Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

Events in Japan - Regulatory Response and Life Extension Process for Canadian Reactors

Ramzi Jammal
Executive Vice-President and Chief Regulatory Operations Officer
Canadian Nuclear Safety Commission

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Canadian Nuclear Safety Commission

Established May 2000, under the ***Nuclear Safety and Control Act***

Replaced the AECB of the 1946 ***Atomic Energy Control Act***

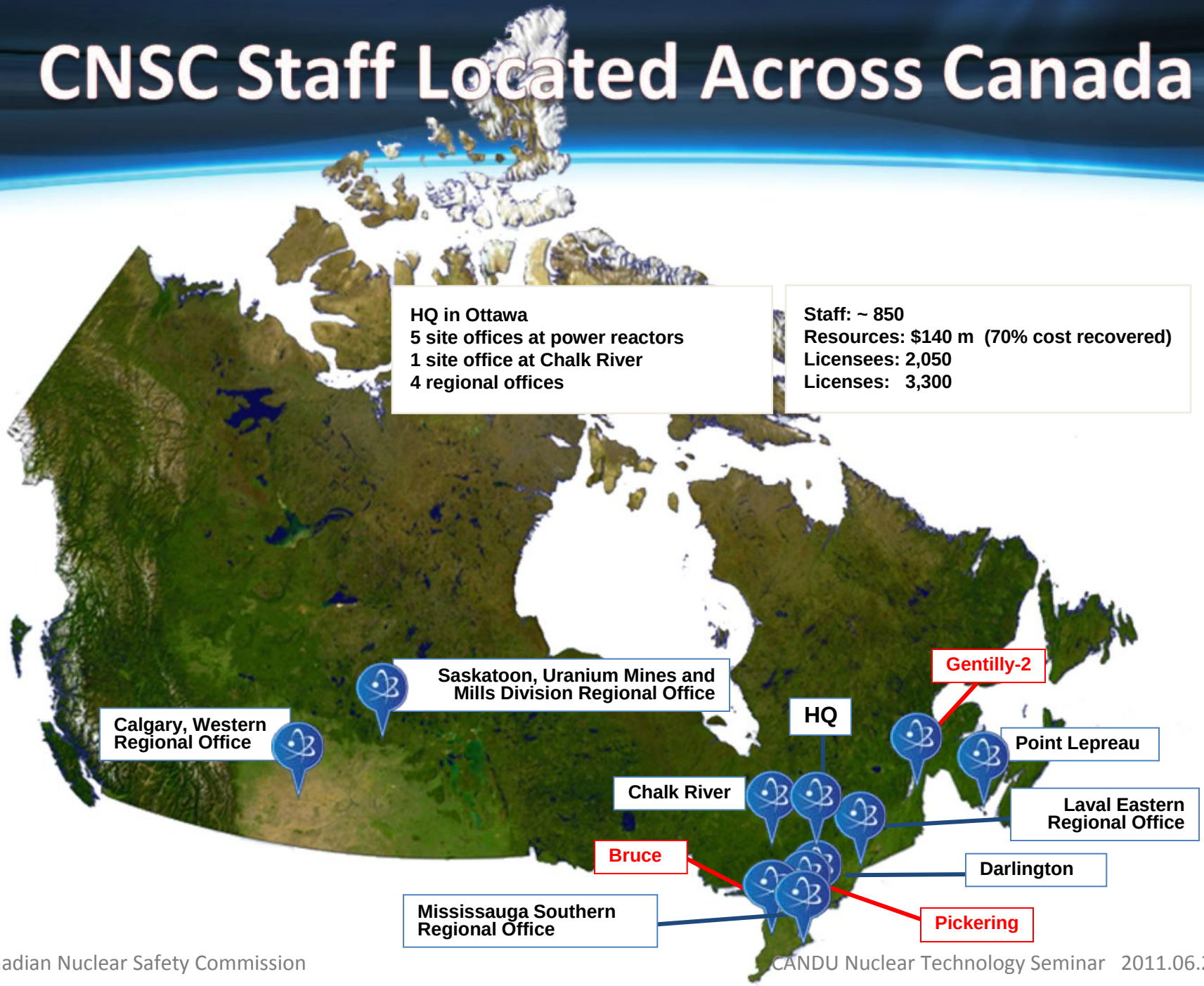
Canada's Independent Nuclear Regulator
65 Years of Experience

Our Mission Is Clear

Protect the **health**, **safety** and **security** of persons and the **environment**; and implement Canada's **international commitments** on the peaceful use of nuclear energy

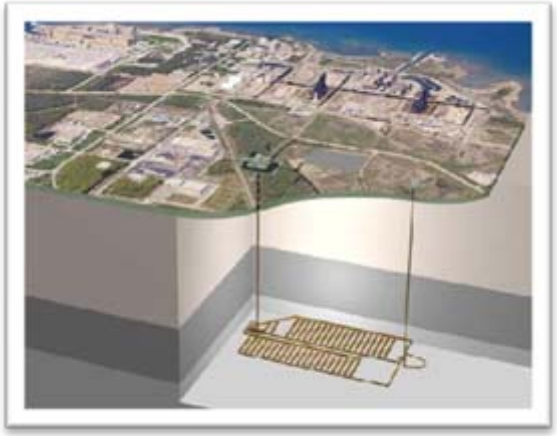
Canada's Nuclear Watchdog

CNSC Staff Located Across Canada



The CNSC Regulates All Nuclear-Related Facilities and Activities in Canada…

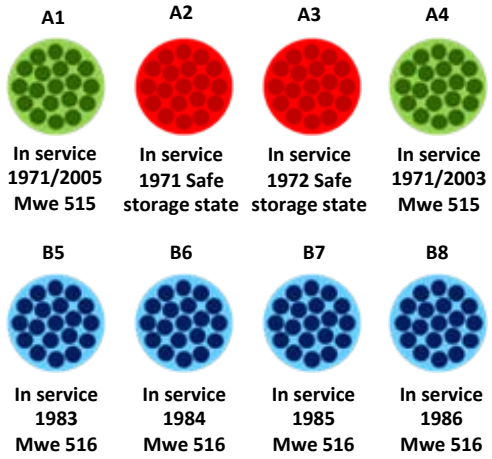
- Uranium mines and mills
- Uranium fuel fabricators and processing
- Nuclear power plants
- Waste management facilities
- Nuclear substance processing
- Industrial and medical applications
- Nuclear research and education
- Export/import control



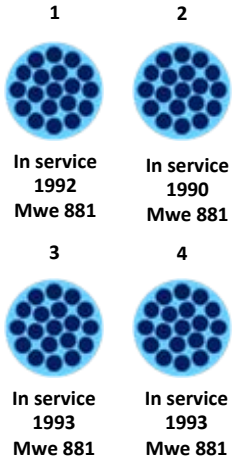
…From Cradle to Grave

Canada's Nuclear Energy Profile

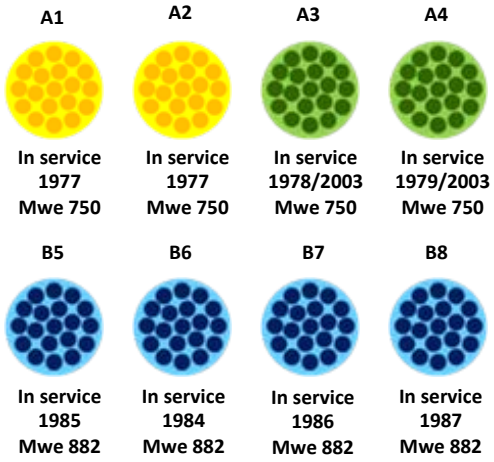
Pickering ON



Darlington ON



Bruce ON



Gentilly QC

Point Lepreau NB

Operable status (Average age – 25 Years)

- In service within design life
- In service / Returned to service
- Safe storage state
- In refurbishment

Typical share of nuclear energy in total electricity generation

- Canada - 14.7%
- Quebec - 3%
- Ontario - 52%
- New Brunswick - 30%

Fukushima-Daiichi Nuclear Power Plant

- **Earthquake and tsunami struck March 11, 2011**
- **Efforts continue to control situation**
  - operator hopes to regain complete control in 6 to 9 months
- **Raised a number of issues**
  - location and stability of emergency backup systems
  - perceptions of radiation and risk to health

A Wake-up Call For The Nuclear Sector

Overall Government Response

- Ongoing environmental monitoring on Canadian territory from coast to coast to coast
- Deployed experts to the IAEA
- Videoconferencing to answer questions from Canadians in Japan

Regulatory Response

- Activated Emergency Operations Centre (EOC) on March 11, 2011
- Staffed EOC 24 hours a day, 7 days a week
- Initiated discussions with international peers
- Held discussions with other Canadian government departments and agencies:
  - Health Canada
  - Foreign Affairs and International Trade Canada
  - Natural Resources Canada
  - Government Operations Centre
  - Canadian Food Inspection Agency
  - Environment Canada

Facility Reviews

- Issued order March 17th under 12(2) NSCA
  - to all major nuclear facilities to:
    - review initial lessons learned
    - re-examine safety cases
    - implement immediate actions and report on long-term measures
- Issued order March 22nd covering rest of the facilities

Confirming Continued Safety Of Our Facilities

Regulatory Response: Immediate Actions

- CNSC site staff carried out focused inspection on:
  - seismic qualification
  - fire
  - flooding
  - backup power
  - hydrogen igniters and passive recombiners
- Ongoing inspection against external hazards

Regulatory Response: Public Communication

- CNSC Web site became the site of choice
- Provided daily information updates
- Web site visits increased:
  - more than 10,000 daily visitors to the Japan updates page
- Performed source term assessment in order to advise Canadian citizens in Japan

Regulatory Response: Task Force

- Establishment of CNSC Task Force
- The mandate of the Task Force is:
  - Review submissions from licensees who have been directed under the *Nuclear Safety and Control Act* 12(2) letters
  - Assess available technical and operational information from the events at the Fukushima Daiichi NPP and identify high-level lessons learned
  - Develop recommendations for short-term and long-term measures to recommend whether design or operational modifications, including supporting research, are needed
  - Determine priorities for implementation of corrective actions
  - Develop recommendations, as appropriate, for potential changes to CNSC regulatory requirements, inspection programs and policies

Regulatory Response: Task Force

- The Task Force will focus on the following items:
  - external hazards which could impact Canadian NPPs (i.e., initiating events),
  - plant response up to severe core damage (i.e., assuming failed accident mitigation),
  - severe accident mitigation and management,
  - on-site and off-site emergency response, and
  - regulatory requirements review

Review of the Safety Cases

- Focus on verifying capabilities to mitigate:
  - beyond-design-basis events including station blackout
  - internal and external flooding
  - other events concurrent with a seismic event
- Verification of defence-in-depth strategy and measures to:
  - minimize frequency of abnormal operation and failures
  - limit the progression of accident to within the design basis
  - control severe plant conditions
  - mitigate radiological consequences
- Emergency management

Verification and Validation

Review Process

- All licensees provided responses
- Internal CNSC task force reviewing responses
- External advisory committee being formed

Every Nuclear Country Reviewing Lessons Learned

Lessons Learned – Canadian Timelines

CNSC Lessons Learned Deliverables	Estimated Completion Dates
Japan Task Force	
- Prepare 1st Preliminary Report	June 30
- Prepare Draft Report	July 27
- Present an update to Commission	August 10-11
- Complete Final Draft Report	September 7
- Senior Management Review & Approval	September 23
- Issuance of Final Report	**October 7**
IRRS Follow-up Mission to CNSC	November 28
External Advisory Committee	Early 2012

Canadian Lessons Learned

- Conflicting Information - making regulatory decisions
  - access to reliable sources / open lines of communication
- Media frenzy – 24/7
  - explaining the facts - everyone's an expert
- Continued confidence in the safety of facilities, but:
  - room for continued improvement
  - opportunity to re-evaluate/validate assumptions
- Managing response
  - coordination within government

Summary

- At all government levels, Canada responded with urgency
- Canadian nuclear industry collaborated to coordinate a comprehensive review within a very short time frame
- Ongoing environmental monitoring on Canadian territory and evaluation of readings from outside Canada
- Follow-up actions to strengthen nuclear safety:
  - begun to accelerate programs that will provide early benefits, in particular in severe accident management and emergency preparedness
- It is time for concrete actions out of IAEA Ministerial Conference
  - Safety standards include governance and independence
  - Leadership / whistleblower role for IAEA and transparency in peer reviews
  - Recognition of important role of INPO and WANO especially in exposing "non responding" countries


We Will Never Compromise Safety…
…It's In Our DNA!

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Canada