



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

## Nuclear Knowledge Management at the Canadian Nuclear Safety Commission



**IAEA TM/Workshop on Managing Nuclear Knowledge  
Trieste, Italy, August 22-26, 2005**

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Canada**



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

## Presentation Outline

- 
- Canadian Nuclear Safety Commission (CNSC)  
Mandate
  - CNSC Staff Organization
  - Nuclear Knowledge Management within the  
CNSC and outside the CNSC
  - Challenges
  - Solutions
  - Summary



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## CNSC Mandate

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### *Nuclear Safety and Control Act:*

- Regulate the development, production and use of nuclear energy and the production, possession and use of nuclear substances, prescribed equipment and prescribed information
- Achieve conformity with measures of control and international obligations
- **Disseminate scientific/technical/regulatory information** concerning the activities of the CNSC

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## CNSC Staff Organization

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- Approx. 525 employees - most at Head Office in Ottawa
- Staff at 7 reactor sites plus 5 regional offices
- Regulate over 2500 licensees from “cradle to grave”
  - Nuclear power reactors/research reactors/research facilities
  - Uranium mines and mills
  - Hospitals/Cancer Clinics
  - Industrial uses of nuclear substances
  - Waste management facilities

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## Nuclear Knowledge Management (NKM) at the CNSC

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- Regulatory Framework
- Regulatory Documents Program
- Research and Support Program
- Human Resources Management
- Information/Records/Document Management
- Management System
- External contributions to NKM

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## Regulatory Framework

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- Nuclear Safety and Control Act
- Regulations (General Safety and Control, Radiation Protection, Class I and Class II Facilities, Nuclear Substances and Radiation Devices, Nuclear Security, etc.)
- Licences/Orders
- Regulatory Documents
- Performance-based regulator

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## Regulatory Documents Program

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### Program Mandate

- Manage the development of regulatory documents
- Maintain regulatory documents and services
- Develop and administer a document management system

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## Regulatory Documents Program (cont.)

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### Program Purpose

- to document the philosophies, requirements and expectations of the CNSC
  - philosophies – regulatory policies
  - requirements – regulatory standards
  - expectations – regulatory guides

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## Regulatory Documents Program (cont.)

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- Historically – difficulties producing regulatory documents
  - Seeking perfection, bottom-up approach, unclear roles/responsibilities, prioritizing
- Regulatory Document Improvement Initiative
  - Improved processes, procedures, tools, Top management support, program is planned top-down, Steering Committee established

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## Regulatory Documents Program (cont.)

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- Development process similar to that used in other standards development organizations
- Seek out Subject Matter Experts (SMEs) for writing and for review teams
- Staff, licensees and public – opportunity to comment
- Published and posted on our website  
[www.nuclearsafety.gc.ca](http://www.nuclearsafety.gc.ca)
- Vision – hierarchy of documents flowing from Act/Regulations to provide clarity/regulatory expectations

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## Research and Support Program

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- Provides access to independent advice, expertise, experience outside the CNSC
- Generates knowledge and information
- CNSC owns resulting intellectual property
- Current program - 77 projects

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## Research and Support Program (cont.)

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- Objectives of the Program
  - supplement staff's knowledge with specialist expertise
  - address problems of potential safety significance
  - support regulatory decision-making
  - refine a staff position/opinion
  - to promote the dissemination of the results of the Research and Support projects
- [www.nuclearsafety.gc.ca](http://www.nuclearsafety.gc.ca)

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## Human Resources Management

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- Developed Internship Program in 2000
  - entry level program for university graduates
  - rigorous training/mentoring (transferring nuclear knowledge)
- Of the 20 interns, only one has left the CNSC
- Nuclear Engineering International Journal – July 2004

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## Human Resources Management (cont.)

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- Spin-off from Internship Program
  - Learning Management System; and
  - Development of nuclear, science and engineering training materials ([www.canteach.candu.org](http://www.canteach.candu.org))
- Focus shifting to succession planning
- Continue to transfer knowledge to new employees and capture knowledge from both new and more experienced staff

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## Information/Records/Document Management

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- Range from day-to-day e-mails/letters, licensing submissions to licensing decisions
- Government entity – subject to various policy and legal requirements – legislation
- Broad Government of Canada initiative
  - One tool being the Records, Document and Information Management System (RDIMS) – a single repository
- Exchange of electronic documents with licensees

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## Management System

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- CNSC's Management System integrates and aligns all this knowledge and information with our management principles, practices and processes
- Consistent with *IAEA Safety Standards Series Draft Safety Guide DS113 Management Systems for Regulatory Bodies*

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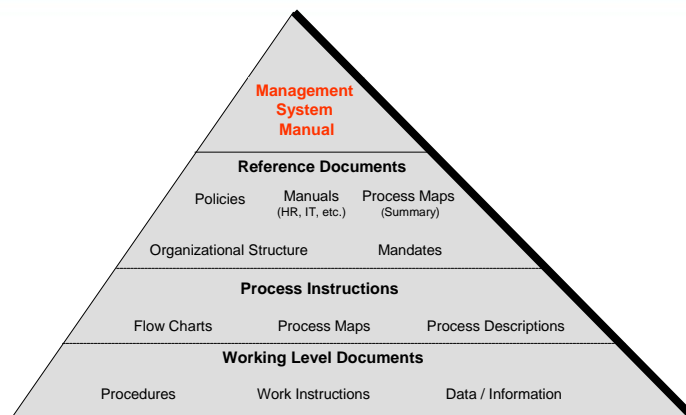
## Management System – Documentation



- Management System Manual (MSM) is our high-level overview/description of the Management System
- Supporting hierarchy of documentation
- Repository of nuclear knowledge necessary to support CNSC staff

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## Management System – Documentation (cont.)



The MSM “sits” at the top of the documentation hierarchy

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## Management System - Documentation (cont.)

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- Improves access to and use of acquired nuclear knowledge
- Promotes consistency in approach – continual improvement
- Promotes clarity (roles/responsibilities)
- Helps alleviate issues found in day-to-day operations
  - typically associated with gaps in documentation

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## Other CNSC Contributions to NKM

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- IAEA → CNSC contributes expertise to develop international standards, guides, technical documents
- Canadian Standards Association (CSA) → CNSC contributes funding and expertise to develop national standards
- Member, University Network of Excellence in Nuclear Engineering (UNENE) → contributes funding and technical support

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## Challenges

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- Resources
- Loss of knowledge
- Resistance to change
- Strategic risk areas for CNSC
  - aging of nuclear facilities
  - new reactors
  - new reactor technology
  - Long-term nuclear waste management

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## Some Solutions

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- Have Top and Middle Management support
- Train new staff/Retrain older staff
- Clarify roles/responsibilities/accountabilities
- Use people/groups for pilot projects who are passionate about your initiative
- Contract work out
- Have patience – implementation of new ideas/programs takes time

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## Summary

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CNSC is actively capturing and managing its nuclear knowledge in many ways

Necessary to fulfill our mandate

Linda J. Keen, CNSC President, "...to be one of the best nuclear regulators in the world"

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## Questions?

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