Évaluation des risques</b></p> <p>Les résultats de l'évaluation probabiliste des risques devraient aider le titulaire de permis à :</p> <p>1. Vérifier que le programme GAG serait efficace face <b>à des</b> séquences d'accidents graves <b>représentatifs, y compris des événements dans des centrales à tranches multiples, des événements déclenchés par des agressions</b> externes d'origine naturelle et celles dues aux</p>	Pas de commentaires	Noté.

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		activités humaines, <b>et des pannes d'électricité totales prolongées à la centrale.</b>		
7.2 (5.2)	Bruce Power NB Power OPG Industry	<p><b>Evaluation of Systems and Equipment</b></p> <p><b>Plant design capabilities for severe accident management – such as containment venting, hydrogen mitigation, and coolant make-up provisions – should be identified.</b></p> <p>For all systems and equipment <b>which</b> are expected to perform in certain manners or conditions that were not considered in their original design, the licensee should conduct an assessment of their potential availability, effectiveness, and limitations for use in support of a SAM program. Existing systems may warrant design enhancement, if the assessment reveals that the potential consequences of severe accidents are such that the existing systems may not provide the desired preventive and mitigating capabilities.</p> <p><b>Essential plant monitoring features and instrumentation for diagnosis of plant state should be identified, and verified to function reliably and provide meaningful data under severe accident conditions.</b></p>	<p>We agree with the changes presented here, but have one comment:</p> <p>It is recommended to rephrase the last paragraph to stipulate that <b>“reasonable assurance that ... will function”</b> rather than <b>“verified to function.”</b></p> <p>e.g.: <b>“Essential plant monitoring features and instrumentation for diagnosis of plant state should be identified; reasonable assurance that these instruments and features will function reliably and provide meaningful data under severe accident conditions should be demonstrated.”</b></p>	<p>The proposed change is consistent with RD-337 Section 7.3.4, and respectively with REGDOC 2.5, <i>Design of New NPPs</i> (formerly RD-337 Version 2 – Section 7.3.4.1 and 7.8, and with Sections 4.2.8 and 6.3.3 of the Fukushima Task Force Report.</p> <p>The last paragraph now reads:</p> <p><b>“Essential plant monitoring features and instrumentation for diagnosis of plant state should be identified; reasonable assurance that these instruments and features will function reliably and provide meaningful data under severe accident conditions should be demonstrated.”</b></p> <p>Amends the text to address the following related to the FTF recommendations:</p> <p>To identify and evaluate the effectiveness and survivability of equipment needed to mitigate challenges on containment integrity and minimize consequences of a severe accident.</p> <p>To cover the installation of passive autocatalytic recombiners.</p> <p>To demonstrate key instrumentation is fully qualified for design-basis accidents, survivability and beyond-design-basis</p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
				<p>accident conditions as it is for DBA.</p> <p>To demonstrate that the minimum Class I/II equipment that is needed to mitigate beyond-design-basis accidents involving loss of all AC power is systematically identified.</p> <p>To ensure plant design capabilities for severe accident management, such as containment venting, hydrogen mitigation, coolant make-up provisions, instrumentation, and the control areas are evaluated and documented. Such design capabilities would allow minimization of the consequences of a severe accident, should one occur.</p> <p>Demonstrates that requirements for design of systems credited in management of BDBAs are adequate, particularly for severe accident harsh environments (e.g., battery life, availability of portable instruments, connections to portable pumps for heat sinks, capability to re-energize instrumentation supplies).</p> <p>Demonstrated compliance to requirements for complementary design features that could be called upon to protect the containment, such as filtered containment venting</p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
7.2 (5.2)	Candu Energy		<p>While Candu Energy generally agrees with this proposed revision to G-306, there are two concerns:</p> <ol style="list-style-type: none"> <li>1. From the perspective of the design of a new nuclear power plant, the guidance in Section 7.2 is not explicitly reflected in draft CNSC document GD-337.</li> <li>2. For severe accident conditions, which are expected to be outside of the design basis of a nuclear power plant, “verified to function reliably” is not appropriate. The same level of confidence for reliable operation of plant monitoring features and instrumentation that is expected for normal operation, anticipated operational occurrences and design basis accidents cannot be practically provided for design extension conditions. By definition, design extension conditions, and the associated severe accident conditions are conditions beyond the range explicitly taken into account in the design basis.</li> </ol> <p>To address Candu Energy's concern, it is suggested that the text be revised by replacing "verified to function" with "reasonably assured to function". Hence, the revised text would be:</p>	<p>1. RD-337 is being updated to incorporate the recommendations resulted from FTF Report. The new REGDOC 2.5, <i>Design of New NPPs</i> (formerly Version 2 of RD-337) was posted for feedback from external stakeholders.</p> <p>2. The proposed change is consistent with RD-337 Section 7.3.4, and respectively with REGDOC 2.5, <i>Design of New NPPs</i> (formerly RD-337 Version 2 – Section 7.3.4.1 and 7.8, and with Sections 4.2.8 and 6.3.3 of the Fukushima Task Force Report. The last paragraph now reads:</p> <p><b>“Essential plant monitoring features and instrumentation for diagnosis of plant state should be identified; reasonable assurance that these instruments and features will function reliably and provide meaningful data under severe accident conditions should be demonstrated.”</b></p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
			<p><b>“Essential plant monitoring features and instrumentation for diagnosis of plant state should be identified, and reasonably assured to function reliably and provide meaningful data under severe accident conditions.”</b></p>	
7.2 (5.2)	Hydro-Québec	<p><b>Évaluation des systèmes et de l'équipement</b></p> <p><b>Les capacités prévues dans la conception de la centrale pour la gestion des accidents graves, comme la ventilation dans l'enceinte de confinement, mitigation de l'hydrogène et les provisions du liquide de refroidissement d'appoint, devraient être identifiées.</b></p> <p><b>Pour tous les</b> systèmes et équipements <b>desquels on attend</b> qu'ils fonctionnent d'une certaine façon ou dans des conditions qui n'ont pas été prévues au moment de leur conception, le titulaire de permis devrait procéder à une évaluation de leur disponibilité potentielle, de leur efficacité et de leurs limites d'utilisation à l'appui du programme GAG. Des améliorations à la conception des systèmes existants pourraient être justifiées si l'évaluation révèle que les conséquences potentielles d'accidents graves plausibles sont telles que les systèmes existants ne</p>	<p>Concernant le dernier paragraphe en rouge, Hydro-Québec suggère de remplacer « éloquente » par « significative ».</p>	<p>D'accord avec le changement proposé.</p> <p><b>Les caractéristiques essentielles de surveillance de la centrale et l'instrumentation pour le diagnostic de l'état de la centrale devraient être identifiées. L'assurance raisonnable que ces instruments et caractéristiques pourront fonctionner de manière fiable et produire des données significatives en cas d'accidents graves devrait être démontrée.</b></p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		<p>pourraient produire les résultats voulus en matière de prévention et d'atténuation.</p> <p><b>Les caractéristiques essentielles de surveillance de la centrale et l'instrumentation pour le diagnostic de l'état de la centrale devraient être identifiées et vérifiées afin d'établir leur capacité à fonctionner de manière fiable et à produire des données éloquentes en conditions d'accident grave.</b></p>		
7.3 (5.3)	Bruce Power NB Power OPG Industry	<p><b>Assessment of Material Resources</b></p> <p>The licensee should perform an assessment to determine the availability of coolant, energy, and other material resources that may be required for the effective completion of SAM actions.</p> <p><b>For procurement of external resources (equipment, power, water and staff), the licensee should assess the adequacy of arrangements with other organizations, to ensure availability, timing and access to these resources during accidents, with consideration of potential challenges posed by common cause/external events. These arrangements should be formalized and documented.</b></p>	No comment.	Noté
7.3 (5.3)	Candu Energy		Candu Energy agrees with the proposed change.	Noté

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
7.3 (5.3)	Hydro-Québec	<p>Évaluation des ressources matérielles</p> <p>Le titulaire de permis devrait procéder à une évaluation de la disponibilité du réfrigérant, de l'énergie et autres ressources matérielles pouvant être nécessaires pour réaliser de façon efficace les actions du programme GAG.</p> <p><b>Relativement à l'approvisionnement en ressources externes (équipement, alimentation électrique, eau et personnel), le titulaire de permis devrait évaluer le caractère adéquat des arrangements pris avec d'autres organisations, afin d'assurer la disponibilité de ces ressources lors d'accidents et leur accessibilité en temps opportun, compte tenu de possibles difficultés découlant d'événements externes ou d'événements de cause commune. Ces arrangements devraient être officialisés et documentés.</b></p>	Pas de commentaires	Noté
9.2 (7.2)	Bruce Power NB Power OPG Industry	<p><b>Personnel Training</b></p> <p>The licensee should provide operating staff and emergency groups with training commensurate with their respective roles in accident management, enabling them to:</p> <ol style="list-style-type: none"> <li>1. understand their roles and responsibilities within the SAM program</li> <li>2. learn about severe accident phenomena and processes</li> <li>3. become familiar with the activities to be carried out</li> </ol>	<p>We agree with the changes presented here, but have two comments:</p> <ul style="list-style-type: none"> <li>- As noted in our comments on section 10 (below), it is believed that issues related to minimum staff complement are covered by other regulatory documents, and need not be discussed here (in the Rationale section).</li> <li>- Regarding the use of simulators, we agree that the full scope simulator provides a valuable training</li> </ul>	<ol style="list-style-type: none"> <li>1. The CNSC G-323 "Ensuring the Presence of Sufficient Qualified Staff at Class I Nuclear Facilities – Minimum Staff Complement", does not explicitly refer to minimum staff complement needs during accidents beyond design basis. In order to ensure that this aspect is not overlooked in the development and implementation of severe accident management programs, the reference to staff complement is maintained.</li> <li>2. See also disposition of the comment to</li> </ol>



Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		<p>4. enhance their ability to perform in stressful conditions</p> <p>5. verify the effectiveness and improve the clarity of SAM procedures and guidelines</p> <p>Training programs should address the roles to be performed by different groups, and include drills and exercises to enable assessment of the interactions between the various groups involved in SAM.</p> <p><b>The licensee should develop a set of drills to cover multi-unit events and events triggered by external events.</b></p> <p>To the extent practicable, the licensee should use simulator training, because it provides a realistic and interactive environment and is an efficient method for enhancing human response in complex situations.</p>	<p>environment for operations staff around overall design basis accident progression. However, we do not foresee that the development of specific, detailed SA scenarios on the full scope simulator will be warranted due to the uncertainties in the SA scenarios and a concern regarding training effectiveness.</p>	<p>Section 10, below.</p> <p>As stated in Section 9.2 of the version of G-306 issued in May 2006, use of simulators can be beneficial therefore their use should not be precluded. No changes will be made.</p> <p>Amends the text to address the following related to the FTF recommendations:</p> <p>To ensure that SAM is effective for multi-unit events and events triggered by external events.</p> <p>To demonstrate that revised emergency plans in regard to multi-unit accidents and severe external events, minimum complements, and emergency response organizations are capable and effective. It is currently demonstrated that emergency response organizations are capable of responding to single-unit beyond design basis events.</p> <p>To demonstrate that the performance of the emergency response organization under severe event and/or multi-unit accident conditions has not been challenged by designing and conducting exercises that are based on such conditions.</p>
9.2 (7.2)	Candu Energy		Candu Energy agrees with the proposed change.	Acknowledged.
9.2 (7.2)	Hydro-	<b>Formation du personnel</b>	Effacer le mot répété « plusieurs » dans le paragraphe en rouge.	L'erreur typographique est reconnue. Le

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
	Québec	<p>Le titulaire de permis devrait fournir au personnel d'exploitation et aux groupes d'intervention d'urgence une formation appropriée à leurs rôles respectifs dans la gestion des accidents, qui leur permettront:</p> <ol style="list-style-type: none"> <li>1. de comprendre leurs rôles et leurs responsabilités inhérents au programme GAG;</li> <li>2. de se renseigner sur les phénomènes et processus entourant les accidents graves;</li> <li>3. de se familiariser avec les activités à exécuter;</li> <li>4. d'améliorer leur capacité d'agir malgré le stress;</li> <li>5. de vérifier l'efficacité des procédures et des lignes directrices du programme GAG et de les clarifier au besoin.</li> </ol> <p>Les programmes de formation devront traiter du rôle de chacun des groupes et inclure des exercices permettant d'évaluer les interactions entre les divers groupes participant à la gestion des accidents graves.</p> <p><b>Le titulaire de permis devrait élaborer un ensemble d'exercices portant sur des événements qui touchent plusieurs unités des centrales à tranches multiples et des événements déclenchés par des événements externes.</b></p> <p>Dans la mesure du possible, le titulaire de permis devrait utiliser une formation sur simulateur, car elle procure un environnement réaliste et interactif et constitue un moyen efficace d'améliorer les réactions</p>		<p>paragraphe se lira :</p> <p><b>« Le titulaire de permis devrait élaborer un ensemble d'exercices portant sur des événements qui touchent plusieurs unités des centrales à tranches multiples et des événements déclenchés par des événements externes. »</b></p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		humaines en situation complexe.		
10.0 (8)	Bruce Power NB Power OPG Industry	<p><b>Validation and review</b></p> <p>The licensee should validate a SAM program upon its establishment, to confirm its effectiveness, usability, technical accuracy and scope. This validation should include modeling of selected accident scenarios with and without consideration of accident management actions, as well as drills and exercises.</p> <p><b>A validation assessment should be undertaken, to confirm that operator actions are possible, accounting for variables such as ease of access, possible radiation fields, presence of debris, fires or flooding, and staff complement.</b></p> <p>The licensee should also perform periodic reviews of a SAM program, provisions, guidelines and procedures, to reflect changes in plant design, operational modes, or organizational responsibilities.</p> <p>The reviews should address new information that has been derived from drills, exercises, training programs, safety analyses, experimental research or other sources.</p>	<p>We agree with the intent of the proposed change, but suggest alternate wording, such as the following:</p> <p><b><i>“An assessment methodology should be employed to demonstrate with a high level of confidence that the means (such as intervention of emergency response crews or mitigating equipment) is available and can be deployed to permit the necessary operator actions to take place in the range of localized working environments that could exist.”</i></b></p> <p>It is recommended to remove the reference to <b>“staff complement.”</b> Staffing issues are addressed in other Regulatory documents.</p>	<p>1. The alternate wording proposed adds new value by referring to intervention of emergency crews or mitigating equipment as means for accident mitigation.</p> <p>2. Use of the wording “validation assessment” is consistent with the scope of the Section 10.0 Validation and Review of G-306.</p> <p>3. The CNSC G-323 “Ensuring the Presence of Sufficient Qualified Staff at Class I Nuclear Facilities – Minimum Staff Complement”, does not explicitly refer to minimum staff complement needs during accidents beyond design basis. In order to ensure that this aspect is not overlooked in the development and implementation of severe accident management programs, the reference to staff complement is maintained.</p> <p>The paragraph now reads:</p> <p><b>“The validation should demonstrate with a reasonable level of confidence that:</b></p> <ul style="list-style-type: none"> <li>- <b>the means (such as intervention of emergency response crews, or mitigating equipment) are available and can be deployed,</b></li> <li>- <b>the operator actions are possible,</b></li> </ul>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
				<p><b>accounting for variables such as ease of access, possible radiation fields, presence of debris, fires or flooding</b></p> <p><b>- qualified staff are available in sufficient numbers</b></p> <p>Amends the text to address the following related to the FTF recommendations:</p> <p>To ensure that SAM is effective for multi-unit events and events triggered by external events.</p> <p>To demonstrate that revised emergency plans in regard to multi-unit accidents and severe external events, minimum complements, and emergency response organizations are capable and effective. It is currently demonstrated that emergency response organizations are capable of responding to single-unit beyond design basis events.</p> <p>To demonstrate that the performance of the emergency response organization under severe event and/or multi-unit accident conditions has not been challenged by designing and conducting exercises that are based on such conditions.</p>
10.0 (8)	Candu Energy		Candu Energy agrees with the intent. Candu Energy suggests the following change to the text:	1. The alternate wording proposed adds new value by referring to intervention of emergency crews or mitigating equipment

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
			<p><b>“An assessment methodology should be employed to demonstrate with a high level of confidence that the means (such as intervention of emergency response crews or mitigating equipment) is available and can be deployed to permit the necessary operator actions to take place in the range of localized working environments that could exist.”</b></p>	<p>as means for accident mitigation.</p> <p>2. Use of the wording “validation assessment” is consistent with the scope of the Section 10.0 Validation and Review of G-306.</p> <p>3. The CNSC G-323 “Ensuring the Presence of Sufficient Qualified Staff at Class I Nuclear Facilities – Minimum Staff Complement”, does not explicitly refer to minimum staff complement needs during accidents beyond design basis. In order to ensure that this aspect is not overlooked in the development and implementation of severe accident management programs, the reference to staff complement is maintained.</p> <p>The paragraph now reads:  <b>“The validation should demonstrate with a reasonable level of confidence that:</b></p> <ul style="list-style-type: none"> <li>- <b>the means (such as intervention of emergency response crews, or mitigating equipment) are available and can be deployed,</b></li> <li>- <b>the operator actions are possible, accounting for variables such as ease of access, possible radiation fields, presence of debris, fires or flooding</b></li> <li>- <b>qualified staff are available in</b></li> </ul>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
				<b>sufficient numbers”</b>
10.0 (8)	Hydro-Québec	<p><b>Validation et revue</b></p> <p>Le titulaire de permis devrait valider le programme GAG, une fois créé, pour en confirmer l’efficacité, l’applicabilité, la justesse technique et la portée. Cette validation devrait comprendre la modélisation des scénarios d’accident choisis, avec et sans considération des mesures de gestion des accidents, <b>y compris</b> des entraînements et avec des exercices.</p> <p>Une évaluation de validation devrait être réalisée afin de confirmer que les actions que doit exécuter l’opérateur sont réalisables, en tenant compte de variables telles que la facilité d’accès, les champs de rayonnement possibles, la présence de débris, les incendies ou les inondations, et de l’effectif présent.</p> <p><b>Le titulaire de permis devrait réviser périodiquement le programme GAG, ses dispositions, ses lignes directrices et ses procédures, afin de refléter l’évolution de la conception de la centrale, des modes d’exploitation ou des responsabilités organisationnelles.</b></p> <p>Ces revues devraient considérer aussi d’incorporer toute l’information nouvelle tirée des entraînements, des programmes de formation, des analyses de sûreté, de la recherche expérimentale et d’autres sources</p>	Pas de commentaires	Noté
Glossary	Bruce Power	<p><b>Glossary</b></p> <p><b>alternate AC power</b></p>	We offer the following comments on the proposed changes:	The definition of “alternate ac power” is deleted from the glossary in this document,

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
	NB Power OPG Industry	<p><b>An alternating current power source that is available to, and located at (or nearby) a reactor facility, and is characterized by the following:</b></p> <ol style="list-style-type: none"> <li><b>1. is connectable to but not normally connected to the offsite or onsite standby and emergency AC power systems</b></li> <li><b>2. has minimum potential for common mode failure with offsite power to the onsite standby and emergency AC power sources</b></li> <li><b>3. is available in a timely manner after the onset of station blackout</b></li> <li><b>4. has sufficient capacity and reliability for operating all the systems required for coping with station blackout, and for the duration of time required to bring and maintain the plant in a safe shutdown state.</b></li> </ol> <p><b>station blackout (SBO)</b> A complete loss of alternating current (AC) power from offsite and onsite main generator, standby and emergency power sources. Note that it does not include failure of uninterruptible AC power supplies (UPS) and DC power supplies. It also does not include failure of alternate AC power. <b>Note: See also definition for alternate AC power in this document.</b></p>	<p>Suggestion that the term <b>“Station Blackout”</b> not be used in the revision because of the potential confusion that can (and will arise). Suggest instead that the term <b>“Extended Loss of All AC Power”</b> (ELAP) be used, or something similar</p>	<p>as it is provided as a requirement in RD-337.</p> <p>The definition of “station blackout (SBO) is revised to delete the reference to the definition of “alternate ac power” in the document, A guidance note is provided to clarify the extended loss of ac power is added as follows:</p> <p><b>station blackout</b> <b>A complete loss of alternating current (AC) power from offsite and onsite main generator, standby and emergency power sources. Note that it does not include failure of uninterruptible AC power supplies and direct current (DC) power supplies. It also does not include failure of alternate AC power.</b> <b>Note: The requirements for Alternate AC power are provided in REGDOC-2.5.2, Design of Reactor Facilities: Nuclear Power Plants.</b> <b>A guidance note is added to the text of the document (not in the definition) in section 6.1: Station blackout is also known as extended loss of AC power.</b></p> <p>This definition is consistent with that used in RD-337 v2.</p> <p>Additionally, the following definitions have</p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
				<p>been revised to provide clarity of requirements, and for consistency with other regulatory documents such as RD-308, RD-310 and RD-337.</p> <p><b>Beyond design basis accident Accidents less frequent than design basis accidents. A BDBA may or may not involve fuel degradation.</b></p> <p><b>Severe accident Accidents more severe than a design basis accident (DBA) and involving significant core degradation or significant fuel degradation in the spent fuel pool. (also called irradiated fuel bay)</b></p>
Glossary	Candu Energy		<p>Candu Energy agrees with the definition of Alternate AC power.</p> <p>However, Candu Energy suggests that some additional clarification is needed for the definition of station blackout. To achieve greater clarity, <b>the complete loss of ac power from offsite and onsite main generator, standby and emergency power sources</b> needs to be defined as:</p> <p><b>- the loss of supply of AC power to essential and non-essential switchgear buses in a nuclear power plant,</b></p>	<p>The definition of “alternate ac power” is deleted from the glossary in this document as it is provided as a requirement in RD-337.</p>



Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
			<p><b>- the unavailability of standby and emergency power sources that automatically start up and connect in response to the loss of offsite power and a turbine trip,</b></p> <p><b>- excluding a concurrent single failure, and</b></p> <p><b>- excluding a concurrent design basis accident.</b></p> <p>Furthermore, Candu Energy suggests that the definition of station blackout should exclude assumptions of failure to standby AC power sources that are dedicated to powering SSCs that are complementary design features, provided the applicable requirements are met.</p> <p>Candu Energy suggests the following change to the text:</p> <p><b>“A complete loss of alternating current (AC) power from offsite and onsite main generator, standby and emergency power sources (i.e., loss of offsite electric power system concurrent with turbine trip and unavailability of the onsite emergency ac power system). Note that it does not include:</b></p>	

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
			<p>- the loss of available AC power to buses fed by station batteries through inverters,</p> <p>- the assumption of a concurrent single failure</p> <p>- the assumption of a concurrent design basis accident,</p> <p>- failure of alternate AC power</p> <p>(Note: See also definition for alternate AC power in this document.), nor</p> <p>- the assumption of failure of standby AC power sources that are dedicated to powering SSCs that are complementary design features, provided the applicable requirements are met.</p>	
Glossaire	Hydro-Québec	<p><b>Alimentation de remplacement en CA</b></p> <p><b>Source d'alimentation en CA qui est disponible à une centrale ou à proximité de celle-ci et qui est caractérisée par les éléments suivants :</b></p> <p><b>1. est raccordable sans être habituellement raccordée aux systèmes d'alimentation auxiliaire et d'urgence en CA sur le site ou hors site;</b></p> <p><b>2. présente un potentiel minimal de défaillance d'origine commune avec une alimentation hors site pour les sources d'alimentation auxiliaire et</b></p>	<p>À la fin du paragraphe en rouge, dans la note, le mot « ci-dessous » devrait se lire « ci-dessus ».</p>	<p>La définition de « l'alimentation de remplacement en CA » a été retirée du glossaire du présent document, car cet élément fait partie des exigences du document RD-337.</p> <p>De plus, les définitions suivantes ont été révisées afin de clarifier les exigences et d'assurer l'uniformité avec d'autres documents de réglementation, comme les</p>

Part C: G-306, *Severe Accident Management Programs for Nuclear Power Plants* / Partie C : G-306 Programme de gestion des accidents graves touchant les réacteurs nucléaires

G-306 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN Rationales/ Justification
		<p><b>d'urgence en CA sur le site;</b></p> <p><b>3. est disponible en temps opportun après le début d'une panne d'électricité totale à la centrale;</b></p> <p><b>4. présente une capacité et une fiabilité suffisantes en vue d'exploiter tous les systèmes nécessaires pour faire face à une panne d'électricité totale de la centrale, et pour la durée requise afin de mettre la centrale en état d'arrêt sûr et de la maintenir dans cet état.</b></p> <p><b>Panne d'électricité totale d'une centrale</b></p> <p><b>Perte complète d'alimentation en courant alternatif (CA) des sources hors site, de la génératrice principale sur le site et des sources d'alimentation de secours et d'urgence. Ne comprends pas la défaillance des sources d'alimentation sans coupure en CA et des sources d'alimentation en courant continu, non plus que la défaillance de l'alimentation de remplacement en CA.</b></p> <p><b>Note : Voir aussi la définition de l'alimentation de remplacement en CA ci-dessous.</b></p>		<p>RD-308, RD-310 et RD-337.</p> <p><b>Accident hors dimensionnement (AHD) Accidents moins fréquents, mais plus graves que ceux associés à un accident de dimensionnement. Un accident hors dimensionnement peut entraîner ou non la détérioration du cœur du réacteur</b></p> <p><b>Accident grave Accidents plus graves qu'un accident de dimensionnement et caractérisés par une détérioration du cœur du réacteur ou une dégradation du combustible dans la piscine de combustible usé (également appelée piscine de stockage)</b></p>

**Part D: RD-308, Deterministic Safety Analysis for Small Reactor Facilities**

**Partie D : RD-308 Analyse déterministe de sûreté pour les installations dotées de petits réacteurs**

(Now REGDOC-2.4.1, Part II, *Deterministic Safety Analysis* / Maintenant REGDOC 2.4.2 Partie 2, *Analyse déterministe de sûreté*)

RD-308 Section # / No de Section	Organization / Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
General	OPG		OPG has not provided comments on RD-308, as it is not applicable to our facilities. We have provided detailed comments in the attached Tables on the remaining four documents.	As RD-308 of similarity of purpose, structure, and requirements,, the responses are consistent with those of RD-310.
General	NB Power		We have not provided comments on RD-308 as it is not applicable to Point Lepreau Generating Station. Our general comments on the remaining four documents are as follows:	As RD-308 of similarity of purpose, structure, and requirements,, the responses are consistent with those of RD-310.
General	Bruce Power		Bruce Power has not provided comments on RD-308 as it is not applicable to the Bruce site facilities.	As RD-308 of similarity of purpose, structure, and requirements, the responses are consistent with those of RD-310.
General	AECL		The purpose of this letter is to submit AECL's feedback on public comments received on Draft Omnibus Amendments to Regulatory Documents Addressing Lessons learned from the Fukushima Daiichi Event as posted in Information Bulletin 12-47, on 2012 October 23.  AECL is supportive of the comments on the draft omnibus amendments and in particular notes that the comments on the amendments to RD-310 are equally	Noted. RD-310 comments are also considered for application to RD-308.  This amendment was included to support the recommendations from the CNSC External Advisory Committee to consider facilities other than NPPs and the Update to the Staff Action Plan to the Commission. However, the requirements are expected to be considered for application in a graded manner for the

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-308 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			applicable to the amendments proposed for RD-308, and requests that they be considered in the proposed revision of this document.	particular type of facility and activity.
Preface	n/a	<p><b>Preface</b></p> <p>This regulatory document sets out the requirements of the Canadian Nuclear Safety Commission (CNSC) with respect to deterministic safety analysis, which must be submitted to the CNSC pursuant to the General Nuclear Safety and Control Regulations and Class I Nuclear Facilities Regulations.</p> <p><b>When published, this document will amend/supersede RD-308. This document has been amended to clarify or add criteria reflecting lessons learned from the Fukushima nuclear event of March 2011. The amendments were made to address findings from INFO-0824, CNSC Fukushima Task Force Report, as applicable to RD-308.</b></p> <p>RD-308, Deterministic Safety Analysis for Small Reactor Facilities, identifies regulatory criteria for the preparation and presentation of a deterministic safety analysis for a regulated facility. A small reactor facility contains a reactor with a power level of less than approximately 200 megawatts thermal (MWt), used for research, isotope production, steam generation, electricity production or other applications.</p> <p>This document establishes a modern risk-informed approach to the classification of accidents, one that considers a full spectrum of possible events, including the events of greatest consequence to the public. The document allows the use of a graded approach to determine the scope and depth of</p>	n/a	<p>The preface is updated to align with standardized text for all regulatory documents, for inclusion in the published documents</p> <p>To provide the administrative history of the amended document, the legal basis, and an explanation of the mandatory language in regulatory and guidance documents. The rationale for the amendment, as related to the CNSC Fukushima Task Force Report, is also provided.</p>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-308 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>deterministic safety analysis.</p> <p>The CNSC expects applicants for new small reactor facility licenses to apply this regulatory document. For currently licensed small reactor facilities, CNSC expects the licensees to phase in the application of this document, in order to meet its requirements to the extent practicable.</p> <p>-----</p> <p>This document may be used as part of the licensing basis for nuclear facilities and regulated activities, including when referenced in a licence, either directly or indirectly (through licensee reference documents).</p> <p>The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity, and thus establishes the basis for the CNSC's compliance program in respect of that regulated facility or activity.</p> <p>The licensing basis for a regulated facility or activity is a set of requirements and documents comprising:</p> <ul style="list-style-type: none"> <li>(i) the regulatory requirements set out in the applicable laws and regulations</li> <li>(ii) the conditions and the safety and control measures described in the facility's or activity's licence, along with the documents directly referenced in that licence</li> <li>(iii) the safety and control measures described in the licence application, and the documents needed to support that licence application</li> </ul> <p>In this document, "shall" is used to express a requirement – i.e., a provision that a licensee or licence applicant is obliged to satisfy, in order to</p>		

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-308 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>comply with the requirements of this regulatory document. “Should” is used to express guidance, or that which is advised. “May” is used to express an option, or that which is permissible within the limits of this regulatory document. “Can” is used to express possibility or capability.</p> <p>Nothing contained in this document is to be construed as relieving any licensee from any other pertinent requirements. It is the licensee’s responsibility to identify and comply with all applicable regulations and licence conditions.</p>		
<p>4.2.1 <b>(8.2.1)</b></p>	<p>n/a</p>	<p><b>Identifying events</b></p> <p>The licensee or applicant shall use a systematic process to identify postulated initiating events (including criticality events), event sequences and event combinations (“events” hereafter in this document) that can potentially challenge the safety functions of the reactor facility <b>The licensee shall also identify events that may potentially lead to fission product releases, including those related to irradiated fuel pools and fuel handling systems.</b> This process must consider regulatory requirements and guidance, past licensing precedents, operational experience, engineering judgment, results of deterministic and PSA and systematic review of the design.</p> <p>The identification of events shall account for:</p> <ul style="list-style-type: none"> <li>• all operating configurations, such as startup, at-power operation, shutdown, maintenance, testing, surveillance, and refuelling</li> <li>• configurations and uses of the reactor facility</li> <li>• interactions between the reactor and any</li> </ul>	<p>n/a</p>	<p>The new text is updated as follows for consistency with terminology used in S-294, RD-337 v2, RD-310, and internationally.</p> <p><b>The licensee shall also identify events that may potentially lead to fission product releases, including those related to spent fuel pools (also called irradiated fuel bays) and fuel handling systems.</b></p>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-308 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>experimental devices, including:</p> <ul style="list-style-type: none"> <li>a. administrative procedures</li> <li>b. controls</li> <li>c. additional equipment related to the experimental devices</li> </ul> <ul style="list-style-type: none"> <li>• <b>Common-cause events affecting multiple reactor units on a site, or a reactor unit and related facilities nearby, shall be considered.</b></li> </ul>		
4.2.2 <b>(8.2.2)</b>	n/a	<p><b>Scope of events analyzed</b></p> <p>The list of events to be developed for the deterministic safety analysis shall include:</p> <ul style="list-style-type: none"> <li>• failures or malfunctions of SSCs</li> <li>• operator errors</li> <li>• common-cause failures initiated by internal and external events, <b>including those affecting multiple reactor units on a site.</b></li> </ul>	n/a	n/a
4.3 4.3.3 <b>(8.3.3)</b>	n/a	<p><b>Acceptance Criteria</b></p> <p>4.3.3 Beyond design basis accidents (BDBA)</p> <p>Safety analysis for BDBAs shall demonstrate that:</p> <ul style="list-style-type: none"> <li>• the reactor facility as designed is capable of meeting the safety goals as established in RD-367</li> <li>• the accident management program is capable of providing mitigation for BDBAs, to the extent practicable, <b>taking into account the long-term availability of cooling water, material and power supplies.</b></li> </ul>	n/a	n/a



**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-308 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
4.4.1 <b>(8.4.1)</b>	n/a	<p><b>Deterministic safety analysis method</b></p> <p>The deterministic safety analysis method shall include:</p> <ul style="list-style-type: none"> <li>conducting the calculations, including <b>performing</b> sensitivity <b>analysis and identifying, where necessary, margins to cliff-edge effects</b></li> <li><b>an event should be analyzed</b> from its initial steady state up to the pre-defined <b>stable state in the long-term</b></li> </ul>	n/a	n/a  • <b>an event should be analyzed</b> from its initial steady state up to the predefined <b>long-term stable state</b>
4.4.2 <b>(8.4.2)</b>	n/a	<p><b>Deterministic safety analysis assumptions</b></p> <p>The deterministic safety analysis for AOO and DBA (conservative analysis for level 3 defence in depth) shall:</p> <ul style="list-style-type: none"> <li>incorporate the key input modeling parameter uncertainties, the key input plant parameters measurement uncertainties, and the measurement uncertainties for the actuation of mitigating systems; the uncertainties shall be properly estimated, following best national and international practices</li> <li>apply the single-failure criterion to all safety groups, and ensure that the safety groups are environmentally qualified</li> <li>use minimum allowable performance (as established in the OLCs) for safety groups</li> <li>account for consequential failures that may occur as a result of the initiating event</li> <li>credit the actions of process and control systems only where the systems are passive and environmentally qualified for the accident</li> </ul>	n/a	n/a

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-308 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>conditions</p> <ul style="list-style-type: none"> <li>• credit process systems only if they are already running and are not affected by the event</li> <li>• include the actions of process and control systems when their actions may have a detrimental effect on the consequences of the analyzed accident</li> <li>• consider the effects of aging on SSCs</li> <li>• account for the possibility of equipment being taken out of service for maintenance</li> <li>• <b>account for the possibility of equipment being rendered inoperable during a prolonged period when it is required to maintain the reactor at a stable state in the long-term, following an accident</b></li> <li>• credit operator actions only when there are: <ul style="list-style-type: none"> <li>a. unambiguous indications of the need for such actions</li> <li>b. adequate procedures and operator training for such actions</li> <li>c. sufficient time to perform the credited actions</li> <li>d. environmental conditions that do not prohibit such actions</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• <b>account for the possibility that, following an accident, the equipment required to maintain the plant in a stable state, may be rendered inoperable during a prolonged period</b></li> </ul>
Glossary	n/a	<p><b>Glossary</b></p> <p><b>cliff-edge effect</b></p> <p><b>A large increase in the severity of consequences caused by a small change of conditions. Note: Cliff-edges can be caused by changes in the characteristics of the environment, the event or</b></p>	n/a	<p>A modified definition for “cliff-edge effect” is provided to better explain the Canadian application, and its intent.</p> <p>The term “cliff-edge effect” is used internationally, and is maintained for consistency of approach. It is one of the</p>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-308 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p><b>changes in the plant response.</b></p>		<p>key lessons learned from the Fukushima Daiichi event. The term is being used consistently in all documents where used.</p> <p>As stated in section 4.4.2 above, sensitivity analysis is expected to be performed in sufficient details for accurate identification of cliff edges and margins of operational parameters to them. Additionally, the following definition is revised to provide clarity of requirements, and to provide consistency with other regulatory documents such as RD-337 v2, RD-310, and G-306.</p> <p><b>Beyond design basis accident</b></p> <p><b>Accidents less frequent than design basis accidents. A BDBA may or may not involve fuel degradation.</b></p>

**Part E: RD-310, *Deterministic Safety Analysis for Nuclear Power Plants***

**Partie E : RD-310 *Analyses déterministes de la sûreté pour les centrales nucléaires***

(Now REGDOC-2.4.1, Part I, *Deterministic Safety Analysis* / Maintenant REGDOC 2.4.2 Partie 1, *Analyses déterministes de la sûreté*)

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
Preface	Candu Energy	<p>Preface</p> <p>This regulatory document was developed pursuant to the requirements and obligations set forth in the General Nuclear Safety and Control Regulations and in the Class I Nuclear Facilities Regulations, where a safety analysis report demonstrating the safety of the nuclear facility must be submitted to the Canadian Nuclear Safety Commission (CNSC).</p> <p><b>When published, this document will amend/supersede RD-310, Safety Analysis for Nuclear Power Plants. This document has been amended to clarify or add criteria reflecting lessons learned from the Fukushima nuclear event of March 2011. The amendments were made to address findings from INFO-0824, CNSC Fukushima Task Force Report, as applicable to RD-310.</b></p> <p>This document identifies high-level regulatory information for a licence applicant's preparation and presentation of a safety analysis. The information required adheres to high standards and is consistent with modern national and international practices addressing issues and elements that control and enhance nuclear safety. In particular, it establishes a more modern risk-informed approach to the categorization of accidents, one that considers a full spectrum of possible events including the events of</p>	Candu Energy agrees with the proposed change.	<p>Noted. The preface is updated to align with standardized text for all regulatory documents, for inclusion in the published documents</p> <p>To provide the administrative history of the amended document, the legal basis, and an explanation of the mandatory language in regulatory and guidance documents. The rationale for the amendment, as related to the CNSC Fukushima Task Force Report, is also provided.</p>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>greatest consequence to the public.</p> <p>The CNSC expects proponents and applicants for new facility licences to immediately apply this regulatory document in new-build submissions. In the context of existing facilities, CNSC expects the licensees to apply this document, in a graduated manner, to all relevant programs in future submissions.</p> <p>-----</p> <p>This document may be used as part of the licensing basis for nuclear facilities and regulated activities, including when referenced in a licence, either directly or indirectly (through licensee reference documents).</p> <p>The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity, and thus establishes the basis for the CNSC's compliance program in respect of that regulated facility or activity.</p> <p>The licensing basis for a regulated facility or activity is a set of requirements and documents comprising:</p> <ul style="list-style-type: none"> <li>(i) the regulatory requirements set out in the applicable laws and regulations</li> <li>(ii) the conditions and the safety and control measures described in the facility's or activity's licence, along with the documents directly referenced in that licence</li> <li>(iii) the safety and control measures described in the licence application, and the documents needed to support that licence application</li> </ul> <p>In this document, "shall" is used to express a requirement – i.e., a provision that a licensee or</p>		

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>licence applicant is obliged to satisfy, in order to comply with the requirements of this regulatory document. "Should" is used to express guidance, or that which is advised. "May" is used to express an option, or that which is permissible within the limits of this regulatory document. "Can" is used to express possibility or capability.</p> <p>Nothing contained in this document is to be construed as relieving any licensee from any other pertinent requirements. It is the licensee's responsibility to identify and comply with all applicable regulations and licence conditions.</p>		
Préface	Hydro-Québec	<p>Préface</p> <p>Le présent document d'application de la réglementation a été élaboré en vertu des dispositions stipulées par le <i>Règlement général sur la sûreté et la réglementation nucléaires</i> et le <i>Règlement sur les installations nucléaires de catégorie I</i> afin de définir un ensemble d'exigences relatives aux rapports d'analyse de la sûreté d'une installation nucléaire qui doit accompagner les diverses demandes de permis visant de telles installations présentées à la Commission canadienne de sûreté nucléaire (CCSN).</p> <p>Ce document précise les principales exigences réglementaires qu'un demandeur de permis visant une installation nucléaire doit satisfaire quant à la préparation et à la présentation de l'analyse de la sûreté de l'installation en question. Les exigences de la CCSN en matière d'analyse de sûreté reposent sur des normes pertinentes rigoureuses et elles sont conformes aux pratiques nationales et internationales les plus récentes utilisées pour traiter</p>	Pas de commentaires	<p>Noté. La préface est mise à jour pour l'aligner sur le texte normalisé inséré dans tous les documents d'application de la réglementation et qui sera ajouté dans les documents publiés.</p> <p>Les préfaces dans les documents ont pour but de présenter l'historique du document avec une description générale des éléments inclus. Les modifications visant à donner suite aux leçons tirées de l'événement de Fukushima constituent l'objectif principal du projet. Cependant, l'information pourrait aussi se retrouver dans le résumé des révisions.</p>

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>les questions et les facteurs qui contribuent à assurer la sûreté nucléaire et à l'améliorer. Plus particulièrement, ce document est fondé sur une méthode de classement des accidents qui tient compte de tout l'éventail des accidents possibles, notamment de ceux qui ont les conséquences les plus graves pour la population, et qui est axée sur le risque relatif que les divers accidents présentent.</p> <p>Les exigences formulées dans ce document entrent immédiatement en vigueur pour toute demande de permis visant une nouvelle installation nucléaire. Pour les installations nucléaires déjà existantes, la CCSN s'attend à ce que les détenteurs actuels de permis se conforment progressivement aux exigences du RD-310 concernant les programmes pertinents dans leurs demandes futures.</p> <p><b>Une fois publié, le présent document modifiera ou remplacera le document d'application de la réglementation RD-310, Analyses de la sûreté pour les centrales nucléaires. Le présent document a été révisé pour tenir compte d'un besoin de clarification ou d'ajout de critères inspirés des leçons tirées de l'accident nucléaire de Fukushima survenu en mars 2011. Les modifications ont été apportées pour donner suite aux conclusions d'INFO-0824, Rapport du Groupe de travail de la CCSN sur Fukushima, qui s'appliquent au document RD-310.</b></p> <p>-----</p> <p>Le présent document peut faire partie du fondement d'autorisation des installations nucléaires et des activités réglementées, y compris sous forme de renvoi dans un permis, directement ou indirectement</p>		

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>(par l'intermédiaire des documents de référence du titulaire de permis).</p> <p>Le fondement d'autorisation établit les conditions limites du rendement acceptable pour une installation ou une activité réglementée et jette ainsi les bases du programme de conformité de la CCSN à l'égard de cette installation ou activité réglementée.</p> <p>Le fondement d'autorisation pour une installation ou une activité réglementée est un ensemble d'exigences et de documents qui comprend :</p> <ul style="list-style-type: none"> <li>i) les exigences réglementaires stipulées dans les lois et règlements applicables;</li> <li>ii) les conditions et les mesures de sûreté et de contrôle décrites dans le permis pour l'installation ou l'activité et les documents cités en référence directement dans ce permis;</li> <li>iii) les mesures de sûreté et de contrôle décrites dans la demande de permis et les documents soumis à l'appui de cette demande.</li> </ul> <p>Aux fins du présent document, « doit » est employé pour exprimer une exigence, c'est-à-dire une disposition qu'un titulaire ou demandeur de permis est tenu de respecter pour se conformer aux exigences du présent document d'application de la réglementation. « Devrait » dénote une orientation ou une mesure conseillée. « Pourrait » exprime une option ou un élément acceptable dans les limites du présent document d'application de la réglementation. « Peut » exprime une possibilité ou une capacité.</p> <p>Aucun élément dans ce document ne doit être interprété par le titulaire de permis comme une</p>		



**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		autorisation de déroger aux exigences pertinentes. Il appartient au titulaire de permis d'identifier tous les règlements et conditions de permis applicables et de s'y conformer.		
5.2.1 <b>(4.2.1)</b>	Bruce Power NB Power OPG Industry	<p><b>Identifying Events</b></p> <p>The licensee shall use a systematic process to identify events, event sequences, and event combinations (“events” hereafter in this document) that can potentially challenge the safety or control functions of the NPP. <b>The licensee shall also identify events that may potentially lead to fission product releases, including those related to irradiated fuel pools and fuel handling systems.</b> This process shall be based on regulatory requirements and guidance, past licensing precedents, operational experience, engineering judgment, results of deterministic and probabilistic assessments, and any other systematic reviews of the design.</p> <p>The identification of events shall account for all operating modes, <b>including low power operation and shutdown modes. Common-cause events affecting multiple reactor units on a site shall be considered. The</b> list of identified events shall be reviewed for completeness during the design and analysis process and modified as necessary.</p> <p>...</p>	<p>We offer the following comments:</p> <p>First proposed change under Clause 5.2.1:</p> <p>We have no comments on this proposed change regarding irradiated fuel pools and fuel handling systems. We suggest that the term <b>irradiated fuel bays</b> be used rather than irradiated fuel pools.</p> <p>Second proposed change under Clause 5.2.:</p> <p>Industry has no comments on this proposed change. Current Nuclear Safety Analyses do consider a wide variety of NPP operating modes. However, some clarification on interpretation of “low power operation and shutdown modes” and the intended application to RD-310 compliant analyses would be helpful.</p>	<p>The term -"<b>spent fuel pools</b>" (in place of "irradiated fuel pools") is used as it is used more generically internationally. However, a note to reference the alternative term of irradiated fuel bay is provided "<b>spent fuel pools (also called irradiated fuel bays)</b>"</p> <p>The “low power operation and shutdown modes,” are intended to include all permissible operational states, and all different system configurations that are possible during such operation.</p> <p>For the purposes of PSA it should be noted that low power operation is intended for extended operational states at low power, and new build applications.</p> <p>Changes are made to:</p> <ol style="list-style-type: none"> <li>1) clarify that any events potentially leading to fission product releases, even occurring outside the reactor, should be identified in order to be considered for safety analysis</li> <li>2) Extend the scope of analysis to include considerations of events that can potentially affect multiple reactors in a multiple unit station.</li> </ol>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				For the purposes of PSA it should be noted that low power operation is intended for extended operational states at low power, and new build applications.
5.2.1 <b>(4.2.1)</b>	Candu Energy		<p>Candu Energy agrees with the proposed changes. Candu Energy suggests that GD-310 be revised to include clarification on "low power operation and shutdown modes".</p> <p>Candu Energy suggests changing "irradiated fuel pools" to "<b>irradiated fuel bays</b>" to be more consistent with terminology currently in use at Canadian nuclear power plants.</p>	<p>The "low power operation and shutdown modes," are intended to include all permissible operational states, and all different system configurations that are possible during such operation.</p> <p>Changes are made to:</p> <ol style="list-style-type: none"> <li>1) clarify that any events potentially leading to fission product releases, even occurring outside the reactor, should be identified in order to be considered for safety analysis</li> <li>2) Extend the scope of analysis to include considerations of events that can potentially affect multiple reactors in a multiple unit station.</li> </ol> <p>The term -"<b>spent fuel pools</b>" (in place of "irradiated fuel pools") is used as it is used more generically internationally. However, a reference to the term irradiated fuel bay is provided "<b>spent fuel pools (also called irradiated fuel bays)</b>"</p> <p>For the purposes of PSA it should be noted that low power operation is intended for extended operational states at low power, and primarily to new build applications.</p>
5.2.1 <b>(4.2.1)</b>	Hydro-Québec	<p><b>Identification des événements</b></p> <p>Le titulaire de permis doit identifier, à l'aide d'un</p>	Une clarification du terme « modes de fonctionnement » devrait être apportée.	Les « modes de fonctionnement à faible puissance et d'arrêt » comprennent tous

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>processus systématique, les événements, les séquences d'événements et les combinaisons d'événements (ci-après « événements ») qui pourraient compromettre les fonctions de sûreté ou de contrôle de l'installation nucléaire. <b>Le titulaire de permis doit également identifier les événements susceptibles d'entraîner des rejets de produits de fission, y compris des rejets en lien avec la piscine de stockage du combustible et les installations de manutention du combustible.</b> Ce processus doit être fondé sur les lignes directrices et les exigences réglementaires, les antécédents en matière de demande de permis, l'expérience d'exploitation, le jugement d'ingénierie, les résultats des évaluations déterministes et probabilistes et tout autre examen systématique de la conception.</p> <p>L'identification des événements doit tenir compte de tous les modes d'exploitation, <b>y compris les modes de fonctionnement à faible puissance et d'arrêt. Les événements de cause commune affectant plusieurs tranches de réacteurs d'un site doivent être prise en compte.</b> La liste des événements identifiés doit être examinée par souci d'exhaustivité durant les processus de conception et d'analyse et modifiée par la suite, au besoin.</p> <p>...</p>	<p>Le fonctionnement à faible puissance n'est pas un « mode de fonctionnement ». Il est préférable de parler de fonctionnement en puissance et à l'arrêt.</p>	<p>les états de fonctionnement autorisés et toutes les configurations de systèmes possibles pendant une telle exploitation.</p> <p>En ce qui concerne l'EPS, il serait bon de noter que le fonctionnement à faible puissance concerne les états de fonctionnement prolongé à faible puissance et principalement les demandes de nouvelles constructions.</p> <p>Les modifications proposées visent à :</p> <p>1) préciser que tout événement susceptible de mener à des rejets de produits de fission, même s'il survient à l'extérieur du réacteur, devrait être identifié pour être pris en compte dans l'analyse de sûreté;</p> <p>2) étendre la portée de l'analyse pour prendre en compte des événements susceptibles de toucher de multiples tranches ou les installations connexes d'un site.</p>
5.2.2 <b>(4.2.2)</b>	Bruce Power NB Power OPG Industry	<p><b>5.2.2 Scope of Events</b></p> <p>The list of events identified for the safety analysis shall include all credible:</p> <p>1. component and system failures or malfunctions</p>	No comments.	Noted

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p>2. operator errors</p> <p>3. common-cause internally and externally initiated events, <b>including those affecting multiple reactor units on a site</b></p>		
5.2.2 <b>(4.2.2)</b>	Candu Energy		Candu Energy agrees with the proposed change.	Noted
5.2.2 <b>(4.2.2)</b>	Hydro-Québec	<p><b>5.2.2 Portée des événements</b></p> <p>La liste des événements identifiés pour l'analyse de sûreté doit comprendre :</p> <p>1. les défaillances ou anomalies crédibles de composants et de systèmes;</p> <p>2. les erreurs crédibles des opérateurs;</p> <p>3. les événements de cause commune crédibles, initiés de manière interne ou externe, <b>y compris ceux qui affectent plusieurs tranches de réacteurs d'un site.</b></p>	Pas de commentaires	Noté
5.3.3 <b>(4.3.3)</b>	Bruce Power NB Power OPG Industry	<p><b>Acceptance Criteria</b></p> <p><b>5.3.3 Beyond Design Basis Accidents</b></p> <p>Analysis for BDBAs shall be performed as part of the safety assessment to demonstrate that:</p> <p>1. The nuclear power plant, as designed, can meet the established safety goals.</p> <p>2. The accident management program and design provisions, put in place to handle the accident management needs, are effective, <b>taking into account the long-term availability of cooling water, material and power supplies.</b></p>	We suggest that the phrase " <b>long term availability</b> " be replaced simply with " <b>availability</b> " (long-term is not well defined).	<p>To be prudent, we have decided to keep the expression "<i>long term</i>" for clarity and emphasis.</p> <p>Ensures considerations of long term make-up water and power supplies in the demonstration of meeting safety analysis acceptance criteria.</p> <p>However, revised to clarify the intent as follows:</p> <p><b>A safety assessment</b> for BDBAs shall be performed to demonstrate that:</p> <p>1. The NPP as designed can meet <b>the</b></p>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<p><b>requirements for release limits established as the safety goals. A deterministic safety analysis provides consequence data for accident sequences to use in the PSA.</b></p> <p>2. The accident management program and design provisions put in place to handle the accident management needs are effective, <b>taking into account the long-term availability of cooling water, material and power supplies.</b></p>
5.3.3 <b>(4.3.3)</b>	Candu Energy		<p>Candu Energy agrees with the proposed change.</p> <p>However, Candu Energy suggests that "long-term availability" be changed to "availability". It is understood that the duration of availability of cooling water, material and power supplies must be sufficient to ensure a stable shutdown condition for the plant until accident management measures are no longer required</p>	<p>To be prudent, we have decided to keep the expression "<i>long term</i>" for clarity and emphasis.</p> <p>Ensures considerations of long term make-up water and power supplies in the demonstration of meeting safety analysis acceptance criteria.</p> <p>However, revised to clarify the intent as follows:</p> <p><b>A safety assessment</b> for BDBAs shall be performed to demonstrate that:</p> <ol style="list-style-type: none"> <li>1. The NPP as designed can meet <b>the requirements for release limits established as the safety goals. A deterministic safety analysis provides consequence data for accident sequences to use in the PSA.</b></li> <li>2. The accident management program and design provisions put in place to handle the accident management needs are effective, <b>taking into account the long-term availability of cooling water,</b></li> </ol>

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<b>material and power supplies.</b>
<b>5.3.3 (4.3.3)</b>	Hydro- Québec	<p><b>Critères d'acceptation</b></p> <p><b>5.3.3 Accidents hors dimensionnement</b></p> <p>L'analyse des AHD doit être réalisée dans le cadre d'une évaluation de la sûreté pour démontrer que :</p> <ol style="list-style-type: none"> <li>1. la centrale nucléaire, telle que conçue, peut respecter les objectifs de sûreté établis;</li> <li>2. le programme de gestion des accidents et les caractéristiques de la conception, mis en place pour répondre aux besoins en matière de gestion des accidents, sont efficaces, <b>et tiennent compte de la disponibilité à long terme de l'eau de refroidissement, du matériel et des sources d'alimentation électrique.</b></li> </ol>	Pas de commentaires	Noté
<b>5.4.2 (4.4.2)</b>	Bruce Power NB Power OPG Industry	<p><b>Analysis Method</b></p> <p>The analysis method shall include the following elements:</p> <ol style="list-style-type: none"> <li>6. Conducting calculations, including performing sensitivity <b>analysis and identifying, where necessary, margins to cliff-edge effects.</b></li> <li>7. <b>An event should be analyzed</b> from its initial steady state up to the pre-<b>defined stable state in the long-term;</b></li> </ol>	<p>Our technical comments on the proposed changes are as follows:</p> <ul style="list-style-type: none"> <li>- Please see our general comment on the use of the term "cliff edge effects".</li> <li>- Cliff-edge effects should only be sought as part of sensitivity analysis for key modeling and operational parameters within reasonable uncertainty bands. Further clarification is required on interpretation of margins to cliff-edge effects.</li> <li>- The impact of this proposal requires further evaluation, particularly in light of the RD-310 work and projects in progress to meet PROL requirements</li> </ul>	<p>A modified definition for "cliff-edge effect" is provided to better explain the Canadian application, and its intent.</p> <p>The term "cliff-edge effect" is used internationally, and is maintained for consistency of approach. It is one of the key lessons learned from the Fukushima Daiichi event. The term is being used consistently in all documents where used.</p> <p>Ensures that (1) an event is continuously analysed up to the cold, depressurized state, and (2) cliff-edge margins are identified.</p> <p>The changes are consistent with the high-level requirements. Further guidance on long-term analysis can be found in guidance that is extracted from the</p>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
				<p>previous GD-310, as follows:</p> <p><b>5.4.2.6 Conducting calculations</b></p> <p><i>The duration of the transients considered in the analysis should be sufficient to determine the event consequences. Therefore, the calculations for plant transients are extended beyond the point where the NPP has been brought to shutdown and stable core cooling, as established by some identified means (i.e., to the point where a long-term, stable state has been reached and is expected to remain as long as required). The analysis should take into account the capacity and limitations of long-term make-up water and electrical power supplies.</i></p>
5.4.2 <b>(4.4.2)</b>	Candu Energy	<p><b>Analysis Method</b></p> <p>The analysis method shall include the following elements:</p> <p>6. Conducting calculations, including performing sensitivity <b>analysis and identifying, where necessary, margins to cliff-edge effects.</b></p> <p>7. <b>An event should be analyzed</b> from its initial steady state up to the pre-defined <b>stable state in the long-term;</b></p>	<p>While Candu Energy generally agrees with the high level requirement in Item 6, additional clarification is needed in GD-310 to explain the expectations for “where necessary, margins to cliff-edge effects.” Cliff-edge effects can be covered by sensitivity cases. The term “cliff-edge effects” was introduced in regulatory requests for assessments of existing nuclear power plants' capabilities for coping with initial lessons learned from the Fukushima Dai-ichi event. Formal addition of requirements to identify “cliff-edge effects” in safety analyses requires</p>	<p>6) A modified definition for “cliff-edge effect” is provided to better explain the Canadian application, and its intent.</p> <p>The term “cliff-edge effect” is used internationally, and is maintained for consistency of approach. It is one of the key lessons learned from the Fukushima Daiichi event. The term is being used consistently in all documents where used.</p> <p>7) Ensures that (1) an event is continuously analysed up to the cold, depressurized state, and (2) cliff-edge margins are identified.</p>

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
			<p>more guidance.</p> <p>Candu Energy agrees with the proposed change to Item 7, because it is consistent with the requirements in RD-337 for the design of new nuclear power plants.</p>	<p><b>“An event should be analyzed</b> from its initial steady state up to the predefined <b>long-term stable state.”</b></p> <p>The changes are consistent with the high-level requirements. Further guidance on long-term analysis can be found in guidance that is extracted from the previous GD-310, as follows:</p> <p><b>5.4.2.6 Conducting calculations</b></p> <p><i>The duration of the transients considered in the analysis should be sufficient to determine the event consequences. Therefore, the calculations for plant transients are extended beyond the point where the NPP has been brought to shutdown and stable core cooling, as established by some identified means (i.e., to the point where a long-term, stable state has been reached and is expected to remain as long as required). The analysis should take into account the capacity and limitations of long-term make-up water and electrical power supplies.</i></p>
5.4.2 <b>(4.4.2)</b>	Hydro-Québec	<p><b>Méthode d’analyse</b></p> <p>La méthode d'analyse doit comprendre les éléments suivants :</p> <p>...</p> <p>6. effectuer des calculs, dont des analyses de sensibilité, <b>et identifier au besoin des marges associées aux effets de falaise;</b></p>	<p>6. On devrait s'assurer d'utiliser une terminologie cohérente pour « cliff edge effect ». On utilise présentement parfois « effets de falaise » ou encore « effet de précipitation ». On croit cependant qu'« effet de bord » est plus approprié.</p>	<p>6) Le définition pour « effets de falaise» est modifiée pour mieux expliquer l'application canadienne, et l'intention. Le terme « effet de falaise » est utilisé à l'échelle internationale et est maintenu aux fins d'uniformité. Il s'agit d'une des leçons clés tirées de l'événement survenu à la centrale nucléaire Fukushima Daiichi. Le terme est utilisé de manière uniforme</p>



RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
		<p><b>7. analyser un événement</b> depuis l'état initial en régime stationnaire jusqu'à l'état <b>stable à long terme</b> prédéfini;</p> <p>...</p>	<p>De façon plus générale, ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre d'une révision ultérieure du document.</p>	<p>dans tous les documents, le cas échéant.</p> <p>7) Assure 1) que l'analyse d'un événement se poursuit jusqu'à l'état dépressurisé à froid, et 2) que les marges pour les effets de précipitation sont établies.</p> <p>Les changements sont conformes aux exigences de haut niveau. Une orientation plus précise sur l'analyse à long terme est énoncée dans le document d'accompagnement GD-310 précédent.</p> <p><b>5.4.2.6 Effectuer des calculs</b></p> <p><i>La durée des transitoires prises en compte dans l'analyse doit être suffisante pour déterminer les conséquences des événements. Par conséquent, les calculs relatifs aux transitoires de la centrale dépassent le point où la centrale nucléaire a été mise à l'arrêt et où le refroidissement stable du cœur du réacteur a été établi par certains moyens (c.-à-d. au point où un état stable de longue durée a été atteint et devrait demeurer comme tel au temps que nécessaire). L'analyse devrait prendre en compte la capacité et les limites d'appoint en eau à long terme et en des alimentations électriques.</i></p>
5.4.4 <b>(4.4.4)</b>	Bruce Power NB Power	<p><b>Analysis Assumptions</b></p> <p>Assumptions made to simplify the analysis, as well as assumptions concerning the operating mode of the nuclear power plant, the availability and</p>	<p>The proposed change is not directly related to Fukushima.</p> <p>The impact of this proposal requires further evaluation, particularly in light of</p>	<p>The proposed change is consistent with RD-337 (now REGDOC 2.5, <i>Design of New Nuclear Power Plants</i>) as noted in the comment by Candu Energy. It is one of the key lessons learned from the</p>

**Public Consultation Comments Table  
Fukushima Omnibus Amendments Project**

**Tableau des commentaires de la consultation publique  
Projet omnibus de modifications relatives à Fukushima**

RD-310 Section # / No de Section	Organization Organisation	Proposed Changes / Changements proposés	Comments / Commentaires	CNSC Response / Réponse de la CCSN
	OPG Industry	<p>performance of the systems, and operator actions, shall be identified and justified.</p> <p>The analysis of AOO and DBA shall:</p> <ol style="list-style-type: none"> <li>1. apply the single-failure criterion to all safety systems and their support systems</li> <li>2. account for consequential failures that may occur as a result of the initiating event</li> <li>3. credit actions of systems only when the systems are qualified for the accident conditions, or when their actions could have a detrimental effect on the consequences of the analyzed accident</li> <li>4. account for the possibility of the equipment being taken out of service for maintenance</li> <li><b>5. account for the possibility of the equipment being rendered inoperable during a prolonged period required to maintain the plant in a stable, cold and depressurized state, following an accident</b></li> <li>6. credit operator actions only when there are             <ol style="list-style-type: none"> <li>a) unambiguous indications of the need for such actions</li> <li>b) adequate procedures and sufficient time to perform the required actions</li> <li>c) environmental conditions that do not prohibit such actions</li> </ol> </li> </ol>	<p>the work and projects in progress to meet RD-310 requirements.</p> <p>Therefore, we suggest that the proposed revision be deferred to a future revision of the document, where the normal CNSC regulatory document revision process can be used.</p> <p>-----</p> <p>Our technical comments on the proposed changes (Item 5) are as follows:</p> <ul style="list-style-type: none"> <li>- The proposed addition seems to be redundant under the discussion on “AOO and DBA analysis”. There also appears to be redundancy from the perspective of equipment EQ and seismic qualifications. It is unclear as to why this would be under AOO and DBA. It appears to be BDBA.</li> <li>- The proposed additions in Clauses 5.3.3 (Beyond Design Basis Accidents) and 5.4.2 (Analysis Method) already provide the added context for long-term, stable plant state.</li> <li>- Clarification is required for “random or consequential equipment failures” aspect of this new clause. PRA already covers random equipment failures during mission time. Analysis to include random failures could become intractable if this new clause requires that no credit be taken for qualified</li> </ul>	<p>Fukushima Daiichi event.</p> <p>Item 5 is an added requirement to AOO and DBA analysis rules as a result of Fukushima. Other items in this paragraph are repeated for completeness (not seen as redundancy.)</p> <p>It is acknowledged that PRA covers random equipment failures during mission time. Results of PRA might however have an impact on the assumptions made in the deterministic safety analysis in relation to equipment availability.</p> <p>Emphasizes that safety analysis should account for the potential unavailability of equipment that may be needed to maintain long-term stable cooling of the reactor, following an accident.</p> <p><b>5. account for the possibility that, following an accident, the equipment required to maintain the plant in a stable, cold and depressurized state may be rendered inoperable during a prolonged period</b></p>

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Fukushima Omnibus Amendments Project**

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Projet omnibus de modifications relatives à Fukushima**

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			<p>equipment in SA.</p> <p>- Including random failures within scope of deterministic safety analysis would make deterministic SA intractable if this new clause requires that no credit be taken for qualified equipment.</p>	
5.4.4 <b>(4.4.4)</b>	Candu Energy		Candu Energy agrees with the proposed change to Item 5, because it is consistent with the requirements in RD-337 for the design of new nuclear power plants.	Noted
5.4.4 <b>(4.4.4)</b>	Hydro-Québec	<p>Hypothèses utilisées pour l'analyse</p> <p>Les hypothèses faites pour simplifier l'analyse, ainsi que les hypothèses concernant le mode d'exploitation de la centrale, la disponibilité et la performance des systèmes, et les actions des opérateurs, doivent être identifiées et justifiées.</p> <p>L'analyse des IFP et des ADR doit :</p> <ol style="list-style-type: none"> <li>1. appliquer le critère de défaillance simple à tous les systèmes de sûreté et leurs systèmes de soutien;</li> <li>2. tenir compte des défaillances indirectes qu'un événement initiateur peut provoquer</li> <li>3. créditer les actions des systèmes seulement lorsque les systèmes sont qualifiés pour des conditions d'accident ou lorsque ces actions pourraient avoir un effet néfaste sur les conséquences de l'accident analysé;</li> <li>4. tenir compte de la possibilité que l'équipement soit mis hors service en vue de l'entretien;</li> </ol> <p><b>5. tenir compte de la possibilité que de</b></p>	Ceci n'est pas un changement relié à l'événement de Fukushima. Il est recommandé que cette proposition de changement soit traitée dans le cadre d'une révision ultérieure du document.	<p>Le changement proposé est conforme au document RD-337 (maintenant appelé REGDOC 2.5, <i>Conception des nouvelles centrales nucléaires</i>), comme il a été noté dans le commentaire de Candu Énergie. Il s'agit d'une des principales leçons retenues de l'événement survenu à la centrale nucléaire de Fukushima Daiichi.</p> <p>Souligne que l'analyse de sûreté devrait prendre en compte l'indisponibilité éventuelle de l'équipement qui pourrait être nécessaire pour maintenir le réacteur dans un état de refroidissement stable à long terme à la suite d'un accident.</p>

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		<p><b>l'équipement devienne inopérable au cours d'une période prolongée nécessaire pour maintenir le réacteur dans un état stable, froid et dépressurisé à long terme à la suite d'un accident;</b></p> <p><b>6. créditer les actions des opérateurs seulement :</b></p> <p>a) lorsqu'il y a des indications claires et non ambiguës de la nécessité de prendre de telles actions ;</p> <p>b) lorsqu'il y a des procédures adéquates et suffisamment de temps pour effectuer les actions requises ;</p> <p>c) lorsque les conditions environnementales n'interdisent pas de telles actions.</p>		
Glossary	Bruce Power NB Power OPG Industry	<p><b>Glossary</b></p> <p><b>cliff-edge effect</b></p> <p><b>A large increase in the severity of consequences caused by a small change of conditions. Note: Cliff-edges can be caused by changes in the characteristics of the environment, the event or changes in the plant response.</b></p>	Please see our general comment on the use of the term "cliff edge effects".	<p>A modified definition for "cliff-edge effect" is provided to better explain the Canadian application, and its intent.</p> <p>The term "cliff-edge effect" is used internationally, and is maintained for consistency of approach. It is one of the key lessons learned from the Fukushima Daiichi event. The term is being used consistently in all documents where used. As stated in section 5.4.2 above, Sensitivity analysis is expected to be performed in sufficient details for accurate identification of cliff edge effects and the margins of operational parameters to them.</p> <p>New or modified definitions are provided.</p>

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Glossary	Candu Energy	<p><b>Glossary</b></p> <p><b>cliff-edge effect</b>  <b>A large increase in the severity of consequences caused by a small change of conditions. Note: Cliff-edges can be caused by changes in the characteristics of the environment, the event or changes in the plant response.</b></p>	<p>Candu Energy considers “cliff-edge effect” to be within the sensitivity analyses. Hence, as noted in the comment Section 5.4.2 item 6, more guidance is needed in GD-310 on the expectations for identifying and analyzing for cliff-edge effects.</p>	<p>A modified definition for “cliff-edge effect” is provided to better explain the Canadian application, and its intent.</p> <p>The term “cliff-edge effect” is used internationally, and is maintained for consistency of approach. It is one of the key lessons learned from the Fukushima Daiichi event. The term is being used consistently in all documents where used. However, additional guidance is provided.</p> <p>As stated in section 5.4.2 above, sensitivity analysis is expected to be performed in sufficient details for accurate identification of cliff edges and margins of operational parameters to them.</p> <p>Additionally, the following definition is revised to provide clarity of requirements, and to provide consistency with other regulatory documents such as RD-337 v2, RD-308, and G-306.</p> <p><b>Beyond design basis accident</b>  <b>Accidents less frequent than design basis accidents. A BDBA may or may not involve fuel degradation.</b></p>
Glossaire	Hydro-Québec	<p><b>Glossaire</b></p> <p><b>Effet de falaise</b></p> <p>Augmentation importante de la sévérité des conséquences découlant d'un petit changement de conditions. Note : Un effet de falaise peut être causé par des changements dans les caractéristiques de l'environnement, de l'événement ou de la façon dont une centrale réagit.</p>	Pas de commentaires	Noté

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Fukushima Omnibus Amendments Project**

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Projet omnibus de modifications relatives à Fukushima**

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Feedback round comments received (below)				
General	AECL		<p>The purpose of this letter is to submit AECL's feedback on public comments received on Draft Omnibus Amendments to Regulatory Documents Addressing Lessons learned from the Fukushima Daiichi Event as posted in Information Bulletin 12-47, on 2012 October 23.</p> <p>AECL is supportive of the comments on the draft omnibus amendments and in particular notes that the comments on the amendments to RD-310 are equally applicable to the amendments proposed for RD-308, and requests that they be considered in the proposed revision of this document.</p>	<p>General. The applicable comments provided for RD-310 are applied to RD-308 in the previous section.</p>