

Canadian Nuclear
Safety Commission



Commission canadienne
de sûreté nucléaire

Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held on February 5 and 6, 2014

Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held Wednesday and Thursday, February 5 and 6, 2014 beginning at 13:32 at the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, Ontario.

Present:

M. Binder, President
R.J. Barriault
D.D. Tolgyesi
M.J. McDill
R. Velshi
S. McEwan

M. Leblanc, Secretary
J. Lavoie, Senior General Counsel
D. Carrière and S. Dimitrijevic, Recording Secretaries

CNSC staff advisors were: R. Jammal, T. Jamieson, G. Rzentkowski, F. Rinfret, B. Poulet, C. Moses, E. Shin, G. Frappier, H. Tadros, D. Miller, M. de Vos, R. Rulko, P. Thompson, M. Rickard, T. Barr, C. Purvis, P. Elder, K. Heppell-Masys, P. Lahaie and P. Wong

Other contributors were:

- Bruce Power: F. Saunders
- Ontario Power Generation: C. Axler and K. Gilbert
- NB Power: S. Granville, P. Thompson and T. Davies
- CSA Group: J. Froats, M. Cianchetti, G. Orloff and C. Sellar
- CANDU Energy Inc.: M. Soulard and A. Lee
- Atomic Energy of Canada Limited: R. Lesco and G. Dolinar

Constitution

1. With the notice of meeting CMD 14-M1 having been properly given and a quorum of Commission Members being present, the meeting was declared to be properly constituted.
2. Since the meeting of the Commission held December 9, 10 and 11, 2013, Commission Member Documents CMD 14-M1 to CMD 14-M10 were distributed to Members. These documents are further detailed in Annex A of these minutes.

Adoption of the Agenda

3. The revised agenda, CMD 14-M2.A, was adopted as presented.

Chair and Secretary

4. The President chaired the meeting of the Commission, assisted by M. Leblanc, Secretary and D. Carrière/S. Dimitrijevic, Recording Secretaries.

Minutes of the CNSC Meeting Held December 9, 10 and 11, 2013

5. The Commission Members approved the minutes of the December 9, 10 and 11, 2013 Commission Meeting with the following changes: the Commission includes a paragraph in the Minutes to better reflect the presented evidence about risks related to alpha contamination, and includes an action item regarding CNSC staff's verification of GEH-C's commitment to better communicate their emergency plans to the surrounding community.

Decision of the Commission

6. On March 20, 2014, with reference to CMD 14-M6, a panel of the Commission approved CNSC staff's proposed updates to the Design Basis Threat Analysis (DBTA). The DBTA specifies the characteristics of potential adversaries in respect of which counter measures must be incorporated into the design and evaluation of a physical protection system of licensees of high-security sites or proponents of a new high security nuclear facility. Both the CMD and the DBTA are classified documents and therefore not accessible to the public.

STATUS REPORTS

Status Report on Power Reactors

7. With reference to CMD 14-M4, CNSC staff presented the Status Report on Power Reactors.
8. CNSC staff provided further details regarding the mineral oil leak from a transformer cooling heat exchanger at the Bruce A nuclear generating station (NGS) Unit 1, which took place on January 31, 2014. CNSC staff stated that the mineral oil released did not contain polychlorinated biphenyls (PCBs) or radioactive material, and that there was no impact to the environment resulting from the leak. This event is discussed further in paragraph 13 below.
9. CNSC staff also provided further details regarding an action recorded during the Commission meeting that was held on August 21, 2013 requesting that CNSC staff provide the Commission with an update regarding the Bruce B NGS, Unit 5,

heat transport system leak after reviewing the Root Cause Analysis Report. CNSC staff stated that it is reviewing the report, received on January 15, 2014, and that it will provide conclusions at the March 2014 Commission Meeting.

ACTION
by
March 2014

Bruce Nuclear Generating Station

10. The Commission enquired about the elevated Iodine-131 (I-131) levels in Units 1 and 2 of the Bruce A NGS, and asked why the levels are still elevated in Unit 1. The Bruce Power Corporation (Bruce Power) representative explained that debris in the reactors from refurbishment activities caused erosion (debris fret) on a few fuel pencils, leading to releases of I-131. The Bruce Power representative explained that a certain period of time is required for the reactor systems to remove the debris and I-131, and for affected fuel bundles to be removed from the reactor. The Bruce Power representative reported that the current level of I-131 in Unit 1 is very low.
11. The Commission asked if the event leading to an increase in I-131 level could occur at other nuclear power plants. CNSC staff explained that this problem could occur anywhere because of flushing that occurs on the heat transfer system following refurbishment activities. It is often very difficult to remove fine debris that may be present in this system.
12. The Commission asked if information regarding this event was shared with the industry. CNSC staff responded that the industry shares operating experience with other operators through the CANDU Owners Group (COG). CNSC staff stated that it brings incidents to the attention of other regulators only if they are safety significant, which was considered not being the case for this incident.
13. The Commission enquired about the significance of different I-131 levels that are present during normal and shutdown conditions. The Bruce Power representative explained that normal levels tracked during operations include low levels of I-131 caused by small leakages from fuel, which occur during normal operation. Unit 2 is now at normal levels, and Unit 1 is at a level below the action level, but at a level that requires investigation and monitoring. The levels of I-131 never reached the point that would require the reactor to be shut down.
14. The Commission enquired about the Bruce A NGS Unit 1 mineral oil leak from a transformer cooling heat exchanger. The Bruce Power representative provided a description of the event and the location of the leak. The Bruce Power representative stated that the mineral oil that leaked was drained into the outfall during the

isolation of the system upon shutdown. The Bruce Power representative stated that the leak was likely small and that it is investigating the exact volume that was released to the environment. A root cause analysis is being performed and reports have been filed according to requirements stated in Regulatory Standard S-99, *Reporting Requirements for Operating Nuclear Power Plants*.¹

15. The Commission commented on the language used in CMD 14-M4 to describe the de-rating of Bruce B NGS units to 93% of nominal unit power, which states that a large loss of cooling accident (LOCA) could occur if the units were operated at nominal unit power. CNSC staff clarified that the power was reduced to mitigate the consequences of a potential large LOCA, not prevent a large LOCA. The Commission recommended that the statement used by CNSC staff in status reports on power reactors be amended to better reflect the intent.

Darlington Nuclear Generating Station

16. The Commission asked for more information regarding the incident involving workers at the Darlington NGS who were exposed to lead while conducting work involving cutting metal. CNSC staff explained that it was only made aware of the incident in 2012 after the charges had been laid by the Ontario Ministry of Labour since the event did not trigger the threshold of reporting requirements that were part of the licence at the time. CNSC staff stated that reporting requirements have since changed. The Ontario Power Generation (OPG) representative and CNSC staff both stated that OPG has taken precautions to prevent the reoccurrence of this event, which included informing and training employees, providing toolkits to analyze the presence of lead, and conducting a comprehensive review of their hazard recognition program. The OPG representative also stated that it has taken measures to address the shortfalls in event reporting.
17. The Commission enquired about the lead exposure levels in the affected individuals. The OPG representative responded that the blood of the affected individuals was analyzed for lead content, and the test results did not demonstrate elevated levels of lead².
18. The Commission sought more information regarding how lead was released. The OPG representative explained that torch-cutting resulted in both molten lead and lead vapour. The Commission asked why respirators were not worn during the event. The OPG

¹ CNSC staff stated that a follow-up of the event to the Commission is not required since there were no significant findings.

² CNSC staff later confirmed that the tests results reported showed no increase in lead concentration above the normal level.

representative explained that workers wore personal protective equipment (PPE) as required when cutting through metal, but the PPE worn was not appropriate to protect against lead hazards. Lead was immediately identified once cutting activities started and workers were immediately aware that a potential exposure to lead had occurred.

19. The Commission enquired about the facility's rating in occupational health and safety for the year 2011. CNSC staff responded that the rating did not take this event into account since the CNSC was not made aware of the event until 2012 when the charges were laid by the Ministry of Labour. A memorandum of understanding between the CNSC and the Ministry of Labour did not yet exist in 2011, which explains why the CNSC did not receive information regarding the event in a timely manner. CNSC staff noted that the event may not be significant enough to change the rating. CNSC staff stated that it now has a good line of communication with the Ministry of Labour, and will therefore use the information received from the Ministry of Labour to assess the rating for occupational health and safety.

Gentilly-2 Nuclear Generating Station

20. The Commission asked if work at the Gentilly-2 NGS was proceeding according to the shutdown plan. CNSC staff responded that all work conducted at the facility has been performed according to procedures CNSC staff reviewed and discussed with Hydro-Quebec. CNSC staff stated that it is aware of all activities that have taken place at this facility. CNSC staff also stated that it has received and is currently reviewing Hydro-Quebec's final operating plan, which describes the activities necessary from the current state until the safe storage of the fuel in the irradiated bays and in dry CANSTOR storage modules.
21. The Commission asked if Gentilly-2 has maintained a sufficient number of skilled workers to support the safe shutdown state of the facility. CNSC staff responded that, while a large number of skilled workers have left the facility, the workers required by the Power Reactor Operating Licence issued to Hydro-Quebec by the CNSC remain employed and available at Gentilly-2.
22. The Commission enquired about the decommissioning plan for the Gentilly-2 facility. CNSC staff reported that the CNSC is currently reviewing Hydro-Quebec's plan for the safe dry storage of used fuel. CNSC staff explained that the decommissioning plan will be considered by the Commission in an application for a Decommissioning Licence to be submitted at a later date.

Pickering Nuclear Generating Station

23. The Commission enquired about the Pickering Unit 1 reactor trip that occurred due to ice accumulation and asked why mitigation measures are not already in place to prevent the occurrence of this event, considering the climate in which the facility exists. CNSC staff explained that this event is only experienced by Pickering on occasions due to the specific design of the intake to the service water. The OPG representative explained why the event occurred and stated that it has provisions in place to manage cold winter conditions. The OPG representative stated that the frequency of this event is low and the trip occurred to protect the equipment.

Point Lepreau Nuclear Generating Station

24. The Commission enquired about the status of the design changes resulting from the event involving the release of light water containing a low concentration of dissolved hydrazine to the environment, which was reported during the December 9, 2013 Commission meeting. The NB Power representative responded that the design change request has been initiated and is going through a prioritization process. The NB Power representative explained that compensatory measures are in place in the meantime. This file is now considered closed.

Information regarding an Incident at Cameco Corporation's Port Hope Conversion Facility

25. CSNC staff informed the Commission of an incident that occurred at Cameco Corporation's (Cameco) Port Hope Conversion Facility (PHCF). CNSC staff reported that Cameco performed a manual shutdown of a critical process uranium hexafluoride conversion on January 29, 2014 due to a potentially unsafe valve configuration. CNSC staff reported that this incident did not impact employees and did not result in a release to the environment. Since this incident had the potential to create an unsafe environment, CNSC staff stated that it requested, through a request made according to subsection 12(2) of the *General Nuclear Safety and Control Regulations*³ to Cameco, that a root cause analysis be performed to identify and establish mitigation measures prior to resuming operations. CNSC staff will provide further update on this incident when more information is available.

ACTION
by
June 2014

³ SOR/2000-202

INFORMATION ITEMSNew Brunswick Power Corporation: Point Lepreau Generating Station – Fire Protection Program Upgrade to Standard CSA N293-07

26. With reference to CMD 14-M7, New Brunswick Power Corporation (NB Power) presented an update on the Point Lepreau Generating Station Fire Protection Program upgrade to Standard CSA N293-07. The presentation described the process by which it is ensuring compliance with the standard, a description of the project team and a description of the upgrades remaining and completed. NB Power noted that it holds regular meetings to update CNSC staff on progress. NB Power stated that it plans to achieve full compliance with Standard CSA N293-07 by the end of 2014.
27. The Commission asked if there is a risk that the priority associated with implementing this standard is hindering the priority of other important work at the facility. CNSC staff responded that the risk exists but that higher priority work had been completed during the refurbishment outage. The NB Power representative stated it prioritizes work in terms of safety significance. The Commission further asked if there are benefits to upgrading the plant to Standard CSA N293-07. The NB Power representative responded that there are safety benefits to upgrading to this standard, but that the step change in this standard from the previously approved version has resulted in a very costly upgrade. CNSC staff stated that many lessons were learned in the implementation of this standard; it recognizes that it must allow licensees to gradually implement new standards and that a good project plan must be established with the licensee.
28. The Commission asked if the public receives information regarding the upgrades to the fire protection program and system at this facility. The NB Power representative responded that it holds regular community liaison group meetings to update the public on the status of the unit and on various issues of public interest. CNSC staff stated that it attends these meetings as either member of the audience or to provide information on the regulatory activities conducted by the CNSC. The NB Power representative also stated that it works very closely with local fire departments, including joint training. CNSC staff stated that it is generally satisfied with NB Power's community outreach activities for the Point Lepreau Generating Station.
29. The Commission asked if other Nuclear Power Plants are in compliance with this standard. CNSC staff responded that the standard is a requirement of Nuclear Power Reactor Operating Licences since 2007. Bruce Power and Ontario Power Generation

- became fully compliant with this standard almost five years after the requirement was introduced to the licences. CNSC staff explained that it has since introduced licence conditions handbooks (LCH) that allow the CNSC to define the implementation strategy for new standards, including timelines for implementation.
30. The Commission asked if third-parties provide guidance during the implementation of this standard to ensure compliance is met. The NB Power representative responded that it has had frequent meetings with other utilities to discuss the implementation of this standard and that it has benchmarked its activities against those of the other utilities. Other utilities have also been involved in reviewing some of NB Power's upgrading activities. The NB Power representative stated that the CANDU Owners Group (COG) fire safety group has also provided comments and feedback on the implementation activities.
 31. The Commission asked if the deadline for becoming compliant with the standard, as stated in the hold point in the Point Lepreau licence, can be revisited if new priorities were deemed more important. CNSC staff responded that it considers this to be of highest priority. The NB Power representative stated that it is committed to implementing this standard by the end of 2014.
 32. The Commission enquired about CNSC staff's review of implementation activities. CNSC staff responded that it has established a multi-disciplinary team who has been monitoring the progress through document reviews, inspections, monthly updates and meetings. CNSC staff stated that it will assess operational and design compliance after implementation is completed by NB Power.
 33. The Commission enquired about the culture shift that was achieved in how combustible and non-combustible material is stored and handled throughout the plant. The NB Power representative responded that it achieved a culture shift by using transparency metrics and accountability, where performance was assessed on a weekly basis. Persistent coaching is still required to maintain the momentum. The NB Power representative stated that it believes it can drive the behaviour of workers to the level needed by the end of 2014.
 34. The Commission asked if more work in the implementation of this standard should have been completed during the refurbishment outage. The NB Power representative responded that the extensive nature of the work that was required to implement the standard was not well defined at the time of refurbishment; it has recognized this as lesson learned. The NB Power representative stated that it now has a program in place, which looks into upcoming CSA standards

and CNSC regulatory documents to ensure it understands these standards and regulations and to create better implementation plans in the future. CNSC staff commented that some of the work required to implement the standard might have been difficult to do during refurbishment due to the complexity of the fire protection programs and system. The work would have hindered refurbishment activities and could have posed an occupational hazard to workers.

CSA Group's Nuclear Standards Program response to the CNSC Fukushima Task Force Recommendation 9.4

35. With reference to CMD 14-M9, the Canadian Standards Association (CSA) Group presented an update to the Commission on the work it has completed to fulfill the CNSC's Fukushima Task Force Recommendation 9.4, which calls on the CSA to provide an action plan on how it will address lessons learned from the Fukushima event. The presentation provided information on the CSA Group's action plan, which identifies Fukushima-related emerging opportunities, some of which require the development of new standards and others that require updates to existing standards. The CSA Group provided a description of what will be addressed within each identified standard. The CSA Group reported having completed the work necessary to satisfy the CNSC's Fukushima Task Force Recommendation 9.4.
36. The Commission enquired about how determination is made to include conditions in CNSC regulations or CSA standards. The CSA Group representative responded that it meets with the CNSC to discuss different topics and that decisions as to whether these topics should be included in standards or regulations are made on a case-by-case basis. The CSA Group representative and CNSC staff explained that CNSC establishes regulatory requirements and that CSA standards include information on how those requirements can be met. CNSC staff stated that, as participants in the CSA Nuclear Strategic Steering Committee, it ensures both programs complement each other and are well aligned.
37. The Commission asked if the CSA Nuclear Strategic Steering Committee (thereinafter Steering Committee) includes participants from outside of Canada. The CSA Group representative responded that it does not have international participation on the Steering Committee, but that there is international participation on its technical committees and groups that draft CSA documents. The CSA Group representative explained that it has members involved in the IAEA, WANO, ISO and other industry groups that ensure harmonization with international standards. In response to a question from the Commission regarding international peer review of CSA standards, the CSA Group representative stated that all

- their standards go through a mandatory 60-day public review period that is opened to the international community.
38. The Commission asked if the CSA Group provides interim guidance on standards that are either under development or review. The CSA Group representative stated that it does not provide interim guidance; however, it previously determined this to be a weakness and is now advertising new standards or standards under review through the CNSC to ensure a larger audience is made aware of upcoming standards. The CSA group representative also stated that the nuclear industry has representatives involved with the CSA to ensure it is aware of new standards before they are enforced.
 39. With regards to the CSA's action plan to address the CNSC's Fukushima Task Force Recommendation 9.4, the Commission asked if the action plan had been revised since it was produced in 2011. The CSA Group representative stated that it is periodically revisited every six months and is often revised to address changing priorities.
 40. The Commission asked if standards regarding required evacuation zone radius during nuclear emergencies should be included in licence conditions, as part of CNSC regulations, or in CSA standards. The CSA Group representative stated that conditions regarding evacuation of communities in proximity to nuclear facilities are going to be included in the new CSA standard on emergency management.
 41. The Commission enquired about information gaps during the Fukushima event and asked if the expectations regarding communication during nuclear events can be built into standards. The CSA Group representative responded that it is developing standard N1600, *General Requirements to our Nuclear Emergency Management Programs*, which has two extensive sections on communications and public alerting and notification to comprehensively address education in surrounding communities, alerting during an incident, as well as recovery phase activities. The CSA Group representative stated that this standard is expected to be published in June 2014.
 42. The Commission enquired on public review of CSA standards and asked if and how the public is invited to comment on draft standards. The CSA Group representative explained that it hosts a nuclear interactive community page on its website where draft standards and milestones are shared. The public is informed of public consultation periods through this interactive community page and through the CNSC website and subscription list.

43. Regarding the draft *General Requirements to our Nuclear Emergency Management Programs* standard, the CSA Group representative stated that it requested that the utilities inform their community stakeholders of the availability of the draft standard for review. The Commission asked if feedback was received from members of the public on this particular standard. The CSA Group representative stated that it had received a large number of public review commentaries from a variety of groups. CNSC staff stated that public notification on draft CSA standards are distributed to the CNSC subscribers list, which includes over 2,600 individuals and all active NGO groups, community associations, licensees, and members of the media. The Commission asked if all members of communities in proximity to nuclear facilities are made aware of the CSA standards and their review. The CSA Group representative responded that, due to the extensive nature of CSA's undertakings, it is not possible to ensure a thorough broadcast to everyone that may have an interest in their standard. Thus, it works with the CNSC to ensure it reaches as many people as possible. CNSC staff stated that there is a regulatory requirement under RD/GD-99.3 for licensees for public information and disclosure.
44. The Commission asked if non-governmental organizations (NGOs) could be members of the Steering Committee. The CSA Group representative responded that they could but often their participation is instead focused on public review due to financial considerations.
45. The Commission enquired about probabilistic safety assessments (PSAs) of nuclear power plants. CNSC staff explained that regulations require licensees to perform PSAs and that there will eventually be a set of CSA standards to define a common methodology for performing PSAs across all Canadian nuclear power plants, including for multiple reactor sites.
46. The Commission enquired about off-site management of assets in case of an emergency. CNSC staff responded that a CSA standard was recently approved by the Steering Committee to address beyond design basis accidents, which would cover off-site equipment and support equipment for those types of events.
47. The Commission appreciated having this presentation from the CSA, and hopes that there will be further presentations in future years.

The Evolution of Nuclear Reactor Technologies

48. With reference to CMD 14-M8, CNSC staff presented to the Commission an account on the evolution of nuclear reactor

- technologies. The presentation included a short history of development of different types and designs of nuclear reactors, description and properties of small modular reactors (SMRs), and an explanation of the pre-licensing vendor design review (VDR) process.
49. During the comprehensive presentation, CNSC staff informed the Commission about the benefits of the VDR process, and about regulatory activities that include the development of new regulatory documents needed to address new reactor designs and the continued safe operation of nuclear reactors. CNSC staff also informed the Commission about its current pre-licensing VDR activities and related lessons learned.
 50. The Commission asked about the potential use of alternative fuels in CANDU 6 reactors. A representative from CANDU Energy Inc. responded that they were testing, through their international collaboration, the implementation of natural uranium equivalent fuel, and that their partners intend to move to a further level of enrichment with recycled uranium and eventually with thorium, as well as with mixed oxide fuel in modified CANMOX reactors.
 51. The Commission sought more information on the timeline for the development of new generation of reactors and asked how distinctive borderlines between different generations of nuclear reactors are. CNSC staff responded that there is overlapping between the reactor properties associated with different generations. The term “generations” is more of a conceptual and subjective, marketing oriented nature. CNSC staff added that all operating reactors, including their safety systems, are upgraded, modified and improved during their operational life. All of them have to meet current regulatory requirements in order to operate safely and to be licensed, regardless of their generation. With respect to the development of Generation-IV reactors, CNSC staff stated that in some countries, these reactors are being constructed.
 52. CNSC staff stated that upgraded safety features and lessons learned through the operation of older generations of reactors is taken into account and used in the design of newer generations, which is reflected in better seismic design, radiation and environmental protection, fire protection and in other areas.
 53. The Commission asked whether new generation reactors, usually much larger than the previous, could be associated with higher performances, smaller footprints and improved safety. CNSC staff responded that, although it depends on the technology applied in new generation reactors, general trends include improved fuel efficiency, smaller and more compact cores, minimization of nuclear waste, and recycling of the used nuclear fuel.

54. The Commission sought more information about the CNSC's adopted technology neutral approach that is being used for evaluating new reactor designs and determining appropriate safety requirements. CNSC staff explained that the approach emphasizes a safe operation as priority, which is reflected in a technology neutral regulatory framework that works very well in assessing a range of technologies.
55. The Commission enquired about licensing and regulatory practices in different countries. CNSC staff explained different approaches to regulatory framework that result in different licence lengths, monitoring, reviewing and reporting practices, licence renewal procedures, and compared these regulatory approaches to the Canadian practice.
56. The Commission sought more information about the development status of SMRs. CNSC staff responded that several types of SMRs having different output powers are under development. At the same time, there is a number of SMRs already operating in other countries. CNSC staff added that it was learning from the past development and use of small reactors by the military.
57. The Commission sought more details regarding the stage of recently conducted pre-licensing VDR activities. CNSC staff informed the Commission about completed phases of the pre-licensing activities regarding the ACR-1000, enhanced CANDU EC-6 and ATMEA-1 reactors.
58. The Commission asked if CNSC staff shares its findings with other regulators. CNSC staff responded that the exchange of information is limited and is done only with the agreement of the vendors and appropriate arrangements with other regulators.
59. CNSC staff added that there is continuous collaboration between regulators to harmonize regulatory positions and look at the various technical requirements that may depend on specific conditions. This collaboration is a step towards greater standardization amongst regulators and is reflected through updates of CNSC regulatory documents.
60. The Commission enquired about the possibility for development of SMRs in Canada, potentially based on the experience gained through development of slowpoke reactors. A representative from CANDU Energy Inc. responded that the development of reactors in Canada and associated demonstration of power reactor economics was driving the design towards or beyond 600 MW (megawatt) range. Currently, CANDU Energy Inc. is focused on fuel cycle modifications rather than on small reactors development.

Atomic Energy of Canada Limited: Report from CNSC staff on the compliance activities following the discovery of dose records not submitted to the National Dose Registry

61. With reference to CMD 14-M5, CNSC staff presented to the Commission an update on the compliance activities following the discovery of dose records not submitted to the National Dose Registry (NDR) by Atomic Energy of Canada Limited (AECL). CNSC staff presented a short timeline of the events and informed the Commission about the implementation of the corrective actions that AECL had committed to. Three corrective actions were identified, and their completion was planned for the end of September 2013. CNSC staff inspected the dosimetry service in November 2013 to verify if the corrective actions had been implemented. During the inspection, AECL staff had reported a second event in which doses received by 121 contractors had not been entered into AECL's Corporate Dosimetry System (CDS) database.
62. CNSC staff reported that the corrective actions' implementation was incomplete. CNSC staff raised four Action Notices and a Directive to require all of these Action Notices to be implemented by the end of March 2014. CNSC staff also reported that it was reviewing AECL's response that had addressed all four Action Notices as well as the Directive.
63. CNSC staff will review the Effectiveness Report that AECL plans to submit by the end of April 2014. CNSC staff will update the Commission after AECL reports on the effectiveness of corrective actions.
64. AECL acknowledged its non-conformance with its dosimetry licence for dose reporting to the NDR, and noted that there was no safety significance to these events since only small doses were involved. AECL provided more details related to the events and added that the issues had been corrected, corrective actions had been implemented, required dose reporting had been performed and further improvements identified.
65. The Commission sought more information about the basis for the lack of convergence between CNSC staff's opinion about completion of the corrective actions and AECL's view. CNSC staff responded that it had evaluated the implementation of technical requirements, and the procedural and management system requirements, and evaluated it against requirements stated in Regulatory Standard S-106, Rev.1, and *Technical and Quality Assurance Requirements for Dosimetry Services*. AECL representatives pointed out that their opinion was based on the

ACTION
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June 2014

- criteria for implementation of corrective actions and described the required “deviation from procedure” during implementation of these actions.
66. The Commission expressed serious concerns regarding management practices at AECL that led to these events.
 67. The Commission asked whether CNSC staff has been proactive enough in ensuring that the licensee understands the seriousness of this issue and undertake the appropriate actions. CNSC staff responded that, during the inspections conducted earlier in 2007, there were gaps in AECL’s management system and quality assurance regarding its dosimetry licence. AECL had completed corrective actions to the satisfaction of CNSC staff. CNSC staff noted that a management review that was requested at this time could probably have been requested earlier.
 68. The Commission asked about AECL’s ratings in the areas of radiation protection and management system during the last licence renewal process. CNSC staff reiterated that the issue was not in the area of radiation protection, but in failure to transfer the data into the NDR. CNSC staff responded that, while radiation protection had been rated as satisfactory, CNSC staff had consistently reported concerns regarding AECL’s management system. CNSC staff added that AECL was making progress in implementing changes to reflect new CSA standard on management system.
 69. The Commission asked if similar issues are present in other organizations, especially in nuclear power plants (NPPs), and enquired about the effectiveness of the actual oversight and reporting system. The AECL representative responded that other licensees exchange information about this and similar issues through various means including the CANDU Owners Group. CNSC staff described regulatory standard and quality assurance requirements that are specific to the dosimetry service, including self-assessments, internal audits and reporting of unplanned events. This information is included in annual reports submitted to CNSC staff. CNSC staff also explained the collaboration between the CNSC and Health Canada in updating the NDR and reviewing and evaluating received reports.
 70. The Commission further enquired about annual reconciliation between licensees’ reports and Health Canada records, and about a possibility to perform such task automatically. CNSC staff responded that it was sampling data for annual verification. CNSC staff added that there is an initiative at Health Canada to improve database accessibility and direct communication with the licensees, and to implement a more rigorous quality control in terms of the data handling and management. CNSC staff will attempt to help

- facilitate or expedite the process, and to put this issue on the agenda for the next quarterly meeting between the CNSC and Health Canada.
71. The Commission expressed concerns regarding contractors failing to return assigned dosimeters and asked if the data on doses received by workers could be automatically transmitted to NDR. The AECL representative stated that financial penalties are in place for lost or missing photo dosimeter badges, and that AECL dosimetry staff had been looking more closely at contractor badges. The AECL representative added that the used thermoluminescent dosimeters are not capable of uploading dose data automatically.
 72. CNSC staff stated that it works to ensure that licensees have mechanisms in place to manage contractor doses. In areas with increased risk of irradiation, workers are equipped with electronic dosimeters that could be used to estimate the received dose. CNSC staff stated that it will ensure that the licensees report on the number of dosimeters that are not accounted for.
 73. The Commission suggested that CNSC staff consider a requirement that the licensee do an annual reconciliation of the dose information in NDR. CNSC staff stated that it will consider this requirement.
 74. The Commission asked if CNSC staff had used the Licence Condition Handbook (LCH) to further clarify the requirements and avoid misunderstanding about their expectations. CNSC staff responded that the licensing requirements will be documented in the LCH in next fiscal year.
 75. The Commission asked if the administrative monetary penalty (AMP) has been considered at this stage. CNSC staff responded that the stage where an AMP would be appropriate had not been reached, but is keeping the possibility of an AMP for further consideration.
 76. The Commission asked whether a root cause analysis was initiated. The AECL representative responded that they were planning on initiating a root cause analysis to identify further areas for improvement. The Commission requests that CNSC staff provide an update in the AECL facilities annual report for 2013. Action
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 77. The Commission enquired about lines of accountability related to AECL's dosimetry services and their representation in AECL's organizational structure. The AECL representatives provided an explanation of the company's line of responsibility. CNSC staff pointed out that, due to the transition and current changes regarding

AECL's structure, the actual organizational scheme was not reflected in the dosimetry licence. CNSC staff will be following up with AECL to make sure that the person responsible for the licence has the appropriate authority.

Presentation on Counterfeit, Fraudulent and Suspect Items

78. With reference to CMD 14-M3, CNSC staff informed the Commission about recent developments related to the counterfeit, fraudulent and suspect items (CFSI) pertaining to the supply chain in the nuclear sector. CNSC staff's presentation included a description of factors contributing to CFSI, situations in different countries and an explanation of CNSC staff's approach to addressing CFSI within the Canadian regulatory framework.
79. A representative of Bruce Power informed the Commission about their experience and actions to address the issue and avoid CFSI items. The Bruce Power representative added that the problem was not pronounced in Canada with high quality products from reputable suppliers, and that the last suspicious product, which could not be confirmed as being counterfeit or not, was noticed in 2009.
80. A representative from New Brunswick Power Corporation (NB Power) stated that, except for four suspect items, they had no reported CFSIs during the refurbishment of the Point Lepreau nuclear power plant, and noted that a special attention was made to their supply chain and information exchange with their partners from the industry.
81. The Commission enquired about the situation in Canada, the number of reported cases of CFSI and about the databases of confirmed fraudulent items and suppliers. Representatives from Bruce Power and NB Power responded that the industry shares information about suspect items through the CANDU Procurement Audit Committee (CANPAC), Nuclear Procurement Issues Committee (NUPIC), Electric Power Research Institute (EPRI) database, and other international forums. The representatives stated that there were no confirmed cases in Canada. The confirmed cases from other countries (e.g. Korea) often involve brokers or distributors and suppliers, which are blacklisted.
82. Both CNSC staff and the representatives from the industry stated that the key lesson learned from the experience around the world was that the robustness of the supply chain, which is the first barrier in multiple levels of defence, is very important in preventing CFSI items getting through controls and being installed in Canadian nuclear power plants. The representatives from the industry noted that, for a long time, the preventive approach in the

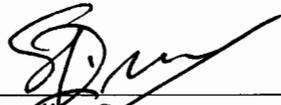
Canadian nuclear industry is based on an approved suppliers list rather than on having a blacklist of suppliers of confirmed counterfeit and fraudulent items.

83. The Commission asked about the international situation and about countries that have not reported CFSI cases. CNSC staff responded that most of the countries have a reactive approach to this issue and have indicated that the majority of them do not have active CFSI programs. CNSC staff added that they participate in the multi-national design evaluation program (MDEP) and in a working group focused on vendor inspection co-operation. These bodies look at standards that various countries use to verify vendors and attempt to cover the CFSI issue from a global perspective.
84. The Commission enquired about consequences for suppliers of fraudulent products. The representatives from the industry responded that such suppliers could be sanctioned through financial actions on a corporate level, as well as through legal actions that exist in the countries around the world in order to prevent and deal with counterfeiting.
85. The Commission asked about the certification process of new or equivalent replacement products, or recycled parts, that are entering the supply chain. The representatives from the industry responded that in such cases they apply an equivalency process in engineering that goes through a design review to make sure that a product in question is equivalent to the previously used one.
86. The Commission enquired about the role of the CNSC in evaluating new products. CNSC staff responded that they conduct inspections of the licensees' supply management process.
87. The Commission further enquired whether the situation was similar with other types of nuclear facilities, such as accelerators. CNSC staff responded that they also conduct procurement and supply management inspections for all Class 1A and 1B licensees. CNSC staff added that there is also requirement that all licensees must ensure, through the commissioning process, that all equipment and parts are verified and approved against the Canadian Standards Association standards. Certification procedures for post-commissioning replacement parts and servicing are also established. Procedures are in place that are dealing with CFSI issues; however CNSC staff will provide to the Commission a written explanation with a precise answer whether CFSI awareness is formally and explicitly part of the inspection process.

ACTION
by
August
2014

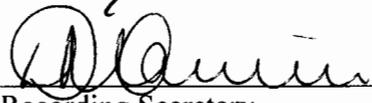
Closure of the Public Meeting

88. The meeting closed at 11:45.



Recording Secretary

2014.03.28.
Date



Recording Secretary

2014-03-31
Date



Secretary

2014-03-31
Date

APPENDIX A

CMD	DATE	File No
14-M1	2014-01-09	Edocs # 4267706
Notice of Meeting of February 5 and 6, 2014		
14-M2	2014-01-22	Edocs #4277192
Agenda of the meeting of the Canadian Nuclear Safety Commission to be held on Wednesday and Thursday, February 5 and 6, 2014, in the Public Hearing Room, 14 th floor, 280 Slater Street, Ottawa, Ontario		
14-M2.A	2014-01-30	Edocs # 4304705
Revised Agenda of the meeting of the Canadian Nuclear Safety Commission to be held on Wednesday and Thursday, February 5 and 6, 2014, in the Public Hearing Room, 14 th floor, 280 Slater Street, Ottawa, Ontario		
14-M3	2014-01-28	Edocs # 4298241
Presentation on Counterfeit, Fraudulent and Suspect Items – Oral presentation by CNSC staff		
14-M4	2014-02-04	Edocs # 4319373
Status Report on Operating Reactors units as of February 4, 2014		
14-M5	2014-01-20	Edocs # 4276947
Atomic Energy of Canada Limited: Report from CNSC Staff on the compliance activities following the discovery of dose records not submitted to the National Dose Registry – Oral presentation by CNSC staff		
14-M7	2014-01-16	Edocs # 4291500
New Brunswick Power Corporation: Point Lepreau Generating Station – Fire Protection Program Upgrade to Standard CSA N293-07 – Written Submission by New Brunswick Power Corporation		
14-M7.A	2014-01-29	Edocs # 4310777
New Brunswick Power Corporation: Point Lepreau Generating Station – Fire Protection Program Upgrade to Standard CSA N293-07 – Oral Presentation by New Brunswick Power Corporation		
14-M8	2014-02-05	Edocs # 4311609
The Evolution of Nuclear Reactor Technologies – Oral presentation by CNSC staff		
14-M9	2014-01-21	Edocs #4298103
CSA Group's Nuclear Standards Program response to the CNSC Fukushima Task Force Recommendation 9.4 – Written Submission by CSA Group		
14-M9.A	2014-01-29	Edocs #4310933
CSA Group's Nuclear Standards Program response to the CNSC Fukushima Task Force Recommendation 9.4 – Oral presentation by CSA Group		

14-M10 2014-02-06 Edocs #4308833
Approval of Minutes of Commission Meeting held December 9, 10 and 11, 2013