



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

65 Years of Nuclear Safety



Michael Binder

President, Canadian Nuclear Safety Commission

TRIUMF Board of Directors

November 17-18, 2011 - Victoria, British Columbia

65TH ANNIVERSARY
65^E ANNIVERSAIRE

Canadian Nuclear Safety Commission

Regulates the use of nuclear energy and materials 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.

Canada's nuclear watchdog



Independent Commission

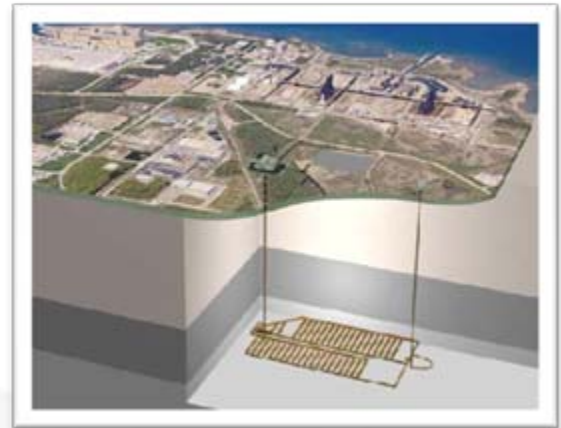
- ❖ Quasi-judicial administrative tribunal
- ❖ Commission members are independent
- ❖ Commission hearings are public and Webcast
- ❖ Decision can only be reviewed by Federal Court



Transparent, Science-based Decision-making

CNSC Regulates All Nuclear-Related Facilities and Activities

- 🇨🇦 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 educational
- 🇨🇦 Export/import control



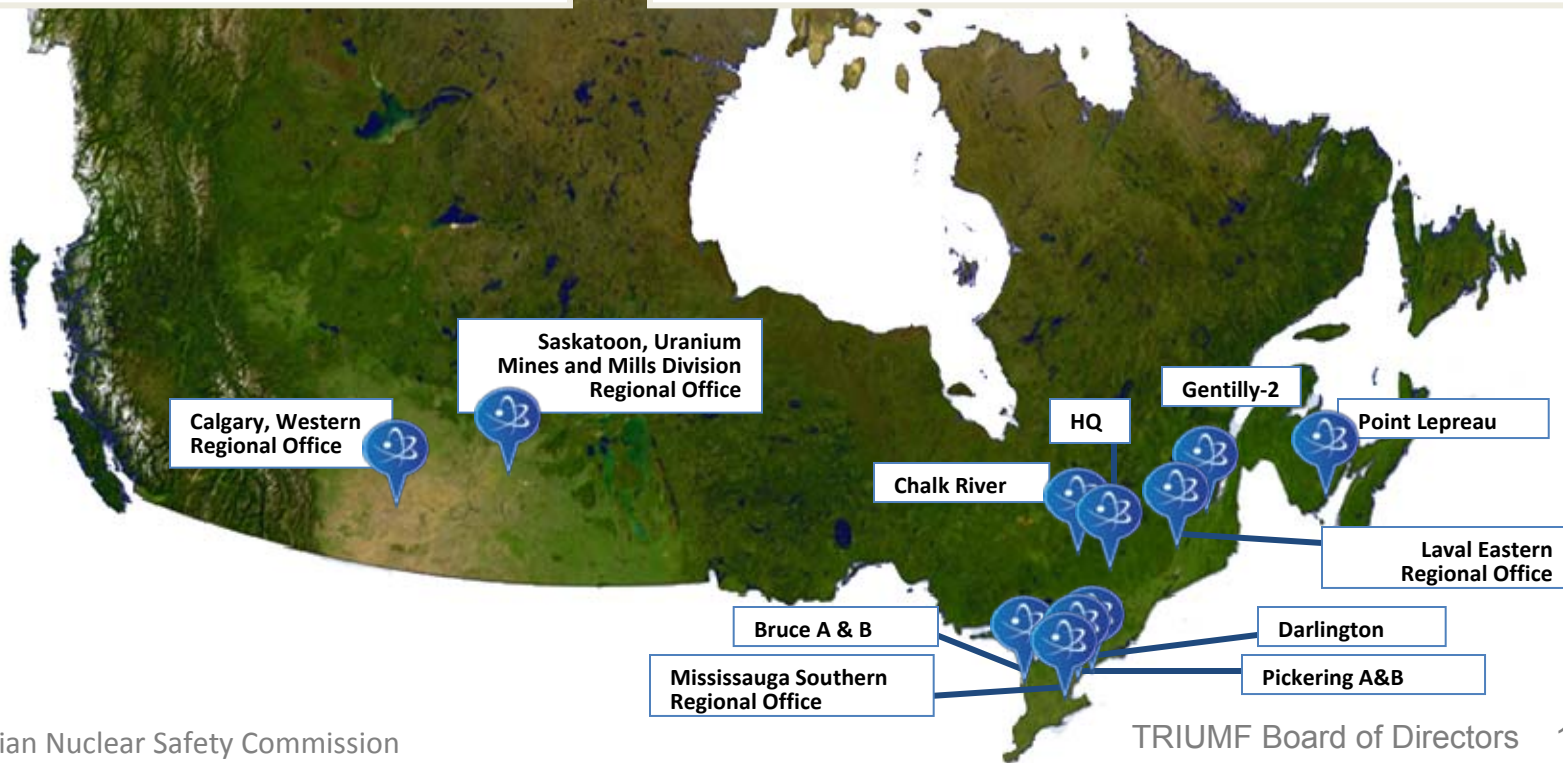
...From Cradle To Grave

CNSC Staff Located Across Canada

HQ in Ottawa
5 site offices at power reactors
1 site office at Chalk River
4 regional offices
Staff: ~ 850
Resources: \$150 m (70% cost-recovered)

Licensees: 2050
Total Licences: 3300

- 220 licences under the Class II Nuclear Facilities and Prescribed Equipment Regulations
- 2430 licences under the Nuclear Substances and Radiation Devices Regulations



Fukushima-Daiichi Nuclear Power Plant

March 11, 2011

Earthquake and tsunami struck

- Efforts continue to control situation
- Raised a number of issues

CNSC took action

- Emergency Operations Centre activated
- Coordinated with federal agencies
- Issued order to all major nuclear facilities
 - Review lessons learned
 - Re-examine safety cases
 - Take action and report

A Wake-up Call For The Nuclear Sector

CNSC Response

🍁 CNSC Internal Task Force

- Task Force Recommendations – public comment - Oct 28 to Dec 1, 2011
- CNSC Commission meeting – Feb 15, 2012

🍁 IRRS Review Follow-Up Mission

- Includes assessment of Canada's response to Fukushima – Nov 2011

🍁 CNSC External Advisory Committee Review – March 2012

🍁 Ongoing CNSC Web updates



Transparent Process

Lessons Learned to Date

Always room for improvements:

Extreme natural hazards - low frequency, high impact events

Severe accidents - beyond plant design

Station Blackout - back-up essential

Loss of Heat Sink - Alternative means to cool reactor

Explosive gases - Prevention of hydrogen build-up inside containment

Spent Fuel Pools - Maintaining water inventory during severe accidents

Emergency Planning - Coordination of all parties

Regulatory Framework - Review regulatory requirements

Canadian Nuclear Facilities Are Safe!!!

Fukushima Casting Chill

- ❖ Spotlight on the nuclear industry
- ❖ Public confidence waning
- ❖ Germany – Advanced phase-out; concentrate on renewables
- ❖ Not alone: Switzerland, Italy . . .
Even China temporarily delaying new approvals

Speed bump or stampede?

We Still Have a Heavy Agenda in Canada

Darlington New build / Joint Review Panel

- Public hearing held in days after Fukushima
- JRP Report issued on August 26
- Government response underway
- Judicial Review

Darlington Licence Extension

- Licence expires June 2013
- Re-licensing Hearings in October 2012
- EA for refurbishment in 2016

We Still Have a Heavy Agenda

Point Lepreau

- Public Hearing – Saint John – Dec 1-2
- Operating licence expires June 30, 2012
- Refurbishment projected to be completed by fall 2012

Gentilly-2

- Hearings on refurbishment and renewal completed in April 2011
- Decision granted by Commission in June 2011

Bruce

- Refurbishments on-going (2 of 8 units), estimated to be completed in 2012
- Steam generator shipment approved by the CNSC but currently on hold by Bruce Power

Pickering

- \$300 million for 10 more years of Pickering B operation, then decommissioning in 2020



Core Activities Must Go On

Waste Management

Port Hope

- Committed to clean-up legacy waste
- Hearing tentatively scheduled for January 2012

Port Granby

- Committed to clean-up legacy waste
- Hearing on September 27, 2011

Deep Geologic Repository

- CNSC reviewing Environmental Impact Statement (EIS) submitted by OPG April 2011
- Joint Review Panel needs to be appointed immediately

Spent Fuel

- ★ Post-Fukushima – Heightened importance of spent fuel management
- ★ Nuclear Waste Management Organization target - 2035



Managing Waste Safely – Now And In The Future

Canadian Uranium Projects

Active projects (all in Saskatchewan)

- Key Lake Mill (Cameco Corporation)
- McArthur River Mine (Cameco)
- Rabbit Lake Mine/Mill (Cameco)
- McClean Lake Mines/Mills (AREVA Resources Canada Inc.)

Under Construction

- Cigar Lake Mine (Cameco)

Proposed Projects

- 🇨🇦 Midwest Mine (N. Sask.) (AREVA)
- 🇨🇦 Kiggavik Project (Nunavut) (AREVA)
- 🇨🇦 Matoush (Quebec) (Strateco Resources Inc.)
- 🇨🇦 Millennium Project (N. Sask.) (Cameco)
- 🇨🇦 Michelin Project – Aurora (Labrador) (Aurora Resources Inc)



Meeting World Demand, but Will All Projects Proceed?

NRU, Medical, Industrial and Research

- ✿ Chalk River operating licence renewed until 2016
 - *NRU isotope production – what's next?*
 - *still significant to world's isotope supply*
- ✿ 220 Class II / Prescribed Equipment Licences
 - hospitals and cancer clinics across the country
- ✿ 2430 Nuclear Substance Licences
 - industrial, research, radiography, etc.
- ✿ University and Research Laboratories
 - TRIUMF, CLS, McMaster, Slowpokes (RMC, UofAlberta, Ecole Polytechnique, Saskatchewan Research Council, Dalhousie (decommissioned))
- ✿ Licensing Non-Reactor-based Isotope Production
 - \$35M funding (Budget 2010), TRIUMF, Advanced Cyclotron Systems Inc, Canadian Light Source Inc, Prairie Isotope Production Enterprise



**Of Continued Importance To Health
And Safety Of Canadians**

TRIUMF – research and medical activities

CNSC recognizes TRIUMF's unique role

- Fundamental physics research
- Medical applications
 - Isotopes and production
 - Medical radioisotope supplier
 - Proton therapy facility for eye melanoma
- CNSC Speaker Series – Dr. Lockyer, Nov 18, 2010
- ARIEL - CONGRATULATIONS
 - Ground breaking - Nov 2011



TRIUMF - Regulatory Activities 2011

Ongoing improvements, licence amendments and compliance activities

Licence amendments

- Advanced Rare Isotope Laboratory (ARIEL) site preparation (2)
- Increased beam current for actinide targets (in process - by December 1)

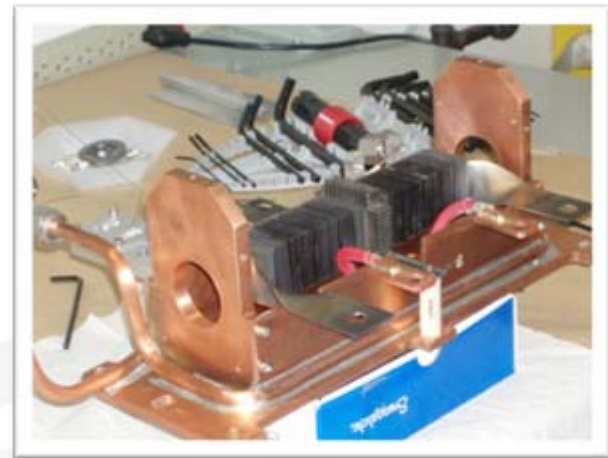
Inspections

- Training program review
- Routine regulatory compliance
- Pre-licence renewal compliance inspection (Dec 6th to 8th, 2011)

TRIUMF - Current regulatory issues

2012 Licensing Actions

- 🇨🇦 Operating licence renewal
 - CNSC has received application Nov 14, 2011
 - Public licensing hearing – Feb 15, 2012
 - Current licence expires – March 31, 2012
- 🇨🇦 Construction licence for ARIEL
- 🇨🇦 Red-tape reduction
 - New licence format
 - Streamlined process for changes that do not alter the safety case
 - Examining classification of accelerators



TRIUMF - In conclusion...

Positive work achieved to date
and ongoing improvements
well in-hand

- ✳ Significant licensing activity
underway for TRIUMF
- ✳ ARIEL and TRIUMF
 - Excellent opportunity for
university nuclear research
- ✳ Future of medical isotopes – what
will it be?



In Looking to the Future, We Must Not Forget the Past!

65TH ANNIVERSARY
E ANNIVERSAIRE

The Presidents

Andrew G.L. McNaughton	Chalmers J. MacKenzie	George C. Laurence	Donald G. Hurst	Alan Prince	Jon H. Jennkens	René J. Lévesque	Agnes J. Bishop	Linda J. Keen	Michael Binder
1946-1948	1948-1961	1961-1970	1970-1975	1975-1978	1978-1987	1987-1994	1994-2001	2001-2008	2008-Present

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**We Will Never
Compromise Safety...**



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