Canada's Nuclear Regulator

Evaluation of the Canadian Nuclear Safety Commission's Contributions to the Organisation of Economic Co-operation and Development – Nuclear Energy Agency

Final Evaluation Report

Approved on June 3, 2014

Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

Canada

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This document can be viewed on the CNSC website at nuclearsafety.gc.ca. To request a copy of the document in English or French, please contact:

Canadian Nuclear Safety Commission
280 Slater Street
P.O. Box 1046, Station B
Ottawa, Ontario K1P 5S9
CANADA

Tel.: 613-995-5894 or 1-800-668-5284 (in Canada only)
Facsimile: 613-995-5086
Email: info@cnsc-ccsn.gc.ca
Website: nuclearsafety.gc.ca
Facebook: facebook.com/CanadianNuclearSafetyCommission
YouTube: youtube.com/cnscccsn

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List of Acronyms

CADAK	Cable Ageing Data and Knowledge
CoG	Candu Owners Group
CODAP	Component Operational Experience, Degradation and Ageing Programme
CPMRS	CNSC Planning and Management Reporting System
CSA	Canadian Standards Association
DAA	Directorate of Assessment and Analysis
DEC	Departmental Evaluation Committee
DERPA	Directorate of Environmental and Radiation Protection and Assessment
Digital I & C Working Group	Digital Instrumentation and Controls working group
DNCFR	Directorate of Nuclear Cycle and Facilities Regulation
DPRR	Directorate of Power Reactor Regulation
DRIMPM	Directorate of Regulatory Improvement and Major Projects Management
DSM	Directorate of Safety Management
EAC	Evaluation Advisory Committee
EPRI	Electric Power Research Institute
EWG	Evaluation Working Group
FIRE	Fire Incidents Records Exchange
GIF	Generation IV International Forum
GoC	Government of Canada
IAEA	International Atomic Energy Agency
ISOE	Information System on Occupational Exposure
ITAS	Integrated Time Accounting System
MDEP	Multinational Design and Evaluation Programme
NEA	Nuclear Energy Agency
NSCA	Nuclear Safety and Control Act
OECD	Organisation of Economic Co-operation and Development
OECD/NEA	Organisation of Economic Co-operation and Development Nuclear Energy Agency
OPDE	Piping Failure Data Exchange
OPG	Ontario Power Generation
PRISME	Fire Propagation in Elementary, Multi-room Scenarios
SCAP	Stress Corrosion Cracking and Cable Ageing Project
SCD	Strategic Communications Directorate
STC	Standing Technical Committee
TBS	Treasury Board Secretariat
TSB	Technical Services Branch

Executive Summary

This report presents the findings, conclusions and recommendations of an evaluation of the Canadian Nuclear Safety Commission's (CNSC) contributions to the Organisation of Economic Co-operation and Development Nuclear Energy Agency (OECD/NEA). The evaluation examines the program's relevance, effectiveness, efficiency and economy, and design/delivery for continuous improvement during the period 2007/08 to 2011/12. An examination of the CNSC's participation in Standing Technical Committees was included in order to understand efficiency/economy. The conduct of this evaluation was undertaken between September 2012 and December 2012.

Program Context

Established in 1958, the Nuclear Energy Agency (NEA) is a specialised agency within the Organisation of Economic Co-operation and Development (OECD). The mission of NEA is to assist its member countries in maintaining and further developing scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes. Its membership consists of thirty OECD member countries, including Canada. The activities of the NEA programme of work are undertaken by eight Standing Technical Committees (STC), Joint Research Projects, and two initiatives: the Generation IV International Forum (GIF) and Multinational Design and Evaluation Programme (MDEP).

Over the period March 31, 2007 to March 31, 2012, the CNSC spent $1,71M in contributing and participating in the OECD/NEA. The research and data obtained as a result of the CNSC contributing and participating in OECD/NEA work is used to improve: the CNSC's regulatory framework, criteria for risk-informed and performance-based inspections, criteria for design reviews and technical assessments, regulatory capabilities, in general, and to share technical knowledge with stakeholders.

Methodology

This evaluation was conducted in accordance with the Treasury Board Policy on Evaluation, April 1, 2009, and addresses its core evaluation issues: consistency with federal roles and responsibilities, alignment with Government priorities, continued need for the program, achievement of expected outcomes, and demonstration of efficiency and economy.

The evaluation includes the use of multiple lines of evidence and complementary research methods to ensure the reliability of the information and data collected. Three main lines of inquiry were employed in this evaluation:

- document review;
- interviews; and
- financial review.

OECD-NEA Contributions Impact on the CNSC

The evaluation found that the contribution agreements supporting CNSC's participation in the OECD/NEA Joint Research Projects and MDEP that are funded through the CNSC's Research and

Support Program have resulted in benefits to the CNSC in meeting its objective "to enable the CNSC to address the demand for clarity of regulatory requirements and institute changes to the regulatory framework in order to make it more strategic, risk informed and aligned with domestic and international benchmarks."

As a participant, the CNSC has realized numerous improvements from its participation with OECD/NEA without having to fully fund the projects to take advantage of the benefits achieved.

Joint Research Project / MDEP	**Project budget (total or annual)**	**CNSC's Contribution portion %**	**Positive results for the CNSC**
Component Operational Experience, Degradation and Ageing Programme (CODAP) Project *CODAP (combines ongoing work related to OPDE and SCAP as of 2013-2014)*	Euro 0.12 million annually (120,000)	11%	• Enhanced Regulatory Framework by contributing to RD-334, RD-99.1 S-294, GD-99.1, and two staff review procedures • Enhanced regulatory oversight by supplying information on: - calandria tubes, resulting in updates to regulatory requirements - information to improve radiation protection inspection reports - information accessible through networking with other MDEP participants • Enhanced Integrated Safety Assessment of Nuclear Power Plants (in 2010 only) • Enhanced CNSC design review process by obtaining information on the AP1000 technology • Improved indicators for inspections by supplying information to enhance radiation protection guides • Shared knowledge with stakeholders through teleconferences, consultations and presentations of data to licensees and CoG • Shared knowledge from issue-specific working groups through common position papers, teleconferences and consultations
Piping Failure Data Exchange (OPDE) Project Prior to 2013-14	*Combined with CODAP*	----	
Stress Corrosion Cracking and Cable Ageing Project (SCAP)	*Combined with CODAP*	----	
Fire Incidents Records Exchange (FIRE) Project	Euro 84,000 annually	11%	
Fire propagation in Elementary, Multi-room Scenarios (PRISME/PRISME-2)	Euro 7 million	4 %	
International Common-cause Data Exchange (ICDE) Project	Euro 120,000 annually	13%	
Information System on Occupational Exposure (ISOE)	Euro 455,493	23%	
Multinational Design Evaluation Programme (MDEP)	Euro 505,980 annually	11%	

Relevance

The Nuclear Safety and Control Act (NSCA) supports Commission activities that provide the public with scientific, technical advice and information. It was found that the contribution agreements supporting CNSC's participation in the OECD/NEA Joint Research Projects and MDEP that are funded through the CNSC's Research and Support Program reflect its objective "to enable the CNSC to address the demand for clarity of regulatory requirements and institute changes to the regulatory framework in order to make it more strategic, risk informed and aligned with domestic and international benchmarks." Additionally, interview evidence supports continued contribution and participation in the OECD/NEA. The benefits attained are: (1) access to information that enables the CNSC to obtain lessons learned and best practices as well as anticipate problems and react accordingly; (2) contributes to the credibility of the CNSC internationally to ensure there is Canadian influence on projects and their outcomes; and, (3) fosters networking and professional competency among CNSC staff.

While the CNSC has referenced its contributions and participation in the OECD/NEA in Annual Reports, it has not consistently been reflected at a departmental level through Departmental Performance Reports and Report on Plans and Priorities or the CNSC's core priorities (Core + 4Cs[1]). Moreover, where alignment has been achieved to CNSC's corporate priorities, it is only been exhibited by a couple of the Joint Research Projects.

Continued contribution and participation in OECD/NEA is predicated on responding to the needs of the CNSC and much of the potential for on-going improvements resulting from the Joint Research Projects and MDEP will depend on how the research and activities progress as well as the ability to align them with the priorities of the CNSC.

Effectiveness

The effectiveness of CNSC's contribution to the OECD/NEA can be measured by improvements to its regulatory framework, the sharing of technical knowledge with stakeholders, improvements to criteria for risk-informed inspections, and enhancements to CNSC's compliance reporting and regulatory oversight capabilities for licensing and compliance. Specific to MDEP, demonstrated effectiveness should result in improved design review criteria and technical assessment criteria for new builds and existing facilities.

To date, the CNSC has not realized the full impacts of its contributions to the OECD/NEA. This is in part driven by the fact that each Joint Research Project and MDEP contribution is unique and therefore the timeframe to achieve expected results varies. Some of the older projects, such as ISOE (first contribution signed in 1992) have fully demonstrated intended impacts, whereas other projects are at too early of a stage to determine achievement of results. Much of this discrepancy stems from the fact that necessary performance information relating results of Joint Research Projects and MDEP with CNSC priorities was never articulated.

<u>Fully Demonstrated Outcomes</u>

[1] The CNSC corporate priorities, referred to as the Core + 4Cs, represents the day-to-day responsibilities performed by the work of the CNSC (the Core) that adheres to the commitment to ongoing improvements, clarity of requirements, capacity for action, and communication (the 4Cs).

The CNSC is very effective at sharing information and data obtained from its participation in the OECD/NEA projects and MDEP with licensees, vendors, and standards development organizations such as the Canadian Standards Association.

Early evidence supports the effectiveness of MDEP. MDEP has had an impact on the efficiency and cost-effectiveness of the design reviews being undertaken of the AP1000 technology. Additionally, the CNSC expects to experience a fuller impact to the improvement of its design review criteria through the adoption he Code Comparison Report which has recently been adopted by its Codes and Standards Working Group.[2]

Partially Demonstrated Outcomes

There have been some measurable impacts to the CNSC's regulatory framework as a result of Joint Research Projects. This was the case for 5 of 7 projects; however, those that are not currently contributing are expected to do so in the near future.

Depending on the nature of some of the Joint Research Projects, licensees are required to collect and report data. In turn, this information has had a successful impact on CNSC regulatory capabilities; namely, the improvement of radiation inspection reports, and updates to requirements for Nuclear Power Plants to pull tubes on a periodic basis. Additionally, there have also been some improvements to criteria to radiation protection indicators for inspections, as demonstrated by one Joint Research Project.

Outcomes that Require Improvement

There is very limited evidence that the CNSC's participation in OECD/NEA Joint Research Projects has enhanced the CNSC's performance reports, with the exception of the ISOE project which has impacted the "Integrated Safety Assessment of Nuclear Power Plants" report.

While MDEP has not improved any indicators for inspection to date, there is evidence that results of the Vendor Inspection Co-operation Working Group as well as the Codes and Standards Working Group will be used to develop a regulatory framework document to observe inspections or to conduct independent inspections.

Efficiency and Economy

Notwithstanding the lack of performance data that is required to complete a full assessment of efficiency and economy, all available financial information that exists was analyzed. Proxy measures, as a series of interview questions, were undertaken to assess efficiency and economy. Additionally, the assessment of efficiency and economy was enhanced by an examination of CNSC funding spent on STCs in order to altogether address total funding provided to the OECD/NEA.

The CNSC's contribution and participation in OECD/NEA Joint Research Projects, MDEP and STCs represent a cost-effective and efficient means to achieve immediate outcomes. There is strong evidence

[2] See http://www.oecd-nea.org/mdep/working-groups/cswg.html for further details. The report is planned to be used within the CNSC regulatory context in order to assess new builds using PWR technologies as it relates to compliance with pressure boundary expectations.

that resources, including staff time and funding, allocated to OECD/NEA Joint Research Projects, MDEP and STCs have been used efficiently and that there are measurable returns on investment as a result of this participation. In all cases where the CNSC could achieve the same output/outcomes, a considerable amount of financial contributions and resources (staff and time) would be required.

The financial analysis revealed that of the total funding the CNSC allocates to OECD/NEA, travel associated with participating in the OECD/NEA accounts for over two-thirds, with the majority supporting CNSC's participation in STCs. While information pertaining to exact person days, or CNSC staff time, was not available due to the variation in ITAS reporting and unavailability of cost codes associated with all aspects of participation in OECD/NEA, an estimate was calculated based on financial information associated with travel. The estimated number of person days further supports the evidence that the CNSC spend more time on STCs than the Joint Research Projects and MDEP.

Lastly, while most CNSC representatives participating in OECD/NEA feel they are provided with sufficient time to participate in their Joint Research Projects, MDEP, or STC, there is some evidence that staff do not always officially track and report the time spent on OECD/NEA work.

Design/Delivery for Continuous Improvement

There are numerous inhibitors/barriers and facilitators to success identified for the CNSC in participating in the projects/working groups and committees of the OECD/NEA. The facilitators to success ranged from management support, CNSC staff expertise and interest, skills and expertise of members and Chair from participating countries, and the openness/willingness of participating countries to share information.

The inhibitors/barriers to success, on the other hand, ranged from staff not having enough time to participate, differing regulatory perspectives/priorities, language/cultural issues, and, specific to a few of the projects, concern or lack of interest on part of the licensee to provide data. Based on the number of projects/working groups and committees that the CNSC participates in, the inhibitors/barriers do not seem to deter participation in any significant manner.

There are examples of positive unexpected/unplanned results by the CNSC participating in OECD/NEA, they include: sharing and learning from Fukushima on an international scale, ability to identify safety gaps, and ability to generate new knowledge in codes and standards.

Moving forward, while there is evidence that information is being communicated by CNSC participants of OECD/NEA to their immediate supervisor, particularly through trip reports, it does not percolate throughout CNSC. To increase awareness and share information, various suggestions were offered by interview respondents with most citing hosting annual workshops and presentations. These workshops and presentations could engage a variety of CNSC staff and management, across all business lines.

Recommendations

1. Construct clear and measurable performance objectives and activities:
    a. Require Technical Authorities to establish and monitor performance for each of their Joint Research Projects and MDEP
    b. Establish performance objectives for CNSC's participation in Standing Technical Committees and link performance to an OECD/NEA logic model

2. Report to Management Committee, on an annual basis, the performance outcomes in support of the Joint Research Projects, MDEP and STCs.

3. Improve the communication of results from CNSC contributions and participation in OECD/NEA with internal stakeholders.

1 Introduction

This report presents the findings, conclusions and recommendations of an evaluation of CNSC's contribution agreements with the Organisation of Economic Co-operation and Development Nuclear Energy Agency (OECD/NEA). The evaluation examines the relevance, effectiveness, efficiency and economy, and design/delivery for continuous improvement of those agreements during the period 2007/08 to 2011/12. An examination of the CNSC's participation in Standing Technical Committees was included in order to understand efficiency/economy. The evaluation was conducted between September 2012 and December 2012.

The evaluation report is organized as follows:

- Section 1: Program description and evaluation context;
- Section 2: Methodology for the evaluation;
- Section 3: Conclusions for supporting evidence; and
- Section 4: Summary and recommendations.

1.1 Program Description

1.1.1 Nuclear Energy Agency

Established in 1958, the Nuclear Energy Agency (NEA) is a specialised agency within the Organisation of Economic Co-operation and Development (OECD). Its membership consists of 30 OECD member countries including Canada.

The mission of the NEA is: "to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economic use of nuclear energy for peaceful purposes; as well as, to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development."[3]

NEA member countries assert that safety can be maintained, and even enhanced, through the use of operating experience, analysis, research and various tools and research can improve the efficiency and effectiveness of a regulatory system by helping to identify the items most important to safety and by anticipating future regulatory challenges, thus allowing resources to be focused on the most significant concerns.[4]

A Nuclear Energy Steering Committee provides oversight to ensure that the NEA carries out its activities in conformity with the provisions of its Statute and OECD Council decisions, and to ensure the program

[3] Organisation of Economic Co-operation and Development, OECD-NEA Strategic Plan, 2011-2016, p. 39, http://www.oecd-nea.org/nea/Strategic-plan-2011-2016.pdf.
[4] Organisation of Economic Co-operation and Development, Main Benefits from 30 Years of Joint Projects in Nuclear Safety, 2012, http://www.oecd-nea.org/nsd/reports/2012/nea7073-30-years-joint-safety-projects.pdf.

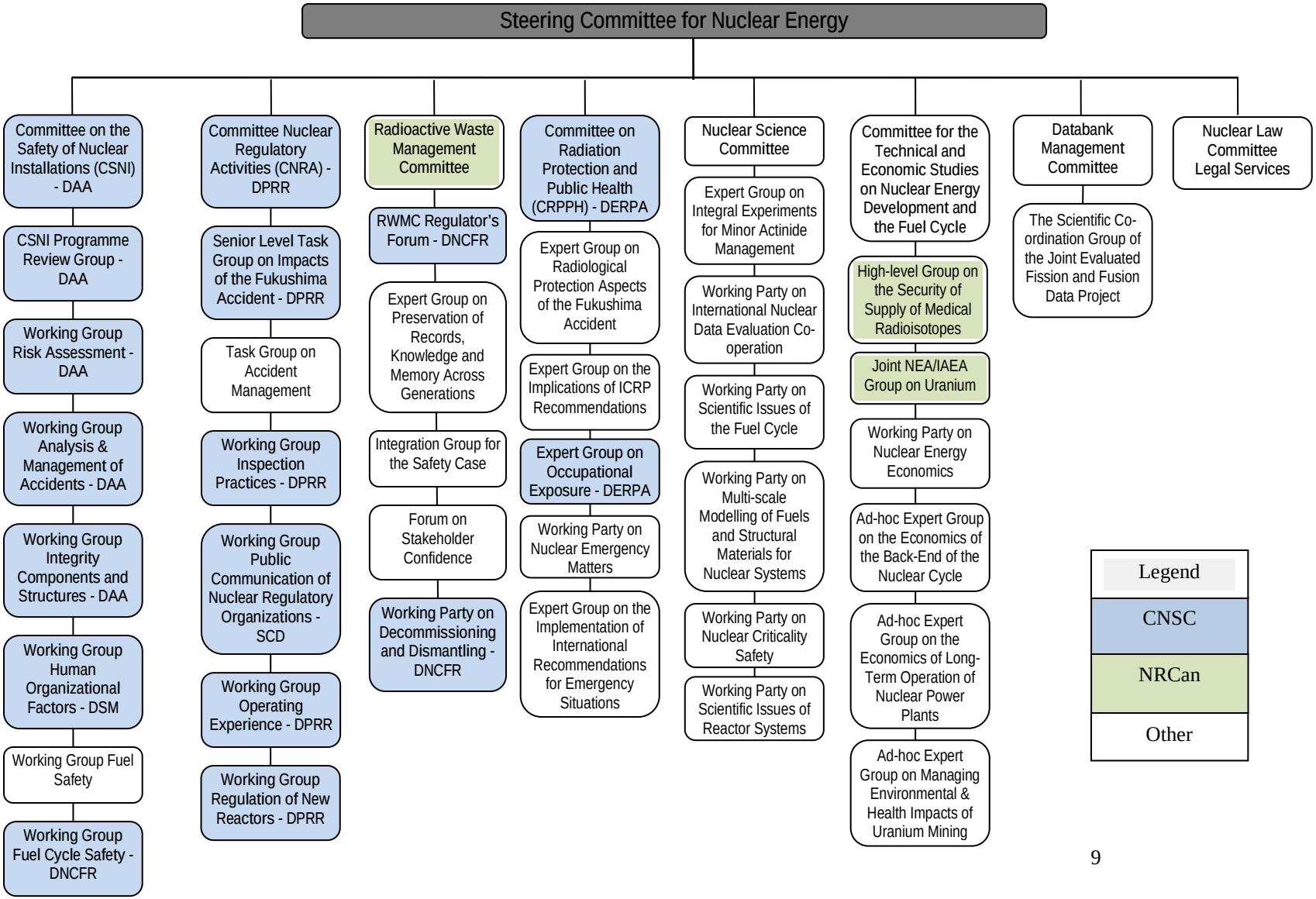
responsive to the needs of NEA member countries and within the policy framework outlined by the Steering Committee.[5]

Standing Technical Committees (STC) have been established by the Nuclear Energy Steering Committee to carry out the NEA Programme of Work efficiently in the sectors of activity, and to develop the basis strengths of the Agency as a key international instrument of co-operation.[6] Each STC contributes to the maintenance of nuclear performance and identification of emerging issues through various subject area working groups.

Joint Research Projects were established to pursue research and share data with respect to particular areas or problems. In addition, the NEA has added two unique initiatives to its structure: the Generation IV International Forum (GIF) in 2001 and the Multinational Design Evaluation Programme (MDEP) in 2005.

The Structure of the NEA is represented below by STC and their working groups. The CNSC's involvement in each of these activities is shown with the relevant Directorate's [7] participation.

[5] Organisation of Economic Co-operation and Development, OECD-NEA Strategic Plan, 2011-2016, p. 27, http://www.oecd-nea.org/nea/Strategic-plan-2011-2016.pdf.
[6] Organisation of Economic Co-operation and Development, OECD-NEA Strategic Plan, 2011-2016, p. 26, http://www.oecd-nea.org/nea/Strategic-plan-2011-2016.pdf.
[7] DAA: Directorate of Assessment and Analysis, DERPA: Directorate of Environmental and Radiation Protection and Assessment, DNCRF: Directorate of Nuclear Cycle and Facilities Regulation, DPRR: Directorate of Power Reactor Regulation, DSM: Directorate of Safety Management, DRIMPM: Directorate of Regulatory Improvement and Major Projects Management.


Steering Committee for Nuclear Energy
Committee on the Safety of Nuclear Installations (CSNI) - DAA
CSNI Programme Review Group - DAA
Working Group Risk Assessment - DAA
Working Group Analysis & Management of Accidents - DAA
Working Group Integrity Components and Structures - DAA
Working Group Human Organizational Factors - DSM
Working Group Fuel Safety
Working Group Fuel Cycle Safety - DNCFR
Committee Nuclear Regulatory Activities (CNRA) - DPRR
Senior Level Task Group on Impacts of the Fukushima Accident - DPRR
Task Group on Accident Management
Working Group Inspection Practices - DPRR
Working Group Public Communication of Nuclear Regulatory Organizations - SCD
Working Group Operating Experience - DPRR
Working Group Regulation of New Reactors - DPRR
Radioactive Waste Management Committee
RWMC Regulator's Forum - DNCFR
Expert Group on Preservation of Records, Knowledge and Memory Across Generations
Integration Group for the Safety Case
Forum on Stakeholder Confidence
Working Party on Decommissioning and Dismantling - DNCFR
Committee on Radiation Protection and Public Health (CRPPH) - DERPA
Expert Group on Radiological Protection Aspects of the Fukushima Accident
Expert Group on the Implications of ICRP Recommendations
Expert Group on Occupational Exposure - DERPA
Working Party on Nuclear Emergency Matters
Expert Group on the Implementation of International Recommendations for Emergency Situations
Nuclear Science Committee
Expert Group on Integral Experiments for Minor Actinide Management
Working Party on International Nuclear Data Evaluation Co-operation
Working Party on Scientific Issues of the Fuel Cycle
Working Party on Multi-scale Modelling of Fuels and Structural Materials for Nuclear Systems
Working Party on Nuclear Criticality Safety
Working Party on Scientific Issues of Reactor Systems
Committee for the Technical and Economic Studies on Nuclear Energy Development and the Fuel Cycle
High-level Group on the Security of Supply of Medical Radioisotopes
Joint NEA/IAEA Group on Uranium
Working Party on Nuclear Energy Economics
Ad-hoc Expert Group on the Economics of the Back-End of the Nuclear Cycle
Ad-hoc Expert Group on the Economics of Long-Term Operation of Nuclear Power Plants
Ad-hoc Expert Group on Managing Environmental & Health Impacts of Uranium Mining
Databank Management Committee
The Scientific Co-ordination Group of the Joint Evaluated Fission and Fusion Data Project
Nuclear Law Committee Legal Services
Legend
CNSC
NRCan
Other

1.1.2 Joint Research Projects

Supporting the work of the STCs, the CNSC contributes to and participates in various Joint Research Projects and the MDEP. The Joint Research Projects, including their objectives, duration and status/results are exhibited in Table 1 below.

Table 1 – Description of Joint Research Projects

Component Operational Experience, Degradation and Ageing Programme (CODAP)	
Objectives	**Initiated / Ended**
a) to collect information on passive metallic component degradation and failures of the primary system, reactor pressure vessel internals, main process and standby safety systems, reactor pressure vessel internals, main process and standby safety systems, and support systems (i.e., ASME Code Class 1, 2 and 3, or equivalent), as well as non safety-related (non-Code) components with significant operational impact; b) to establish a knowledge base for general information on component and degradation mechanisms; and c) to assess the information collected to develop topical reports on degradation mechanisms.	2011 - ongoing **Status / Results** Ongoing with results expected by 2014; to date, the database structure and coding guidelines have been completed. See results for OPDE and SCAP.
OECD Piping Failure Data Exchange Project (OPDE)	
Objectives	**Initiated / Ended**
a) collect and analyze piping failure event data to promote a better understanding of underlying causes, impact on operations and safety, and prevention; b) generate qualitative insights about the root causes of piping failure events; c) establish a mechanism for efficient feedback of experience gained in connection with piping failure phenomena, including the development of defence against their occurrence; and d) collect information on piping reliability attributes and influence factors to facilitate estimation of piping failure frequencies when so decided by the Project Review Group.	2002 - 2011 **Status / Results** The project collected piping failure event data from NPPs around the world and processed the information into a database. The database includes 3800 events and has been used in nuclear regulatory processes including PSA, PFM, RI-ISI, Leak before Break analysis and predicting piping failure frequencies for both safe operation and maintenance activities.
Stress Corrosion Cracking Cable Ageing Project (SCAP)	
Objectives	**Initiated / Ended**
a) establish two complete databases with regard to major ageing phenomena for stress corrosion cracking (SCC) and degradation of cable insulation respectively, through collective efforts by OECD/NEA member countries; b) establish a knowledge base by systematically compiling and evaluating collected data and information; and c) perform an assessment of the data and identify the basis for commendable practices which would help regulators and operators to enhance ageing management.	2006 – 2010 **Status / Results** The results of SCAP include a database of 578 events, 253 related to piping and 325 related to non-piping passive components, as well as a knowledge base and commendable practices which will support both regulators and operators. The international knowledge that was collected in this project will help industry organizations to revise existing standards or develop new standards.
Fire Incident Records Exchange Project (FIRE)	
Objectives	**Initiated / Ended**

a) to collect fire event experience (by international exchange) in an appropriate format in a quality-assured and consistent database; b) to collect and analyse fire events over the long term so as to better understand such events and their causes, and to encourage their prevention; c) to generate qualitative insights into the root causes of fire events in order to derive approaches or mechanisms for their prevention and to mitigate their consequences; d) to establish a mechanism for efficient operation feedback on fire event experience including the development of policies of prevention, such as indicators for risk-informed and performance-based inspections; and e) to record characteristics of fire events in order to facilitate fire risk analysis, including quantification of fire frequencies.	2003 - ongoing **Status/Results** Coding guidelines completed, 370 events in database, 8 publications.
International Common-cause Failure Data Exchange Project (ICDE Project)	
Objectives	**Initiated / Ended**
a) collect and analyse Common-Cause Failure (CCF) event over the long term so as to better understand such events, their causes, and their prevention; b) generate qualitative insights into the root causes of CCF events which can then be used to derive approaches or mechanisms for their prevention or for mitigating their consequences; c) establish a mechanism for the efficient feedback of experience gained in connection with CCF phenomena, including the development of defences against their occurrence, such as indicators for risk based inspections; d) generate quantitative insights and record event attributes to facilitate quantification of CCF frequencies in member countries; and e) use the ICDE data to estimate CCF parameters.	1994 – ongoing **Status/Results** Coding Guidelines completed (updated version October, 2011) 7500 events in 10 categories, 10 CSNI reports, 14 publications
Information System on Occupational Exposure (ISOE)	
Objectives	**Initiated / Ended**
To make available to all ISOE participants - a) broad and regularly updated information, data and experience on i) methods to optimise the protection of workers and on ii) occupational exposure in nuclear power plants, including ALARA experience of ISOE Participants and evaluation and analysis of the data assembled; and, b) a communications network for dissemination of information and related experience on these issues, including information exchange platforms, workshops and symposia, cooperative undertakings and publications and resources as a contribution to the optimisation of radiation protection.	1992 - ongoing **Status/Results** Comprehensive database of information collected from 394 operating reactors and 84 shutdown reactors including annual outage dose, outage duration, normal ops and total unit doses including outage task/job duration, dose and crew size. A communications network including 70 participating utilities from 29 countries and 27 regulatory authorities from 24 countries has been implemented.
Fire Propagation in Elementary Multi-Room Scenarios (PRISME-2)	
Objectives	**Initiated / Ended**
The Programme is divided into four fire test campaigns: • Three campaigns corresponding to typical fire scenarios identified based on analysis of partners' needs; and • One campaign where the scenario and the configuration will be set after discussion with project participants, on the basis of the results of the three previous fire test campaigns and numerical simulations.	2006 - ongoing **Status/Results** PRISME-2 not yet completed and therefore no results are reported. For PRISME all four experimental campaigns were completed and knowledge was obtained on smoke movements from the fire room to adjacent rooms, the effects of under-ventilated conditions on the fire

	source, the electrical cable behaviour submitted to a high thermal stress, the implementation of a large experimental database and an international research network.

This evaluation does not examine the Cable Ageing Data and Knowledge (CADAK) Project. The CNSC has commenced participation in this committee since Spring of 2012, results of the contribution will be assessed in a future evaluation.

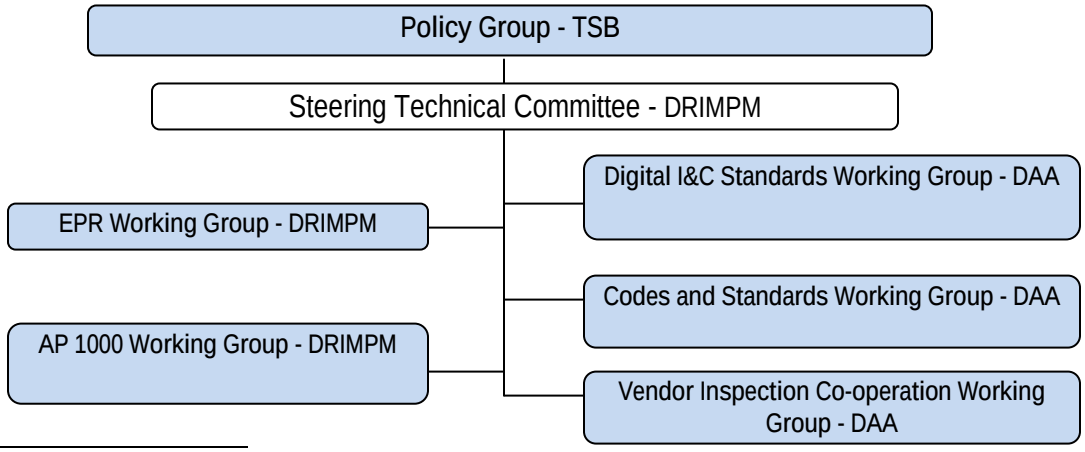
1.1.3 Multinational Design and Evaluation Programme

The MDEP is a multinational initiative taken by national safety authorities. It aims to develop innovative approaches to leverage the resources and knowledge of the national regulatory authorities, who are currently or will be tasked with the review of new power reactor plant designs.

The main objective of the MDEP is to enable increased co-operation and establish mutually agreed upon practices to enhance the safety of new reactor designs. The enhanced co-operation among regulators is intended to improve the effectiveness and efficiency of the regulatory design reviews which are part of each country's licensing process. The programme focuses on co-operation and convergence of regulatory practices, and is intended to lead to convergence of regulatory requirements. The goal of MDEP is not to independently develop new regulatory standards, but to build upon the similarities already existing. In addition, the common positions developed in MDEP will be shared with the IAEA for consideration in the IAEA standards development programme.

According to the 2011-2012 MDEP Annual Report, the MDEP has been successful in meeting the expected outcomes as defined in MDEP (TORs) by: increasing knowledge transfer, identifying similarities and differences in the regulatory practices; increasing stakeholders' understanding of regulatory practices; and enhancing the ability of regulatory bodies to co-operate in reactor design evaluations, vendor inspections, and construction oversight, leading to more efficient and more safety-focused regulatory decisions.[8]

The MDEP structure and CNSC's involvement, by Directorate/Branch is highlighted below.



[8] OECD, Nuclear Energy Agency, Multinational Design Evaluation Programme, *Annual Report*, March 2011-2012, pp. 9-10, http://www.oecd-nea.org/mdep/annual-reports/MDEP-Annual-Report-2011.pdf.

There is one contribution agreement associated with MDEP and includes the above highlighted groups.

1.1.4 Canadian Nuclear Safety Commission Participation in the Nuclear Energy Agency

As exhibited in the logic model in Appendix C, through the CNSC's contributions to the NEA, the CNSC seeks to:

- Enhance its regulatory framework
- Enhance compliance reporting
- Enhance inspections by improving inspection criteria
- Enhance risk-informed review and technical assessment of licensing applications and compliance activities by improved design review criteria and technical assessment criteria

Activities associated with the program are described below:

- Attendance of meetings
- Analysis and sharing of technical/scientific data
- Participation in symposiums and task groups
- Exchange of best practices and lessons learned

1.2 Resources

The resources that the CNSC provides the OECD/NEA for the administration and establishment of the Joint Research Projects and MDEP are listed below in Table 2. The total contributions from March 31, 2007 to March 31, 2012 amount to $556K. A further break-down of resources, including travel and estimated person days was calculated in support of this evaluation and can be found in the section "Efficiency and Economy" as well as Appendix B.

Table 2 – Canadian Nuclear Safety Commission Contributions to the OECD/NEA, per financial year in thousands of dollars

Year / Contribution	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
ICDE	$ 17.2	$ 19.5	$ 18.1	$ 3.7	$ 11.9
OPDE	$ 6.0	$ 8.6	$ 7.1	$ 6.4	---
ISOE	$ 11.3	$ 15.0	$ 15.0	$ 15.0	$ 15.0
FIRE	$ 26.6	$ 29.3	---	$ 9.7	$ 9.5
PRISME-2	---	---	---	---	$ 70.3
CODAP	---	---	---	---	$ 6.7
MDEP	---	$ 64.9	$ 59.5	$ 54.3	$ 55.6
TOTAL	$ 61.1	$ 137.3	$ 99.7	$ 89.1	$ 169.0

The project work of OPDE was completed in 2010-2011, and any remaining work was rolled into a new project, entitled, CODAP. PRISME-2 was created in 2011-2012.

1.3 Governance

The CNSC's contributions to the OECD/NEA are managed by several stakeholders within the CNSC.

Interest in participating in one of the Joint Research Projects or MDEP is initiated by a need for scientific, technical information within a specified field by a CNSC staff member (e.g., cable ageing at Nuclear Power Plants). Following, a request is made to the CNSC's Research and Support Program to prepare a

contribution agreement. The CNSC staff member originating the request, or a delegate, is named as Technical Authority. In other words, this person is responsible for overseeing CNSC's participation and implementation of the contribution agreement.

Monitoring of performance is fulfilled by the Technical Authority who is responsible for developing, implementing and updating performance metrics and reporting to the CNSC, including the CNSC Research and Support Program. The CNSC's Research and Support Program, who is responsible for overseeing all grants and contributions, reviews performance reporting at regular intervals throughout the contribution timeframe to ensure CNSC objectives are met.

In the case of STCs, which are not funded through contribution agreements, continued participation is managed by the CNSC Director General. The Director General approves all travel for their staff participating in STCs.
Periodically, the Operations Management Committee (OMC) is briefed on the full range of international committees and working groups (including OECD/NEA) that operational staff participate in.

1.4 Stakeholders

There are a number of internal and external stakeholders of the CNSC's contributions to the OECD/NEA.

The primary internal stakeholders are CNSC staff and management who participate in the Joint Research Projects, MDEP, and STC working groups and committees. Most of the CNSC representatives are members of the Technical Services Branch and Regulatory Operations Branch of the CNSC.

Supporting the CNSC representatives participating in the OECD/NEA are CNSC staff and management responsible for enhancing regulatory capabilities such as: developing, amending and implementing the regulatory framework documents, revising criteria for risk-informed and performance-based inspections, and enhancing design reviews and technical assessments. Additionally, supporting stakeholders include the CNSC staff who participate in the Canadian Standards Association (CSA) and other standards development organizations that have used information/data from the OECD/NEA to enhance the technical basis for standards development.

The external stakeholders are varied and include Canadian licensees and vendors who contribute their own data as part of some of the projects and working groups as well as share lessons and learned and best practices, and other national regulatory and safety authorities who benefit from the experience and information/data that the CNSC shares. Additionally, it should be noted that the staff of the NEA benefit by having multiple national regulators, including Canada, participate in its various projects/working groups and committees in order to contribute to the best scientific and technical work of the Agency. Furthermore, the International Atomic Energy Agency (IAEA), as a stakeholder to the NEA through various joint groups benefits indirectly through Canada's participation in that project.

2 Evaluation Scope and Objectives

The objectives of this evaluation are to assess the relevance, effectiveness, efficiency and economy, and design/delivery for continuous improvement of the CNSC's contributions to the Joint Research Projects and MDEP of the OECD/NEA during the period from March 31, 2007 to March 31, 2012. An

examination of the CNSC's participation in STCs was also performed for the purposes of understanding the total efficiency and economy impacts of CNSC's participation in the OECD/NEA.

2.1 Evaluation Questions

This evaluation was conducted in accordance with the Treasury Board Policy on Evaluation, April 1, 2009. It addresses the core evaluation issues of consistency with federal roles and responsibilities, alignment with Government priorities, continued need for the program, the achievement of expected outcomes, and the demonstration of efficiency and economy.

During the planning phase for this evaluation, June 2012 to September 2012, the evaluation team at the CNSC consulted with an Evaluation Working Group (EWG) and an Evaluation Advisory Committee (EAC) in order to validate the Evaluation Framework, including the Evaluation Matrix (see Appendix E), and to generally guide the evaluation. As outlined below, the following evaluation questions were agreed upon:

Relevance

- Is there a legitimate role for the CNSC's participation in the OECD/NEA?
- Are the contributions to OECD/NEA aligned with priorities of the federal government and departmental strategic priorities/outcomes?
- Is there a continued need for the CNSC to participate in the OECD/NEA?
- Are CNSC objectives adequately addressed through its contribution and participation in OECD/NEA?

Effectiveness

- To what extent has CNSC's participation in OECD/NEA Joint Research Projects enhanced the CNSC's regulatory framework?
- To what extent has CNSC participation in OECD/NEA Joint Research Projects enhanced the CNSC's performance reports?
- To what extent has the CNSC's participation in OECD/NEA Joint Research Projects and the MDEP enhanced regulatory oversight capabilities to review data submitted by licensees?
- To what extent has the CNSC's participation in OECD/NEA Joint Research Projects and the MDEP increased its ability to share technical knowledge with stakeholders?
- To what extent has the CNSC's participation in OECD/NEA Joint Research Projects and the MDEP improved indicators for inspections?
- To what extent has the CNSC's participation in the MDEP enhanced the CNSC's design reviews and technical assessments of new licence applications?

Efficiency and Economy

- Have resources (contribution and travel dollars and staff time) been used to optimize outputs?
- Are the administrative activities of the OECD/NEA contribution agreements well executed so as to maximize the benefits of the immediate outcomes?
- Are there alternative methods which ensure the same achievement of immediate outcomes?

Design and Delivery

- What have been some of the inhibitors/barriers and facilitators to success?
- What have been some of the unintended/unplanned results of program implementation?

- How effective are the channels of communication for management of the CNSC's participation in OECD/NEA?

3 Evaluation Approach and Methodology

The program evaluation matrix (see Appendix E) outlines which methods were used to capture data for each of the evaluation indicators. The evaluation matrix includes the use of multiple lines of evidence and complementary research methods as a means to ensure the reliability of the information and data collected. Three main lines of inquiry were employed in this evaluation. These were both quantitative and qualitative, and include a document review, interviews, and financial analysis. A description of the data sources is described below by line of inquiry.

3.1 Data Sources

3.1.1 Document Review

A document review was undertaken for the purposes of describing activities, outputs and mandate of the OECD/NEA. It was also used to assess relevance, establishing the impact on the CNSC's regulatory framework and compliance activities, and to assess best practices and lessons learned.
Identified sources include, but are not limited to:

- Contribution Agreements between CNSC and the OECD/NEA
- CNSC Departmental Performance Reports and Reports on Plans and Priorities
- CNSC regulations, regulatory documents, guidance documents and staff review procedures
- Nuclear Energy Agency reports and publications
- CNSC PowerPoint presentations on contributions to the OECD/NEA

A full list of documents is listed in Appendix E. A customized template was developed by the lead evaluator to populate findings and conclusions from the document review; this enabled the extraction and analysis of relevant information according to evaluation questions and indicators.

3.1.2 Interviews

Key informant interviews were conducted with CNSC staff for the purpose of addressing program relevance, productivity of outputs leading to achievement of outcomes, efficiency and economy and design/delivery for continuous improvement. Interview participants included all Technical Specialists, Directors, and senior management representing the CNSC on Joint Research Projects, the MDEP and STCs. An additional CNSC representative was also interviewed to confirm information related to assessment of nuclear power plant safety. Table 3 below identifies the number of key informant interviews by group.

Table 3 – Key Informant Interviews

Interview Group	Number of Interviews
Representatives on Joint Research Projects	6
Representatives on MDEP	7
Representatives on Standing Technical Committees	12
Senior Management	4

Other	1
Total	30

An interview guide was drafted based on the evaluation matrix presented in the evaluation framework, as well as findings and conclusions based on the document review. The guide was pre-tested with members of the EWG for technical content, clarity, length and flow.

Interview participants were sent an engagement letter three weeks before the interview was conducted. Interviews were conducted in-person from October 18, 2012 to November 15, 2012.

Interviewees were assured of their anonymity (according to privacy and access to information laws). Interview findings are reported in an aggregate manner with no references to an individual interviewee.

A customized template was developed by the lead evaluator to populate findings and conclusions from the interviews; this enabled the extraction and analysis of relevant information according to evaluation questions and indicators.

3.1.3 Financial Review

For the purpose of addressing efficiency, finances related to the CNSC's contribution and participation in OECD/NEA were reviewed and analyzed. Financial information was extracted from the financial system of record (Freebalance). The CNSC Planning and Management Reporting System (CPMRS), an internal database used to track and report financial information at the CNSC, was also used. All information on the contribution allotments as well as travel spent by all participants of OECD/NEA Joint Research Projects, MDEP, and STCs were analyzed.

A break-down of financial information is listed in Appendix B.

3.2 Limitations of the Evaluation Methodology and Mitigation Strategies

The evaluation methodology was designed to provide multiple lines of evidence in order to identify relevant evaluation findings. The data and information were collected to respond to the evaluation questions and indicators. As in all evaluations, there are limitations and considerations that should be noted.

Lack of Performance Data

During the planning phase it was identified that the CNSC does not have a performance measurement strategy in place for individual contribution(s) to the OECD/NEA. As such, there was no documentation of the benefits and measures to assess performance of intended results.

Mitigation Strategy: A logic model was created and supported by an evaluation matrix, identifying issues, questions, indicators and data sources. Both the logic model and evaluation matrix were validated by the EWG and EAC.

4 Management of the Evaluation

4.1 Roles and Responsibilities

The lead evaluator was responsible for managing all phases of the evaluation (planning, conduct and reporting), developing all evaluation deliverables, including the terms of reference, data collection templates and instruments, contract, correspondence to interview participants, draft evaluation reports, final evaluation report, technical support in developing the management action plan and monitoring thereafter, and briefing materials to inform senior management of evaluation findings, conclusions and recommendations.

The EWG was composed of a Director and a Program Officer from the Directorate of Assessment and Analysis, as well as Radiation Protection Specialist from the Directorate of Environmental and Radiation Protection and Assessment. The primary role of the Working Group was to help coordinate timely data collection and pilot test the interview guide. Furthermore, the Working Group played a key role in validating the Evaluation Terms of Reference (including logic model and matrix) before the evaluation commenced and validating the draft evaluation report for technical content before the Evaluation Advisory Committee.

The EAC was composed of three Director Generals, representing the Directorate of Assessment and Analysis, Directorate of Nuclear Cycle and Facilities Regulation, and the Strategic Planning Directorate (Head of Evaluation). The primary role of the EAC was to provide management input to help validate the Evaluation Terms of Reference (including the evaluation questions and logic model), the evaluation report, and the management response to the evaluation's recommendations.

The CNSC's Management Committee serves as the Departmental Evaluation Committee and is responsible for the timely validation of evaluation reports and management action plans. The President is the chair of the Management Committee and approves all evaluation reports and management action plans.

4.2 Contracts and Associated Procedures / Considerations

One sole-source contract supported the development of this evaluation report.[9] The contract was used to conduct interviews in support of the evaluation.

4.3 Timelines – Planned versus Actual

The timelines for planning and conducting this evaluation were all met as planned. Table 3 below identifies the timelines, categorized by planning phase (yellow), conducting phase (green) and reporting phase (pink).

Table 3 – Planned versus Actual Timelines

Year	2012							2013		
Phase	PLANNING			CONDUCTING				REPORTING		
Activity / Month	6	7	8	9	10	11	12	1	2	3

[9] The sole source contract to conduct interviews was in the amount of $22, 840.13.

Develop and Approve EWG and EAC Terms of References										
Develop and Approve Evaluation Terms of Reference										
Collect Documentation										
Develop Evaluation Contract										
Develop Data Collection Tools										
Select Interview Participants										
Select Contractor for Evaluation										
Conduct Document Review										
Conduct Financial Analysis										
Conduct Interviews										
Draft Evaluation Report										
Approve Evaluation Report by EWG and EAC										

4.4 Challenges to Implementation

Low Knowledge of Evaluation
The evaluation function at the CNSC was reinstituted in 2010 and only fully staffed in the fall of 2011. Most CNSC staff members are unfamiliar with the concepts and processes used in program evaluation, and often did not understand evaluation needs.

Mitigation Strategy: For the purposes of this evaluation, the lead evaluator met with key program stakeholders at the beginning of the evaluation project to explain the concept of evaluation, the evaluation process, and identify key information needed from the EWG and EAC. Additionally, the use of participatory level data collection and instrument testing helped to increase the knowledge of evaluation among EWG members, thus contributing to increased knowledge of results-based management.

5 Findings and Conclusions

5.1 Relevance

Evaluation questions explored in this section include:

- Is there a legitimate role for the CNSC's participation in the OECD/NEA?
- Are the contributions to OECD/NEA aligned with priorities of the federal government and departmental strategic priorities/outcomes?
- Is there a continued need for the CNSC to participate in the OECD/NEA?
- Are CNSC objectives adequately addressed through its contribution and participation in OECD/NEA?

Conclusion

The Nuclear Safety and Control Act (NSCA) supports commission activities that provide the public with scientific, technical advice and information. It was found that the contribution agreements support CNSC's participation in the OECD/NEA and are directly funded through the CNSC's Research and

Support Program. The contributions reflect the objective of the Research and Support Program: "to enable the CNSC to address the demand for clarity of regulatory requirements and institute changes to the regulatory framework in order to make it more strategic, risk informed and aligned with domestic and international benchmarks." Additionally, there is evidence from interviews based on benefits attained for the CNSC to continue contributing and participating in the OECD/NEA. The benefits attained are: (1) access to information that enables the CNSC to obtain lessons learned and best practices as well as anticipate problems and react accordingly; (2) contributes to the credibility of the CNSC internationally to ensure there is Canadian influence on projects and their outcomes; and, (3) fosters networking and professional competency among CNSC staff.

While the CNSC has referenced its contributions and participation in the OECD/NEA in Annual Reports, it has not consistently been reflected at a departmental level through Departmental Performance Reports and Report on Plans and Priorities or the CNSC's core priorities (Core + 4Cs[10]). Moreover, where alignment has been achieved to CNSC's corporate priorities, it is only been exhibited by a couple of the Joint Research Projects.

Continued contribution and participation in OECD/NEA is predicated on responding to the needs of the CNSC and much of the potential for on-going improvements resulting from the Joint Research Projects and MDEP will depend on how the research and activities progress as well as the ability to align them with the priorities of the CNSC.

[10] The CNSC corporate priorities, referred to as the Core + 4Cs, represents the day-to-day responsibilities performed by the work of the CNSC (the Core) that adheres to the commitment to ongoing improvements, clarity of requirements, capacity for action, and communication (the 4Cs).

Supporting Evidence

Is there a legitimate role for the CNSC's participation in the OECD/NEA?

There is a legitimate role for the CNSC's contribution to and participation in the OECD/NEA. The CNSC attains scientific, technical information to be used in the establishment and maintenance of its programs.

The Nuclear Safety and Control Act states that "The Commission may, in order to attain its objectives, […] b) establish and maintain programs to provide the Commission with scientific, technical and other advice and information; …"[11] The CNSC's contribution to and participation in OECD/NEA is intended to contribute to the attainment of scientific, technical information.

Are the contributions to OECD/NEA aligned with priorities of the federal government and departmental strategic priorities/outcomes?

Since 2010/11, the CNSC's Reports on Plans and Priorities does not specifically reference the CNSC's contribution to the OECD/NEA. However, alignment is consistently displayed in the CNSC's Annual Reports dating back to 2007/08.

Explicit reference to the NEA and/or MDEP, the latter of which is often reported separately, is inconsistently mentioned in various Departmental Performance Reports (DPRs) and Reports on Plans and Priorities (RPPs) throughout the years 2007/08 – 2011/12. When the NEA was directly referenced in previous 2007/08 and 2008/09 DPRs and RPPs, the program sub-activity was "co-operative undertakings" with the expected outcome that the "CNSC cooperates and integrates its activities in national/international nuclear fora." As a result of a change to the CNSC Performance Activity Architecture (PAA), the 2009/10 RPP referenced NEA under the program activity "regulatory framework" with the expected outcome of "A Clear and Pragmatic Regulatory Framework." Yet, the RPP in years 2010/11 and 2011/12 makes no reference to NEA. It should be noted that years the DPR for years 2009/10 to 2011/12 references NEA, however at the strategic outcome level only.

The CNSC's Annual Report dating back to 2007/08 was also reviewed to measure alignment, where the CNSC's contribution to the OECD/NEA and MDEP were consistently supported. An example of this support, include references like, "By participating in several international fora, including the IAEA, the Organisation for Economic Co-operation and Development's Nuclear Energy Agency, the International Regulator's Association and the G8 Nuclear Safety and Security Group, the CNSC adds to the nuclear industry's collective knowledge by helping develop best practices, regulatory guides and standards."[12]

There is some evidence from the interviews that the OECD/NEA Joint Research Projects and MDEP are aligned with CNSC's strategic priorities; however, interview respondents were better able to make the linkage between the core priority and the Joint Research Projects. Much of the

[11] Government of Canada, "Nuclear Safety and Control Act," S.C. 1997, c.9, s.21.
[12] Canadian Nuclear Safety Commission, Annual Report March 31, 2009 – March 31, 2010, p. 57.

potential for on-going improvements resulting from the Joint Research Projects and MDEP will depend on how the research and activities progress.

Interview respondents who participate in the Joint Research Projects and MDEP were asked to what extent their project/working group reflects the CNSC's core priorities (Core + 4Cs). While there was evidence that there is some alignment between work of the projects/working groups and the 4Cs, the majority of respondents[13] stated that their project/working group aligns with the core priority.

The core priority is focused on regulatory work related to compliance and licensing and the key mechanisms driving this linkage are the sharing of research, information, data and lessons learned and best practices among regulators. The examples of alignment included:

- Cable ageing was a previously neglected area and data from the ICDE project highlighted the need for more regulatory oversight and links to the CNSC standard 294 – "Probabilistic Safety Assessment for Nuclear Power Plants."
- Data from the FIRE project helped produce a better database related to fires in Nuclear Power Plants. The larger sample based developed using data from around the world increased the reliability of risk assessment and thus potentially, the regulations related to fires in Nuclear Power Plants.

The alignment of MDEP with CNSC's core priority is more anticipatory as respondents noted that the work of MDEP is expected to directly assist the CNSC in establishing design standards and will therefore be reflected in requirements/guidance established in regulatory framework documents pertaining to new builds.

Is there a continued need for the CNSC to participate in the OECD/NEA?

There is evidence of benefits attained for the CNSC by participating in the OECD/NEA Joint Research Projects, MDEP and STCs.

All interview respondents unanimously agreed that there was a continued need for the CNSC to participate in and fund the OECD/NEA Joint Research Projects, MDEP, and STCs. Furthermore, interviewees were asked to qualify their agreement by offering examples of needs (from the perspective of the CNSC) that are being met through the CNSC's participation in and funding of the Joint Research Projects, MDEP and STCs.

(1) Access to data and information which would otherwise be difficult or impossible to obtain.
(2) Allows the CNSC access to other countries information which, in turn, enables comparison assessments to incur
(3) Alerting CNSC to anticipate problems and modify or develop regulations as needed.
(4) Contributes to the credibility of the CNSC internationally to ensure there is Canadian influence on projects and their outcomes.
(5) Data and information obtained are valuable sources of lessons learned and best practices

[13] Ten out of sixteen respondents stated that the Joint Research Project or MDEP working group they participate in aligns with the CNSC's core priority.

(6) Fosters networking and professional competency among CNSC staff to exchange ideas and operational experience with other experts/regulators.

Interview respondents expressed their rationale for continuing participation with the need for the CNSC to assess its involvement based on whether the data, information and reports respond to the needs of the CNSC.

Are CNSC objectives adequately addressed through its contribution and participation in OECD/NEA?

The contribution agreements supporting CNSC's participation in the OECD/NEA Joint Research Projects and MDEP are directly funded through the CNSC's Research and Support Program and reflect its objective "to enable the CNSC to address the demand for clarity of regulatory requirements and institute changes to the regulatory framework in order to make it more strategic, risk informed and aligned with domestic and international benchmarks."

There was almost complete consensus[14] among interview respondents that the contribution agreements support the CNSC's participation in the OECD/NEA and reflects the objective of the CNSC's Research and Support Program. The objective of the Research and Support Program is "to enable the CNSC to address the demand for clarity of regulatory requirements and institute changes to the regulatory framework in order to make it more strategic, risk informed and aligned with domestic and international benchmarks." Interview respondents noted that the link to international benchmarks, in particular, has increased the robustness of databases used by the CNSC to undertake risk analysis. Other examples of how CNSC has utilized international benchmarks, by project/working group, include:

- SCAP – provided evidence that the CNSC was not monitoring cable ageing and this provided an impetus to reassess its regulations.
- ICDE – contributed to enhancing CNSCs standard 294.
- ISOE – contributed to regulatory framework documents related to severe accident management and occupational exposure to radiation.

5.2 Effectiveness

The evaluation questions explored in this section are:

- To what extent has the CNSC's participation in OECD/NEA Joint Research Projects enhanced the CNSC's regulatory framework?
- To what extent has the CNSC's participation in OECD/NEA Joint Research Projects enhanced the CNSC's performance reports?
- To what extent has the CNSC's participation in OECD/NEA Joint Research Projects and the MDEP enhanced regulatory oversight capabilities to review data submitted by licensees?

[14] Twenty-seven out of twenty-eight respondents felt that the contribution agreements the CNSC has with the OECD/NEA reflects the objective of the CNSC Research and Support Program.

- To what extent has the CNSC's participation in OECD/NEA Joint Research Projects and the MDEP increased the ability to share technical knowledge with stakeholders?
- To what extent has the CNSC's participation in OECD/NEA Joint Research Projects and the MDEP improved indicators for inspections?
- To what extent has the CNSC's participation in MDEP enhanced the CNSC's design reviews and technical assessments of new licence applications?

Conclusion

The effectiveness of CNSC's contribution to the OECD/NEA can be measured by improvements to its regulatory framework, the sharing of technical knowledge with stakeholders, improvements to criteria for risk-informed inspections, and enhancements to CNSC's compliance reporting and regulatory oversight capabilities for licensing and compliance. Specific to MDEP, demonstrated effectiveness should result in improved design review criteria and technical assessment criteria for new builds and existing facilities.

To date, the CNSC has not realized the full impacts of its contributions to the OECD/NEA. This is in part driven by the fact that each Joint Research Project and MDEP contribution is unique and therefore the timeframe to achieve expected results varies. Some of the older projects, such as ISOE (first contribution signed in 1992) have fully demonstrated intended impacts, whereas other projects are at too early of a stage to determine achievement of results. Much of this discrepancy stems from the fact that necessary performance information relating results of Joint Research Projects and MDEP with CNSC priorities was never articulated.

Fully Demonstrated Outcomes

The CNSC is very effective at sharing information and data obtained from its participation in the OECD/NEA projects and MDEP with licensees, vendors, and standards development organizations such as the Canadian Standards Association.

Early evidence supports the effectiveness of MDEP. MDEP has had an impact on the efficiency and cost-effectiveness of the design reviews being undertaken of the AP1000 technology. Additionally, the CNSC expects to experience a fuller impact to the improvement of its design review criteria through the adoption of the Code Comparison Report which has recently been adopted by its Codes and Standards Working Group.[15]

Partially Demonstrated Outcomes

There have been some measurable impacts to the CNSC's regulatory framework as a result of Joint Research Projects. This was the case for 5 of 7 projects; however, those that are not currently contributing are expected to do so in the near future.

[15] See http://www.oecd-nea.org/mdep/working-groups/cswg.html for further details. The report is planned to be used within the CNSC regulatory context in order to assess new builds using PWR technologies as it relates to compliance with pressure boundary expectations.

Depending on the nature of some of the Joint Research Projects, licensees are required to collect and report data. In turn, this information has had a successful impact on CNSC regulatory capabilities; namely, the improvement of radiation inspection reports, and updates to requirements for Nuclear Power Plants to pull tubes on a periodic basis. Additionally, there have also been some improvements to criteria to radiation protection indicators for inspections, as demonstrated by one Joint Research Project.

Outcomes that Require Improvement

There is very limited evidence that the CNSC's participation in OECD/NEA Joint Research Projects has enhanced the CNSC's performance reports, with the exception of the ISOE project which has impacted the "Integrated Safety Assessment of Nuclear Power Plants" report.

While MDEP has not improved any indicators for inspection to date, there is evidence that results of the Vendor Inspection Co-operation Working Group as well as the Codes and Standards Working Group will be used to develop a regulatory framework document to observe inspections or to conduct independent inspections.

Supporting Evidence

To what extent has CNSC's participation in OECD/NEA Joint Research Projects enhanced the CNSC's regulatory framework?

There is evidence that most OECD/NEA Joint Research Projects are enhancing the CNSC's regulatory framework. Projects that have not enhanced the CNSC's regulatory framework are expected to do so in the near future.

The regulatory framework consists of requirements presented in regulations, licences, Licence Condition Handbooks and regulatory documents as well as guidance documents presented in guides, CNSC standards, policies, staff review procedures and other documents. The document review and interviews identified a series of regulatory framework documents that have been enhanced due to CNSC's participation in the OECD/NEA. Five out of seven Joint Research Projects have enhanced CNSC requirement and guidance documents; PRISME/PRISME-2 and FIRE have not yet contributed but are expected to do so in the near future.

Table 4 below is organized from requirements to guidance and enhancements made to the Joint Research Projects.

Table 4 – Joint Research Project Enhancements to CNSC Regulatory Framework Documents

Joint Research Project	Requirement / Guidance Documents	Issue Date
• ISOE • OPDE	RD-99.1 – Reporting Requirements for Operating Nuclear Power Plants (in draft)	In draft
• CODAP • OPDE • SCAP	RD-334 – Ageing Management for Nuclear Power Plants	June, 2011
• ICDE	S-294 – Probabilistic Safety Assessment for Nuclear Power Plants	April, 2005

• ISOE	Staff Review Procedure[16] – Application for Licence to Construct	Internal document, last revised October, 2012
• ISOE	Staff Review Procedure– CNSC Pre-Licensing Review of a Vendor Reactor Design	Internal document, last revised June, 2012

Data from the ISOE project was also successfully leveraged by CNSC during the recent drafting of the "Proposals to Amend the Radiation Protection Regulations" in close cooperation with other OECD regulatory authorities and nuclear power utilities.[17]

To what extent has CNSC's participation in OECD/NEA Joint Research Projects enhanced CNSC's performance reports?

There is limited evidence that the CNSC's participation in OECD/NEA Joint Research Projects has enhanced CNSC's Performance Reports such as the "Integrated Safety Assessment of Nuclear Power Plants". To date, Joint Research Projects have not had a full impact on the regulatory framework and thus have limited impact on licensee compliance.

The scientific and technical information gathered from participating in the OECD/NEA Joint Research Projects is intended to be used to enhance the CNSC's performance reports, in particular the "Integrated Safety Assessment of Nuclear Power Plants". This is an annual report (published since 2006) that assesses how well plant operators are meeting regulatory requirements and program expectations in areas such as human performance, radiation and environmental protection, emergency management and fire protection.[18]

There is only one reference made to the OECD/NEA in this report. The 2010 report uses information extracted from the ISOE database to compare Canada's doses per reactor to international values under the Safety and Control Area "Radiation Protection". No previous or following reports have cited any OECD/NEA data or have compared Canada's doses per reactor to that of international values.

Interview participants on OECD/NEA Joint Research Projects and the CNSC representative for the Integrated Safety of Nuclear Power Plants report were asked to comment on the extent to which participation in these projects has enhanced the safety report. Slightly over half[19] of the interview respondents indicated that there was no link as of yet. One interview respondent explained that no one should expect impacts at this early stage because the reports provide information on compliance to current

[16] It should be noted that the guidance information inherent in Staff Review Procedures is now being incorporated into Regulatory Documents (following the notation of REG DOC) where applicable to licensees and, in the case of information pertaining to CNSC staff, will be incorporated into internal procedural documents.
[17] Canadian Nuclear Safety Commission, "Proposals to Amend the Radiation Protection Regulations," discussion paper, September 2012.
[18] To access the Annual Reports "CNSC Integrated Safety Assessment of Nuclear Power Plants," see http://www.nuclearsafety.gc.ca/eng/resources/publications/reports/powerindustry/index.cfm.
[19] Five out of nine respondents indicated there is no link as of yet to the Integrated Safety Assessment of Nuclear Power Plants.

licensee requirements. Those that did state there was a link[20] expressed it was, for the most part, indirect through the data and information obtained through participating in the Joint Research Projects gave CNSC a technical advantage in being better able to regulate Nuclear Power Plants. Additionally, in the case of ISOE, regulations were enhanced that would have attributed to licensee compliance and perhaps increased safety.

To what extent has the CNSC's participation in OECD/NEA Joint Research Projects and MDEP enhanced regulatory oversight capabilities to review data submitted by licensees?

Access to licensee data collected through the OECD/NEA Joint Research Projects has had some measurable impact on CNSC's regulatory oversight capabilities for licensing and compliance. MDEP collects data from vendors as part of the design review for new builds and thus has no planned impact on regulatory oversight of licensing and compliance. Yet, by virtue of participating in MDEP, the CNSC has been able to access information and data through networking; in turn, this has contributed to positive changes to the regulatory oversight of design reviews.

Interview responses on the extent to which regulatory oversight capabilities increased as a result of CNSC's participation in the OECD/NEA Joint Research Projects varied. The variation depended on the nature of the project data submitted by licensees (voluntary or required) to the project/working group and the stage of the research. In the case of ICDE and SCAP, data submitted voluntarily by licensees to the CNSC is not reviewed to assess licensing or compliance. CODAP, FIRE, ISOE, OPDE, and PRISME/PRISME-2 are all projects were licensee data is reviewed; however, to date, only ISOE and OPDE have had an impact on regulatory oversight capabilities.

Access to Joint Research Project databases is intended to provide the CNSC with valuable benchmarks against which to assess the performance of Canadian licensees and therefore enhance regulatory oversight. ISOE information was used to improve radiation protection inspection reports, and therefore radiation protection programs of licensees. The OPDE database provided highly accurate information on calandria tubes which was used to update the regulatory requirements for Nuclear Power Plants licensees on tube life management.

MDEP, on the other hand, collects vendor data as part of the design review for new builds and thus has no immediate compliance impact. Access to information and data obtained through networking with other MDEP participants has contributed to improved information and oversight of the design review process. One interview respondent explained that the sharing of information with other regulators has enhanced the CNSC's awareness of potential challenges related to the design of the AP1000 technology and thus regulatory oversight of the design review.

To what extent has CNSC's participation in OECD/NEA Joint Research Projects and MDEP increased the ability to share technical knowledge with stakeholders?

There is evidence that information and data from the Joint Research Projects and MDEP is being shared with licensees, vendors, and standards development organizations.

[20] Four of nine respondents indicated there was an indirect link.

Interview respondents who participate in OECD/NEA Joint Research Projects and the MDEP were asked if technical knowledge and/or data from their project/working group are shared with licensees. The majority[21] of interviewees indicated that information is being shared. There are some cases where work is undertaken in closed forums and is not intended to be shared outside of the working groups, in the case of the EPR Working Group and AP1000 Working Group of MDEP, or that information is not yet available to be shared, in the case of PRISME-2 where experiments are currently being conducted.

Almost all of the Joint Research Projects share data and/or information with licensees. The one exception is PRISME-2 which is an experiment-based project started in 2011/2012 for which results are not yet available. For the majority of projects that do share information, the mechanism for sharing information varies depending on the nature of the project. For example, SCAP and ICDE request and receive data from licensees on a voluntary basis and licensees are then provided with password protected access to information. Other modes of information sharing consist of teleconferences and presentations of data to licensees, sharing information through the Candu Owners Group (COG), and the Nuclear Energy Agency website.

For the MDEP, information sharing is common among the issue-specific working groups (vendor inspection co-operation, codes and standards, and digital instrumentation and controls). The sharing of information occurs through the solicitation of feedback on documents such as common position papers, teleconferences and consultations. The EPR and AP 1000 working groups, on the other hand, are closed forums for regulators only and do not share information with vendors.

In addition, three CSA Standards were identified by CNSC representatives during the planning phase of this evaluation as having used data generated from the NEA Joint Research Projects, they are: N293 (FIRE and PRISME/PRISME-2), N393 (FIRE and PRISME/PRISME-2), and N285.7 (CODAP). However, the document review found that no Standards have incorporated information from NEA to date. The assessment found that N293 does not mention NEA, N393 is expected to reference information from NEA (published on January 2014,[22]and N285.7 is currently being revised and may reference NEA.

To what extent has CNSC's participation in OECD/NEA Joint Research Projects and MDEP improved indicators for inspections?

MDEP has not improved any indicators for inspections to date; however, there is evidence that results of the Vendor Inspection Co-operation Working Group will provide tangible benefits to the CNSC. There is some improvement to indicators for radiation protection inspections leveraged from one Joint Research Project.

For the most part, improvements to indicators for inspections are associated with the Vendor Inspection Co-operation Working Group in MDEP. Interview respondents who participate in the Vendor Inspection Co-operation Working Group explained that there have not been any revisions made to CNSC indicators for inspections to date. They noted, however, that information gathered from this working group will be used to develop a regulatory framework document to observe inspections or to conduct independent inspections. A recent Protocol between Ontario Power Generation (OPG) and the CNSC, for example,

[21] Eleven out of sixteen respondents indicated that information from Joint Research Projects and MDEP is being shared with stakeholders.

[22] Canadian Standards Association, CSA N393-14 Project Schedule, published December 20, 2012.

reflects some aspects of the Vendor Inspection Co-operation Working Group. It was further stated that participation in this working group has allowed the CNSC to be better prepared for future inspections that are anticipated to be undertaken by the manufacturer of the AP1000 technology and support of the design review. The sharing of inspection data is seen as increasing the transparency of inspections and allowing for better identification of problems with design.

The knowledge obtained in ISOE, specifically on best Occupation Dose Reduction Techniques and best Occupational Exposure Management at Nuclear Power Plants has been leveraged in preparation of the following radiation inspection guides: CNSC Radiation Protection Type II Inspection Guides – NPPs, CNSC Type II Inspection Guide – Alpha Monitoring and Control, CNSC Type II Inspection Guide – Occupational ALARA Planning and Controls, and CNSC Type II Inspection Guide – Radiological Hazard Control.

To what extent has CNSC's participation in MDEP enhanced the CNSC's design reviews and technical assessments of new licence applications?

There have been no new licence applications to date and therefore no technical assessments have been undertaken. However, there is evidence that MDEP has had an impact on the efficiency and cost-effectiveness of the design review being undertaken of the AP1000 technology.

With respect to design reviews, approximately two thirds[23] of the interview respondents who participate in MDEP were able to respond to this question. It was expressed that no technical assessments have been done to date and the design review for AP1000 is on-going. Two interview respondents indicated that the design review of the AP1000 technology could have been accomplished without CNSC participation in MDEP; however, it would have taken longer and would have been more expensive. MDEP is viewed by interview respondents as a cost effective and efficient mechanism through which to undertake design reviews because it provides a forum for regulators to share their knowledge and experience. Moreover, one interviewee expressed that during an MDEP AP1000 working group meeting it was learned that another OECD/NEA participating country has 14,000 design changes to which the manufacturer of AP1000 did not alert the CNSC. Four hundred of these changes have safety implications (direct impact on safety analysis) and precipitated the CNSC to contact the manufacturer to request full details of these changes. Additionally, the CNSC expects to experience a fuller impact to the improvement of its design review criteria through the adoption of the Code Comparison Report which has recently been adopted by its Codes and Standards Working Group.[24]

Two of the interview respondents participating in MDEP indicated that generic common positions reflect future requirements for new builds and that currently each participating country of the OECD/NEA has different criteria for classification, i.e. the same product has to meet different requirements in each country. The MDEP Digital Instrumentation and Controls working group (Digital I & C working group) is developing common criteria which the CNSC intends to incorporate into its technical assessments.

[23] Five of eight respondents were able to answer the question "how has MDEP enhanced the CNSC's design review and technical assessment of new licence applications?"

[24] See http://www.oecd-nea.org/mdep/working-groups/cswg.html for further details. The report is planned to be used within the CNSC regulatory context in order to assess new builds using PWR technologies as it relates to compliance with pressure boundary expectations.

5.3 Efficiency and Economy

Under the Treasury Board Evaluation Policy, April 1, 2009, efficiency is defined as maximizing the outputs produced with a fixed level of inputs or minimizing the inputs used to produce a fixed level of outputs; and economy is defined as "minimizing the use of resources […] to achieve expected outcomes."[25] These elements of performance are demonstrated when:

a) outputs are produced at minimum cost (efficiency); and
b) outcomes are produced at minimum cost (economy).

Evaluation questions explored in this section include:

- Have resources (contribution dollars and travel (dollars and staff time)) been utilized to optimize outputs?
- Are the administrative activities of the OECD/NEA contribution agreement well executed so as to maximize the benefits of the immediate outcomes?
- Are there alternative methods which ensure the same achievement of immediate outcomes?

Conclusion

Notwithstanding the lack of performance data that is required to complete a full assessment of efficiency and economy, where exact outputs and outcomes are measured by their costs, all available financial information that exists was analyzed and proxy measures as a series of interview questions were undertaken to assess efficiency and economy. Additionally, the assessment of efficiency and economy was enhanced by an examination of CNSC funding spent on STCs in order to altogether address total funding provided to the OECD/NEA. The CNSC's contribution and participation in OECD/NEA Joint Research Projects, MDEP and STCs represent a cost-effective and efficient means to achieve immediate outcomes. There is strong evidence that resources, including staff time and funding, allocated to OECD/NEA Joint Research Projects, MDEP and STCs have been used efficiently and that there are measurable returns on investment as a result of this participation. In all cases where the CNSC could achieve the same output/outcomes, a considerable amount of financial contributions and resources (staff and time) would be required.

The financial analysis revealed that of the total funding the CNSC allocates to OECD/NEA, travel associated with participating in the OECD/NEA accounts for over two-thirds, with the majority supporting CNSC's participation in STCs. While information pertaining to exact person days, or CNSC staff time, was not available due to the variation in ITAS reporting and unavailability of cost codes associated with all aspects of participation in OECD/NEA, an estimate was calculated based on financial information associated with travel. The estimated number of person days further supports the evidence that the CNSC spend more time on STCs than the Joint Research Projects and MDEP.

Lastly, while most CNSC representatives participating in OECD/NEA feel they are provided with sufficient time to participate in their Joint Research Projects, MDEP, or STC, there is some evidence that staff do not always officially track and report the time spent on OECD/NEA work.

[25] Treasury Board of Canada Secretariat, Policy on Evaluation, April 1, 2009, http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=15024&section=text#cha4.

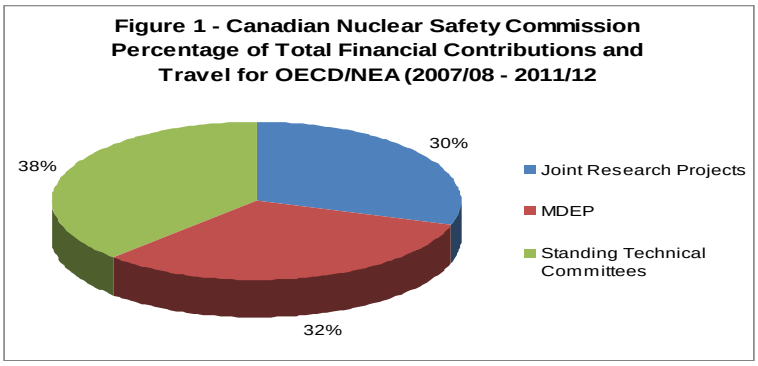
Supporting Evidence

Have resources (contribution dollars and travel (dollars and staff time)) been utilized to optimize outputs?

Actual funding spent on the OECD/NEA comprises $1.71M over the period from 2007/08 – 2011/12. Of this total, travel associated with participating in the OECD/NEA accounts for over two-thirds, with the majority supporting CNSC's participation in STCs. This is further reflected in the estimated number of person days, or CNSC staff time, spent participating in the OECD/NEA. The amount of time spent on OECD/NEA Joint Research Projects, MDEP, and STC varies based on the workload of the projects/working group/committee and the level of involvement of the CNSC representative.

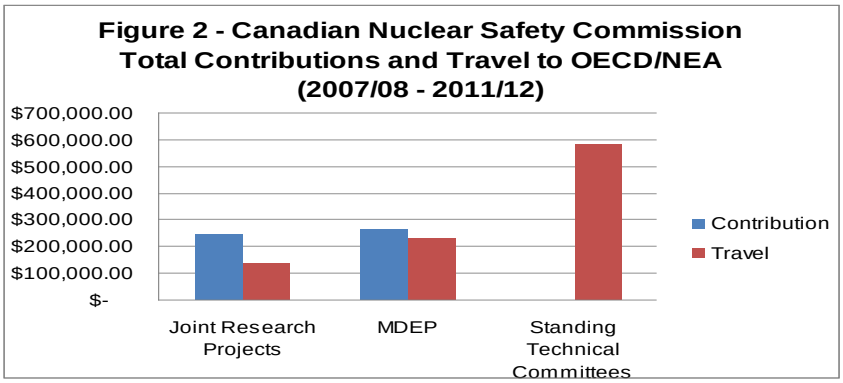
The CNSC has spent in total $1.71M, over five fiscal years (2007/08 – 2011/12) contributing to and participating in the OECD/NEA. While this evaluation predominately focuses on CNSC's contributions to the OECD/NEA, more specifically the Joint Research Projects and MDEP, the financial review revealed that the most significant amount of finances spent on OECD/NEA are not the contribution agreements but travel by CNSC to participate in the various Joint Research Projects, MDEP working groups and STCs. Of this total, $556K, or 36%, was spent on contributing to the joint research projects and MDEP and $959K, or 62%, was spent on travel for the joint research projects, MDEP and STCs. Further analysis of the total amount of finances, contribution dollars and travel dollars, spent on each of these categories, the CNSC spends most finances on travel associated with the STCs at $585K, or 38%, followed by MDEP contribution funding and travel at $497K, or 32%, and Joint Research Projects contribution funding and travel at $463K, or 30%.

Figure 1 below illustrates the percentage of the CNSC's total financial contributions and travel by Joint Research Projects, MDEP and STCs from the period 2007/08 – 2011/12.



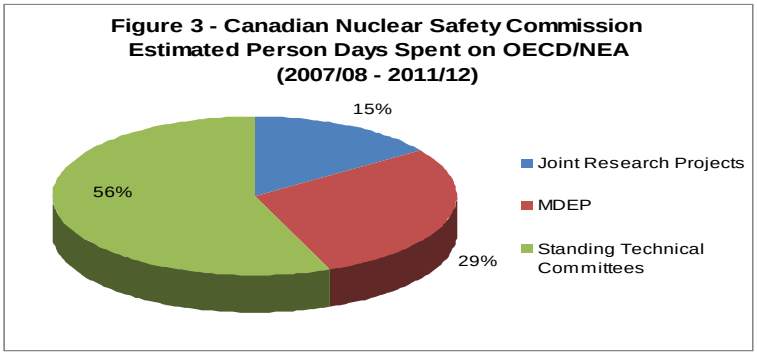
Furthermore, the total travel spent can be further organized over this five year period: travel for STCs amounts to $585K, or 61%, travel for MDEP amounts to $234K, or 24%, and travel for Joint Research Projects amounts to $140K, or 15%. Over the five year time period of 2007/08 – 2011/12, the CNSC has contributed to seven Joint Research Projects and MDEP. MDEP is the largest funded initiative, with 47% equivalent to $263K spent over the five-year period of 2007/08 – 2011/12. The Joint Research Projects comprise of 45% of total contribution funding, equivalent to $252K over the same five-year period.

Figure 2 represents the CNSC's total contributions and total travel spent on OECD/NEA Joint Research Projects, MDEP and STCs from the period of 2007/08 – 2011/12.



To fully assess resource utilization, an estimation of staff time was calculated using information associated with travel in Freebalance and CPMRS. Due to the variability of how information is gathered using the Integrated Time Accounting System (ITAS), a full account of CNSC staff time associated with OECD/NEA work could not be achieved. Information missing, for example, would be staff time allocated to sharing information internally and supervising staff participating in OECD/NEA Joint Research Projects, MDEP working groups and STCs.

Since the majority of CNSC staff time spent on OECD/NEA work is associated with travel, the following estimated person days is a reasonable account of time. Each time CNSC staff travelled in support of OECD/NEA three person days were accounted for, this includes: time associated for travel, time associated for the meeting/conference, and time associated for preparation of the meeting/conference. Over the period 2007/08 – 2011/12, 441 person days, or 56%, was estimated as CNSC staff time spent on STCs, 225 person days, or 29%, was estimated as CNSC staff time spent on MDEP, and 120 person days, or 15%, was estimated as CNSC staff time spent on Joint Research Projects.



Most CNSC representatives participating in OECD/NEA feel they are provided with sufficient time to participate in Joint Research Projects, MDEP, STCs. There is some evidence that staff are not provided with sufficient time to participate in OECD/NEA work and often this work occurs in addition to a normal work day.

Interview participants were further asked if they felt they were provided with sufficient time to effectively participate in their project/committee with most interview participants[26] stating they are provided with sufficient time. Interview participants involved in MDEP tended to be the most satisfied,[27] whereas interview participants involved in STCs tended to be the least satisfied.[28] There is evidence from all interview categories that they were hesitant to voice dissatisfaction with the amount of time they have to spend on OECD/NEA work. In all cases, interviewees expressed that work related to OECD/NEA gets accomplished in addition to a normal work day and that this time is not tracked or reported. Yet, at the same time, as one interview expresses, having a sufficient amount of time to participate translates into more Canadian influence on OECD/NEA direction and results.

There is strong evidence that resources, including staff time and funding, allocated to OECD/NEA Joint Research Projects, MDEP and STCs has been used efficiently and that there are measurable returns on investment as a result of this participation.

All interview participants were asked to what extent have resources (staff time and funding) been used efficiently and if they felt resources were effective relative to specific project/working group and committee outputs. Almost all interview participants[29] stated that resources allocated to OECD/NEA projects/working groups and committees were used efficiently. Likewise, there was near consensus[30] that resources contributed by the CNSC, including contribution funding, travel costs for CNSC staff and CNSC staff time, are effectively used relative to the outputs produced. The same interview participant who disagreed in both cases expressed that everything the CNSC is inefficient. Interview participants who agreed provided examples of this return on investment:

- If the CNSC were to hire consultants to do the work/research or if it were to purchase the reports from the Electric Power Research Institute (EPRI), it would cost approximately $50K per report.
- CNSC staff obtained a number of nuclear industry technical radiation protection documents of a value of about $50K, which compares favourable against the $30K CNSC contribution over two years to the ISOE project.
- CNSC is benefiting from PRISME/PRISME-2, valued at $14M over 10 years with a contribution of only $250 ($50K per year over five years). Thus the CNSC is obtaining $14M worth of data from this project with a contribution of $250K total.

Are the administrative activities of the OECD/NEA contribution agreement well executed so as to maximize the benefits of the immediate outcomes?

Contribution agreements are well executed on the part of both the CNSC and the OECD/NEA.

[26] Nineteen of twenty-eight respondents indicated they are provided with sufficient time to participate in work related to the OECD/NEA.
[27] Seven out of eight respondents who participate in MDEP were the most satisfied with having sufficient time to participate in work related to the OECD/NEA.
[28] Seven out of twelve respondents who participate in Standing Technical Committees were the least satisfied with having sufficient time to participate in work related to the OECD/NEA.
[29] Twenty-seven out of twenty-eight respondents indicated resources allocated to their OECD/NEA work is used efficiently.
[30] Twenty-seven out of twenty-eight respondents indicated resources used to participate and contribute to their OECD/NEA work is used effectively relative to outputs produced.

Interview participants who participate in the Joint Research Projects and MDEP were asked if there were any improvements that needed to be made to the administration of the contribution agreement on the part of the CNSC as well as on the part of the OECD/NEA. Interview participants unanimously felt that they did not believe that any improvements to the administration of the contribution agreements were required.

Are there alternative methods which ensure the same achievement of immediate outcomes?

The OECD/NEA Joint Research Projects, MDEP and STCs represent a cost-effective and efficient means to achieve immediate outcomes

Interview participants who participate in the OECD/NEA Joint Research Projects, MDEP and STCs were asked if there were any alternative methods through which the CNSC could achieve the similar objectives. Interview participants unanimously stated that the OECD/NEA projects/working groups and committees are the best way to achieve the objectives. Some interview respondents offered alternative approaches; however, these were all referred to as "second best" options due to the strong limitations attached to each and the fact that they can only be offered as alternatives to some of the work CNSC is involved in with OECD/NEA. The most frequently cited alternatives and associated limitations are as follows:

- Securing bilateral relationships between the United States Nuclear Regulatory Commission; however, the number of bilateral relationships to achieve the same objectives would correspond to more effort, time and money than what is spent currently on the OECD/NEA
- Increased involvement with some of the IAEA committees to deliver some of the same objectives; however, the IAEA has limited research abilities
- CNSC could review design reports; however, not all reports are available publicly, are written in English, and follow tight timeframes which do not allow for sufficient review of detail
- More meetings could be conducted via teleconference/videoconference to minimize travel costs; however this would be difficult to coordinate among all country participants provided differing time zones
- CNSC could participate, as a member or observer, to regional regulatory meetings held by European Union countries on similar topics; however, it is unlikely that CNSC would be fully welcome as a non-European country and Europe focuses on non-CANDU technology
- Some work could be accomplished through the Electric Power Research Institute (EPRI); however, it would be more expensive, less complete and would risk biases due to the fact that the EPRI is a lobby group

5.4 Design/Delivery for Continuous Improvement

Evaluation questions explored in this section include:

- What have been some of the inhibitors/barriers and facilitators to success?
- What have been some of the unintended/unplanned results of program implementation?
- How effective are the channels of communication for managing CNSC's participation in OECD/NEA?

Conclusion

There are numerous inhibitors/barriers and facilitators to success identified for the CNSC in participating in the projects/working groups and committees of the OECD/NEA. The facilitators to success ranged from management support, CNSC staff expertise and interest, skills and expertise of members and Chair from participating countries, and the openness/willingness of participating countries to share information. The inhibitors/barriers to success, on the other hand, ranged from not enough time to participate, differing regulatory perspectives/priorities, language/cultural issues, and, specific to a few of the projects, concern or lack of interest on part of the licensee to provide data. Based on the number of projects/working groups and committees that the CNSC participates in, the inhibitors/barriers do not seem to deter participation in any significant manner.

There are examples of positive unexpected/unplanned results by the CNSC participating in OECD/NEA, they include: sharing and learning from Fukushima on an international scale, ability to identify safety gaps, and ability to generate new knowledge in codes and standards.

Moving forward, while there is evidence that information is being communicated by CNSC participants of OECD/NEA to their immediate supervisor, particularly through trip reports, it does not percolate throughout CNSC. To increase awareness and share information, various suggestions were offered by interview respondents with most citing hosting annual workshops and presentations. These workshops and presentations could engage a variety of CNSC staff and management, across all business lines.

Supporting Evidence

What have been some of the barriers/inhibitors and facilitators to success?

There are numerous inhibitors/barriers and facilitators to success identified for the CNSC in participating in the OECD/NEA Joint Research Projects, MDEP and STCs.

All interview participants, including: CNSC staff who participate in Joint Research Projects, MDEP and STCs, were asked to identify inhibitors/barriers and facilitators to achievement of expected objectives for participation in the OECD/NEA. Among all twenty-eight respondents, facilitators of success were consistently expressed and are as follows:

- Management interest and support at the CNSC
- CNSC staff expertise, interest and engagement
- Skills and expertise of members from participating countries on the project/committee, particularly the Chair
- Openness/willingness of participating countries to share information and data
- Strong international interest and engagement

Among all twenty-eight respondents, inhibitors/barriers that limit success of participating in OECD/NEA were expressed as follows:

- Time issues on the part of the CNSC staff who don't feel they have as much time as they would like to spend, particularly with respect to MDEP

- Differing regulatory perspectives/priorities as projects/committees generally focus on non-CANDU technologies
- Language/cultural issues
- Concerns or lack of interest on the part of the licensee about providing potentially proprietary data
- Inadequate sharing of information on the part of some countries
- Lack of strong Chairmanship
- Lack of interest and buy-in on the part of CNSC senior management
- CNSC senior management prefers not to send DGs to meetings so CNSC is sending more junior people who may not have sufficient experience (1/28)

What have been some of the unexpected results of program implementation?

All unexpected results offered were positive and include: sharing and learning from Fukushima on an international scale, ability to identify safety gaps, ability to generate new knowledge in codes and standards.

All interview participants, including: CNSC staff that participate on Joint Research Projects, MDEP and STCs, were asked to identify any unexpected results (either outputs or outcomes) of CNSC participating in OECD/NEA. Where unexpected results were identified, they were all positive:

- Sharing of information and learning as a result of Fukushima.
- Research of the project/committee identified gaps in safety monitoring at CNSC and to which CNSC was then able to respond.
- Specific to MDEP, one of the working groups discovered that although codes and standards may be the same, there are often differences in interpretation. This resulted in a soon to be released document, *Regulatory Frameworks for the use of Nuclear Pressure Boundary Codes and Standards in MDEP Countries.*

How effective are the channels of communication for management of CNSC's participation in OECD/NEA?

There is evidence that information is being communicated by CNSC participants of OECD/NEA to their immediate supervisor; however, it does not percolate throughout CNSC.

All interview participants, including CNSC staff that participate on Joint Research Projects, MDEP and STCs, were asked if the channels of communication between those who directly participate OECD/NEA and CNSC management are effective.

Slightly more than half of those interviewed[31] felt that communication is effective. Many cited the CNSC trip reporting process whereby work on projects/working groups and committees is documented after every trip, submitted to their supervisor, and made available to CNSC. Yet, more than two-thirds (including some who feel communication is effective) indicated that some improvements could be made. These interview respondents were asked to provide tangible suggestions on how to improve communication, they are:

- Host annual workshops and presentations on work accomplished with the CNSC.
- Delegating someone within each division to review/read all the documents related to the OECD/NEA projects/committees.
- Set up a repository (e.g., wiki repository) within CNSC where staff could put all OECD/NEA documents.
- Document benefits and share the information in order to gauge benefits of OECD/NEA involvement.
- Have management communication expectations for involvement in OECD/NEA projects/committees.

6 Summary and Recommendations

To date, the CNSC has not realized the full impacts of its contribution and participation in OECD/NEA. Each Joint Research Project and MDEP contribution is unique and therefore time to achieve expected results varies. Some of the older projects, such as ISOE (first contribution signed in 1992) have fully demonstrated intended impacts, whereas other projects are at too early of a stage to determine achievement of results. Much of this discrepancy stems from the fact that necessary performance information relating results of Joint Research Projects and MDEP with CNSC priorities was never articulated.

In terms of the results attained from contributing to and participating in OECD/NEA, the CNSC is effective at sharing information and data obtained from its participation in the OECD/NEA with licensees, vendors, and standards development organizations such as the Canadian Standards Association.

The Joint Research Projects are only beginning to make an impact on the CNSC's regulatory framework, regulatory capabilities, and indicators for risk-informed and performance-based inspections.

[31] Sixteen out of twenty-eight respondents indicated that communication is effective.

Additionally, while there is some evidence that MDEP has had an impact on the efficiency and cost-effectiveness of the design review and process being undertaken of the AP1000 technology, the full impact of MDEP is not yet known. To date, only one design review has been issued and it is not yet completed. MDEP has not contributed to enhancing technical assessments as there have been no new licence applications and therefore no technical assessments undertaken to date.

In summary, the impacts by Joint Research Project and MDEP are listed below.

Joint Research Project / MDEP	Duration	Impacts to Date
CODAP (combines ongoing work related to OPDE and SCAP)	2011-ongoing	• Enhanced Regulatory Framework by contributing to RD-334 • Shared knowledge with stakeholders through teleconferences, consultations and presentations of data to licensees and CoG
OPDE	2002-2011	• Enhanced Regulatory Framework by contributing to RD-99.1 and RD-334 • Enhanced regulatory oversight by supplying information on calandria tubes, resulting in updates to regulatory requirements • Shared knowledge with stakeholders through teleconferences, consultations and presentations of data to licensees and CoG
SCAP	2006-2010	• Enhanced Regulatory Framework by contributing to RD-334 • Shared knowledge with stakeholders through teleconferences, consultations and presentations of data to licensees and CoG
FIRE	2003-ongoing	• Shared knowledge with stakeholders through teleconferences, consultations and presentations of data to licensees and CoG
PRISME/PRISME-2	2006-ongoing	• Shared knowledge with stakeholders through teleconferences, consultations and presentations of data to licensees and CoG
ICDE	1994-ongoing	• Enhanced Regulatory Framework by contributing to S-294 • Shared knowledge with stakeholders through teleconferences, consultations and presentations of data to licensees and CoG
ISOE	1992-ongoing	• Enhanced Regulatory Framework by contributing to RD-99.1, GD-99.1, S-294, and two staff review procedures • Enhanced *Integrated Safety Assessment of Nuclear Power Plants* (in 2010 only) • Enhanced regulatory oversight by supplying information to improve radiation protection inspection reports • Shared knowledge with stakeholders through teleconferences, consultations and presentations of data to licensees.

		• Improved indicators for inspections by supplying information to enhance radiation protection guides
MDEP	2008-ongoing	• Enhanced regulatory oversight by supplying information accessible through networking with other MDEP participants • Shared knowledge from issue-specific working groups through common position papers, teleconferences and consultations • Enhanced CNSC design review process by obtaining information on the AP1000 technology

The CNSC's contribution and participation in OECD/NEA Joint Research Projects, MDEP and STCs represents a cost-effective and efficient means to achieve immediate outcomes. There is evidence that resources, including staff time and funding, allocated to OECD/NEA has been used efficiently and that there are measurable returns on investment as a result. In all cases where the CNSC could achieve the same outputs/outcomes, a considerable amount of financial contributions and resources (staff and time) would be required.

The financial analysis revealed that of the total funding the CNSC allocates to OECD/NEA, travel and staff time associated with participating in the OECD/NEA accounts for over two-thirds and majorly supports participation in STCs. Additionally, it was found that STCs yield similar benefits to Joint Research Project and MDEP. As a result, there should be a management focus placed on the CNSC's participation in STCs moving forward.

Continued participation in the OECD/NEA is predicated on responding to the needs of the CNSC and much of the potential for on-going improvements resulting from the Joint Research Projects and MDEP will depend on how the research and activities progress. The fact that performance information was not developed for the CNSC's participation in OECD/NEA makes assessing impacts challenging.

Moving forward, the following recommendations should be addressed:

- Recommendation #1: Construct clear and measurable performance objectives and activities:
    a. Require Technical Authorities to establish and monitor performance for each of their Joint Research Projects and MDEP
    b. Establish performance objectives for CNSC's participation in Standing Technical Committees and link performance to an OECD/NEA logic model

- Recommendation #2: Report to Management Committee, on an annual basis, the performance outcomes in support of the Joint Research Projects, MDEP and Standing Technical Committees.

There is evidence that information is being communicated by CNSC participants of OECD/NEA to their immediate supervisor, particularly through trip reports, it does not percolate throughout CNSC. To increase awareness and share information, various suggestions were offered by interview respondents with most citing hosting annual workshops and presentations. These workshops and presentations could engage a variety of CNSC staff and management, across all business lines.

Moving forward, the following recommendation should be addressed:

- Recommendation #3: Improve the communication of results of CNSC's contributions and participation in OECD/NEA with internal stakeholders.

Appendix A – Draft Management Action Plan

#	Recommendation	Type of Recommendation	Response	Planned Actions	Responsibility	Expected Date of Completion (M/Y)	Measures of Achievement
1	Construct clear and measurable performance objectives and activities: a. Require Technical Authorities to establish and monitor performance for each of their Joint Research Projects and MDEP	Program Design	Accepted	As lead, VP TSB will have relevant Technical Authorities implement performance measurement strategies for all Joint Research Projects and MDEP to support approval and/or renewal. VP RAB will provide evaluation staff expertise and guidance to assist technical authorities with performance measurement strategy development.	VP TSB supported by VP RAB	December, 2016	Performance Measurement Strategies developed and sent to Regulatory Research: • FIRE – June, 2014 • ISOE – June, 2014 • MDEP – June, 2014 • CADAK – June, 2014 • CODAP – December, 2014 • ICDE – December, 2014 • PRISME – June, 2016

				The status of all ongoing research-related performance measurement strategies will be reported to MC as part of the Q4 Integrated Research Plan presentation.	VP RAB supported by VP TSB	Annually, starting June, 2014	Annual Q4 Integrated Research Plan
	b. Establish performance objectives for CNSC's participation in Standing Technical Committees and link performance to an OECD/NEA logic model			As lead, VP TSB, in consultation with EVP ROB, will have relevant Technical Authorities implement performance objectives and align them to the OECD/NEA logic model. VP RAB will provide evaluation staff expertise and guidance to assist technical authorities in developing performance objectives.	VP TSB supported by VP RAB	March 31, 2014	Documented performance objectives that are aligned to the OECD/NEA logic model and cover all Standing Technical Committees where CNSC participates
				VP TSB to convene an annual meeting with Natural Resources Canada to coordinate joint participation in OECD/NEA committees. VP RAB will provide policy staff to facilitate.	VP TSB supported by VP RAB	Annually, starting September, 2014	Annual meeting minutes
2	Report to Management Committee, on an annual basis, the performance outcomes in support of the Joint Research Projects, MDEP and Standing Technical Committees	Program Delivery	Accepted	EVP ROB and VP TSB will annually report on performance of Joint Research Projects, MDEP and Standing Technical Committees to Management Committee.	VP TSB	Annually, starting July, 2014	Annual presentation to Management Committee
3	Improve communication of results from CNSC contributions and participation in OECD/NEA with internal stakeholders	Program Delivery	Accepted	As lead, VP TSB, in consultation with EVP ROB, will annually present results and performance of Joint Research Projects, MDEP and Standing Technical Committees at Operations	VP TSB supported by VP ROB	Annually, starting June, 2014	Annual report presented to Operations Management Committee

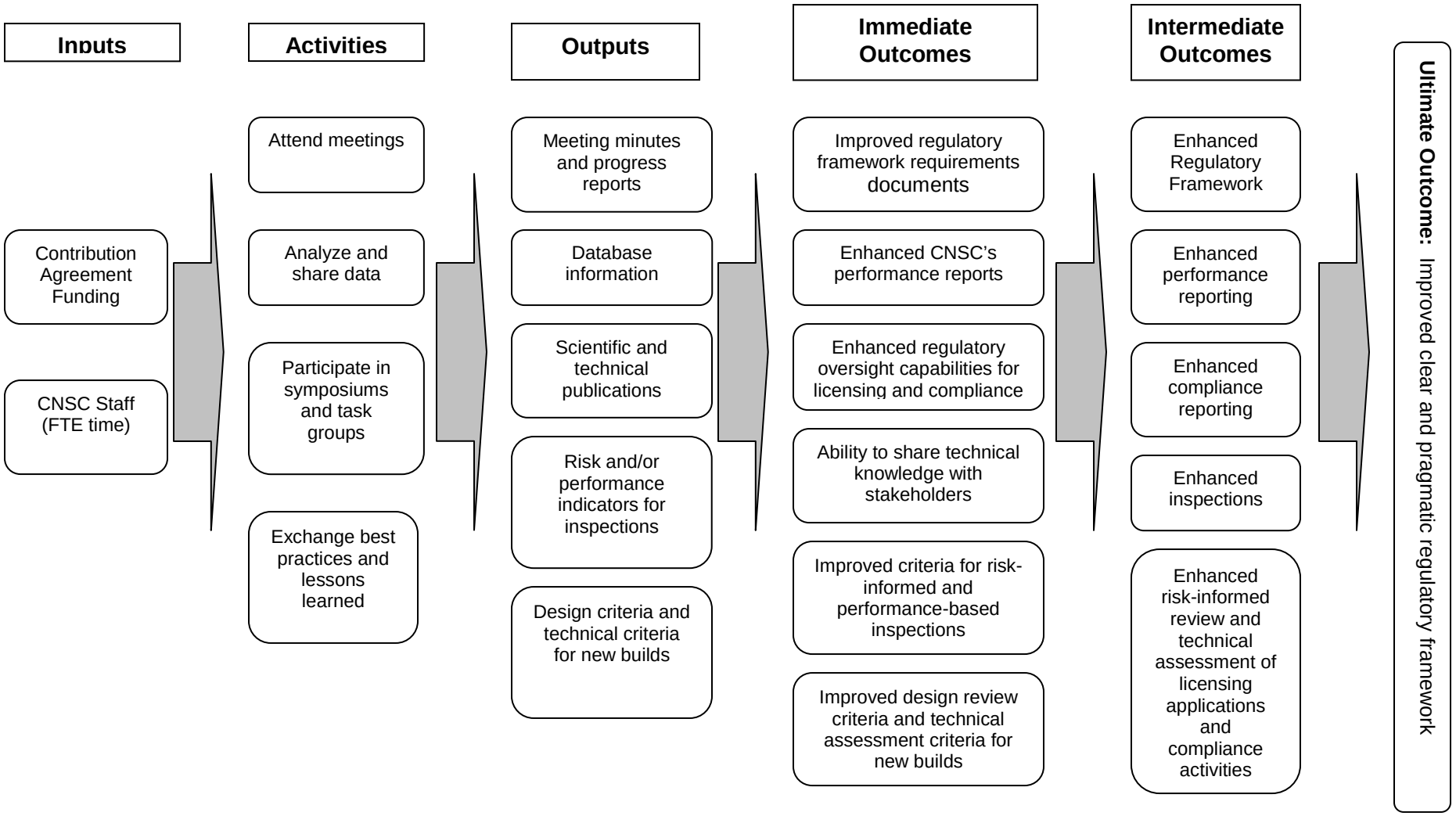
				Management Committee.			
				As lead, VP TSB, with staff resources in SCD by VP RAB, will implement a communications strategy to improve knowledge sharing and results of Joint Research Projects, MDEP and Standing Technical Committees.	VP TSB supported by VP RAB	March 31, 2014	Completed communications strategy

Appendix B - Program Budget

Canadian Nuclear Safety Commission Financial Contributions and Travel[32] for Participation in the Organisation for Economic Co-operation and Development											
Joint Research Projects and Multinational Design and Evaluation Programme – Contribution and Travel ($)											
	2007-2008		2008-2009		2009-2010		2010-2011		2011-2012		SUB - TOTAL
	Contribution	Travel	Contribution	Travel	Contribution	Travel	Contribution	Travel	Contribution	Travel	
ICDE	17,160.01	2,757.89	19,455.70	2,772.07	18,102.15	12,595.06	3,685.46	6,752.29	11,918.89	0	95,199.52
OPDE	6,039.60	20,347.80	8,627.40	8,112.03	7,083.43	6,856.29	6,426.00	4,391.84	6,665.50	0	67,884.39
ISOE	11,250.00	0	15,000.00	9,549.10	15,000.00	2,417.73	15,000.00	4,464.81	15,000.00	3,170.20	90,851.84
FIRE	26,584.41	3,236.96	29,348.63	8,017.15	0	5,227.46	9,685.90	5,296.98	9,529.10	3,195.15	100,121.74
PRISME-2	---	---	---	---	---	---	---	---	70,285.00	5,214.99	75,499.99
CODAP	---	---	---	---	---	---	---	---	6,665.50	6,978.36	13,643.86
SCAP[33]	---	5,341.00	---	5,830.72	---	5,982.43	---	1,298.54	---	---	18,452.69
MDEP	---	31,467.00	64,852.00	73,714.32	59,520.00	73,731.21	55,628.00	40,136.23	55,628.00	43,594.09	498,270.85
SUB - TOTAL	**124,184.67**		**245,279.12**		**206,515.76**		**152,766.05**		**231,179.28**		**959,924.88**
Standing Technical Committees – Travel ($)											
	2007-2008		2008-2009		2009-2010		2010-2011		2011-2012		SUB - TOTAL
CNRA	25,722.00		46,534.45		21,420.04		40,833.02		53,570.33		188,079.84
CSNI	38,012.00		36,433.09		62,618.85		41,936.05		42,456.15		221,456.14
CRPPH	29,170.00		13,722.21		8,042.36		5,685.33		6,515.89		63,135.79
RWMC	5,422.00		15,718.00		3,712.82		3,010.17		0		27,862.99
CSNI / CNRA	5,910.00		9,889.32		0		0		0		15,799.32
NEA general[34]	15,069.00		20,737.00		16,154.98		13,018.35		3,497.23		68,476.56
SUB - TOTAL	**119,305.00**		**143,034.07**		**111,949.05**		**104,482.92**		**106,039.60**		**584,810.64**
TOTAL	**243,489.67**		**388,313.19**		**318,464.81**		**257,248.97**		**337,218.88**		**1,544,735.50**

[32] All Financial Contributions and Finances associated with travel are referenced in Freebalance and CPMRS.
[33] Contribution funding related to SCAP is paid voluntary by Japan for all member states.
[34] NEA – general references all travel associated with the OECD/NEA that is not further referenced by one of the STCs, Joint Research Projects or MDEP.

Appendix C – Logic Model



Appendix D – Evaluation Matrix

Relevance : *Assessment of the role and responsibilities for the federal government in delivering the program ; Assessment of the linkages between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes ; Assessment of the extent to which the program continues to address a demonstrable need and is responsive to the needs of Canadians*

Evaluation Question	Success Factors (i.e. what should be observed)	Indicators	Collection Methods
1. Is there a legitimate role for the CNSC's participation in the OECD/NEA?	CNSC's participation in the Nuclear Standards Program is consistent with their role as a federal regulator.	1.1 Demonstrable support for CNSC's participation in the OECD/NEA as a federal priority	Document Review
2. Are the contributions to OECD/NEA aligned with priorities of the federal government and departmental strategic priorities/outcomes?	The objectives of the OECD/NEA joint research projects and MDEP are aligned with priorities of the federal government and CNSC strategic priorities/outcomes.	2.1 Extent to which the OECD/NEA joint research projects and MDEP are aligned with CNSC's strategic priorities/outcomes	Document Review Interviews
3. Is there a continued need for the CNSC to participate in the OECD/NEA?	Perspectives on stakeholder's needs and how these are being met/not met by design of contributions.	3.1 Stakeholder's perspectives on the usefulness/accessibility of the contributions to the OECD/NEA to meet actual needs	Interviews
4. Are CNSC objectives adequately addressed through it contribution and participation in OECD/NEA?	Evidence is available to assess whether CNSC objectives are addressed/not addressed through its contribution and participation in OECD/NEA.	4.1 Extent to which CNSC objectives are addressed through its contribution and participation in OECD/NEA	Interviews

Performance – Effectiveness: *Assessment of progress towards expected outcomes with reference to performance targets and program reach, program design, including the linkage and contribution of outputs to outcomes*

Evaluation Question	Success Factors (i.e. what should be observed)	Indicators	Collection Methods
5. To what extent has CNSC's participation in OECD/NEA joint research projects enhanced CNSC's regulatory framework?	OECD/NEA joint research projects have enhanced CNSC's regulatory documents in frequency and type.	5.1 # and type of regulatory framework documents that have been revised based on each OECD/NEA research project	Document Review Interviews
6. To what extent has CNSC's participation in OECD/NEA joint research projects enhanced CNSC's performance reports?	OECD/NEA joint research projects have enhanced CNSC performance reports.	6.1 Demonstrable support that access to OECD/NEA data has enhanced CNSC's performance reports	Document Review Interviews
7. To what extent has CNSC's participation in OECD/NEA enhanced regulatory oversight capabilities to review data submitted by licensees and vendors?	Access to licensee and vendor data as part of OECD/NEA has increased CNSC's regulatory oversight capabilities.	7.1 Demonstrable support that access to licensee and vendor data as part of OECD/NEA has increased regulatory oversight capabilities	Document Review Interviews
8. To what extent has CNSC's participation in OECD/NEA increased the ability to share technical knowledge with stakeholders?	Technical knowledge from OECD/NEA have been shared with Canadian licensees and the CSA	8.1 # of references to OECD/NEA within CSA standards	Document Review
		8.2 Demonstrable support that technical knowledge from participating in OECD/NEA has been shared with licensees and the CSA	Interviews
9. To what extent has CNSC's participation in OECD/NEA improved criteria for inspections?	Criteria developed by OECD/NEA work has been incorporated into CNSC inspection criteria.	9.1 # of revisions to indicators for inspections, by type	Document Review
		9.2 Demonstrable support that criteria developed by OECD/NEA work has been incorporated into CNSC inspection criteria	Interviews
10. To what extent has CNSC's participation in MDEP enhanced	Design criteria developed in MDEP has been incorporated into CNSC	10.1 # of revisions to design reviews based on MDEP design criteria	Document Review

CNSC's design reviews and technical assessments of new licence applications?	design reviews and technical assessments have been revised	information exchange	
		10.2 Demonstrable support that CNSC has enhanced design reviews based on participation in MDEP	Interviews
		10.3 # of revisions to technical assessments based on information exchange	Document Review
		10.4 Demonstrable support that CNSC has enhanced technical assessments based on participation in MDEP	Interviews

Performance – Efficiency and Economy: *Assessment of resource utilization in relation to the production of outputs and progress towards expected outcomes*

Evaluation Question	Success Factors (i.e. what should be observed)	Indicators	Collection Methods
11. Have resources (contribution dollars and travel (dollars and staff time)) been utilized to optimize outputs?	Resources are spent according to optimize outputs.	11.1 Resource utilization (contribution dollars and travel (dollars and staff time)) to produce outputs	Financial Review
		11.2 Stakeholder opinions on satisfaction with efficiency (resources used and outputs produced)	Interviews
12. Are the administrative activities of the OECD/NEA contribution agreement well executed so as to maximize the benefits of the immediate outcomes?	Stakeholder opinions are gathered on resource management for achievement of immediate outcomes.	12.1 Stakeholder opinions about resource management needed for immediate outcome achievement	Interviews
13. Are there alternative methods which ensure the same achievement of immediate outcomes?	Stakeholder opinions are gathered on alternative methods, if any, to achieve immediate outcomes.	13.1 Stakeholder opinions about alternative methods to achieve immediate outcomes	Interviews

Design/Delivery: *Assessment of design/delivery for continuous improvement*

Evaluation Question	Success Factors (i.e. what should be observed)	Indicators	Collection Methods
14. What have been some of the inhibitors/barriers and facilitators to success?	Barrier and facilitators to success have been identified.	14.1 Identified barriers and facilitators to success	Interviews
15. What have been some of the unintended/unplanned results of program implementation?	Unexpected/unplanned results (outputs or outcomes) have been identified.	15.1 # and type of unexpected/unplanned results (outputs or outcomes)	Interviews
16. How effective are the channels of communication for management of CNSC's participation in OECD/NEA?	Opinions of CNSC staff involved in participating in OECD/NEA are gathered on effectiveness of channels of communication.	16.1 Opinions of effectiveness of channels of communication	Interviews

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Appendix F –Interview Questions

1) *To what extent does your PROJECT/MDEP reflect each of the following CNSC corporate priorities (Core +4Cs)?*

2) *What, if any, needs (from the perspective of the CNSC) are being met through the CNSC's participation in and funding of the PROJECT/MDEP/Standing Technical Committee Working Groups?*

3) *From your perspective is it worthwhile for CNSC to continue to participate in the PROJECT/MDEP/Standing Technical Committee Working Groups?*

4) *The Contribution Agreements that CNSC has with OECD/NEA are funded through the CNSC's Research and Support Program. The objective of this CNSC program is "to enable the CNSC to address the demand for clarity of regulatory requirements and institute changes to the regulatory framework in order to make it more strategic, risk informed and aligned with domestic and international benchmarks." How does CNSC's participation in and contribution to OECD/NEA contribute to address this objective?*

5) *To your knowledge to what extent has CNSC's participation in your PROJECT enhanced CNSC's regulatory framework? Are you able to provide some examples of how data or information generated through your PROJECT have been used to revise regulatory framework documents?*

6) *To what extent do you feel that CNSC's participation in the PROJECT/MDEP has enhanced CNSC's Staff Integrated Safety Assessment of Canadian Nuclear Power Plants (otherwise referred to as the Annual Nuclear Power Industry Safety Performance Reports)? Are you able to provide specific examples of how CNSC's participation in the PROJECT/MDEP has contributed to this report?*

7) *To what extent do you feel that access to licensee data as part the PROJECT/MDEP has increased the regulatory oversight capabilities of the CNSC? Are you able to provide specific examples of how access to licensee data has improved the oversight capabilities of the CNSC?*

8) *One of the objectives of the CNSC's participation in the PROJECT/MDEP is that the CNSC is able to share technical knowledge and data from the PROJECT/MDEP with licensees and the Canadian Standards Association (CSA). To your knowledge, is the technical knowledge and/or data from the PROJECT/MDEP being shared with licensees? To your knowledge, is the technical knowledge and/or data from the PROJECT/MDEP being shared with the CSA?*

9) *To your knowledge, has indicator criteria developed in MDEP (i.e. Vendor Inspection Co-operation Working Group) been incorporated into CNSC inspection criteria? Are you able to provide examples of revisions to indicators for inspections implemented as a result of MDEP?*

10) *In your experience, to what extent has CNSC's participation in MDEP enhanced CNSC's design reviews and technical assessments of new licence applications?*

11) As the key CNSC representative on the PROJECT/MDEP/Standing Technical Committee Working Group, approximately how many days per year, including travel do you spend on activities related to your PROJECT/MDEP/Standing Technical Committee Working Group?

12) In your opinion, to what extent have resources (staff time and funding) allocated to the PROJECT/MDEP/Standing Technical Committee Working Group by the CNSC been used efficiently?

13) Based on your experience with the PROJECT/MDEP contribution agreement, are there improvements needed to the administration of the contribution agreement on the part of the CNSC? Based on your experience with the PROJECT/MDEP contribution agreement, are there improvements needed to the administration of the contribution agreement on the part of the OECD/NEA?

14) Are there alternative methods through which the CNSC could achieve the same objectives as through its participation in the PROJECT/MDEP/Standing Technical Committee Working Group?

15) Based on your experience with the PROJECT/MDEP/Standing Technical Committee Working Group, what have been some of the factors that have facilitated the achievement of the expected objectives for your group's participation in the OECD/NEA?

16) Based on your experience with the PROJECT/MDEP/Standing Technical Committee Working Group, what have been some of the challenges to achieving the expected objectives for the your group's participation in the OECD/NEA?

17) To your knowledge, have there been any unexpected or unplanned results (either outputs or outcomes)? What have been the implications of these unexpected or unplanned results?

18) In your opinion, are the channels of communication between those who directly participate in the PROJECT/MDEP/Standing Technical Committee Working Group and CNSC management effective?