Canadian Nuclear Safety Commission
Commission canadienne de sûreté nucléaire

Research and Support Program 2002-2003 Performance Report and 2003-2004 Program

May 2003

Canada

RESEARCH AND SUPPORT PROGRAM
2002-2003 PERFORMANCE REPORT AND
2003-2004 PROGRAM

Prepared by
Regulatory Standards and Research Division
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Executive Summary

The Canadian Nuclear Safety Commission funds an extramural Research and Support Program (Program) to obtain knowledge and information needed to support its regulatory mission. The Program gives access to independent advice, expertise and experience through contracts placed in the private sector and with other agencies and organizations in Canada and elsewhere. The Program is compiled by the Regulatory Standards and Research Division (RSRD) from project proposals submitted by clients across the CNSC.

This submission presents information on the objectives, management and fiscal performance of the 2002-2003 Program as well as the planned 2003-2004 Program.

During fiscal year 2002-2003, a budget of $2,320K was originally allocated to the Program (this included $300K in special security funding). On several occasions during the year, RSRD returned funds to the central CNSC budget thereby decreasing the Program budget to $1,454K, of which $1,215K was spent. The original program plan was to fund fifty-five projects, of which twenty-eight had been in-progress at the start of the year. Changes during the year resulted in a total of sixty projects being active.

The planned 2003-2004 Program consists of fifty-two projects with a total budget requirement of $1,822K as of April 2003.

Introduction

Each year, the CNSC funds an extramural Research and Support Program (Program) whose mission is to generate knowledge and information to support CNSC staff in its regulatory mission. The Program provides access to independent advice, expertise and experience through contracts placed in the private sector and with other agencies and organizations in Canada and elsewhere.

The annual Program is compiled from project proposals made prior to the start of the year. Proponents define their specific needs for contracted-out research or support work, provide justification for the proposed work and outline the intended use of the results. The Regulatory Standards and Research Division (RSRD) staff compiles the draft Program and submits it for review and approval by the Research and Support Committee (RSC). The RSC decides which proposals to recommend for funding based on an assessment of their merit and bearing in mind corporate strategies and priorities and specific objectives that are set each year for the Program. The RSC then advises the Operations Management Committee (OMC) on the funding requirement for the Program. The extent to which the work can be completed depends on the funding allocated.

Subject to availability of funds, new project proposals may be considered for funding at any time during the annual program cycle.

To initiate work on an approved project, the client division prepares a Statement of Work and either a sole source justification or criteria for evaluation of proposals. The Senior Research Program Officer, RSRD, assists in the preparation of this material and reviews the completed Contract Request Form. A contracting officer prepares the supporting documentation and forwards the Request for Proposals to Public Works and Government Services Canada (PWGSC) or advertises directly on MERX (the government's on-line open bidding service) in accordance with Treasury Board policy. Proposals received from potential contractors are evaluated by the client division and the Senior Research Program Officer. The contracts officer (PWGSC or CNSC) then prepares and issues the contract.

Once a contract is awarded, the proponent is responsible for project management, including arranging meetings, reviewing deliverables, certifying invoices, and ensuring that the contractor meets the objectives specified in the Statement of Work. The Senior Research Program Officer is responsible for arranging contract amendments requested by the client division and for performance of other non-technical work associated with the contract. At the end of the project, the client division reviews and accepts the final report produced by the contractor.

Finally, public reports from the Program are allocated an RSP number by the Research Program Assistant, RSRD, and listed in the on-line CNSC Documents Catalogue. Copies of non-restricted reports are provided on request to outside bodies or the public.

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1 Performance Report on Fiscal Year 2002-2003

1.1 Objectives and Organization of the Program

To improve planning and recognizing the multi-year nature of many projects, the RSC issued in November 2001, a two-year Call for Proposals, i.e., proposals were requested for fiscal years 2002-2003 and 2003-2004, even though budget allotment is on a single fiscal year basis. Planning two years ahead also helped meet the requirements of the CNSC's new cost recovery proposal.

The objectives set for the Program were to:

- Support timely regulatory judgements and decisions through the acquisition of independent expertise, advice, and information;
- Assist the resolution of health, safety, security, and environmental issues by developing capability tools;
- Assess the significance of emerging issues by performing exploratory studies; and
- Support regulatory and corporate activities within the CNSC.

A number of specific objectives were also set and the proponents were required to demonstrate which of them their proposals were designed to meet:

- to prepare staff to discharge new responsibilities under the NSCA
- to address issues raised by the Office of the Auditor General
- to support regulatory decision-making or to refine a regulatory position
- to contribute to the independence of the regulator
- to address problems of potential safety significance
- to supplement staff's knowledge with specialist expertise
- to induce a licensee to follow a course of action

The Call for Proposals resulted in a total of fifty-five new proposals being received, four of which were for the 2003-2004 Program. There were also an additional twenty-nine projects continuing from fiscal year 2001-2002, one of which was an approved Level 1 which had failed to find a successful contractor on the first RFP attempt and was to be reissued (R127.1).

At the December 10 and 17, 2001 RSC meetings, the Committee decided to adopt a Risk Management approach when reviewing the submissions for the 2002-2003 Program. Proponents were asked to demonstrate how their proposals addressed the risks and objectives which the CNSC faces and which the Research and Support Program could be used to respond. The factors which the proponents were asked to address were:

Health and Safety	Environment
Stakeholder Confidence	Efficiency and Effectiveness
Openness and Transparency	NSCA New Responsibility
OAG Recommendation	Support Regulatory Decisions
DFCMR Priority	DRR Priority
Risk of Not Doing (e.g. Legal)	Other (asked to specify)

The RSC met on February 1, 2002 to review the completed risk matrices prepared by proponents. Because of the ongoing re-organization, the Committee decided only to approve projects which were ongoing (i.e., continue into fiscal year 2002-2003), as well as the next phase (R109.2, R119.3) of two of the completed projects, which were deemed high priority based on the Risk Management approach. The remainder of the program was deferred until the continued existence of a central Program was confirmed and the role and membership of the Research and Support Committee clarified.

In late April 2002, Executive Committee confirmed that the mandate of the Research and Support Program was unchanged for this fiscal year and a new Research and Support Committee was formed. In May a budget of $2,320K was approved by Executive Committee for the Research Program of which $300K was specially marked for Security related projects. The Committee then met on May 31, 2002 to decide on the balance of the Program. Only those proposals that had submitted the required risk justification information were reviewed. This resulted in sixteen projects being granted Level 1 approval, one proposal being withdrawn (by the proponent) and eight placed on Hold. The proponents of the remaining eighteen proposals which lacked risk justifications were given an additional month to submit the required risk information.

On July 18, 2002 the Committee met to consider funding the remaining proposals of which twelve had the required risk justification information. The RSC approved four at Level 1, five at Level 2, placed one on Hold and rejected two that did not meet the objectives of the Program. The six which still lacked risk information were once again given an additional month.

On September 10, 2002 the Committee met to make the final decisions on the Program. An additional four projects (two of which were new proposals) were granted Level 1 approval.

The final disposition of the proposals received for the Research and Support Program for fiscal year 2002-2003 was as follows:

In-progress (from FY01/02) projects:	26	
Unexpected carryovers (from FY01/02):	2	
Level 1 approved (immediate initiation):	28	(includes R127.1)
Level 2 approved (in principle):	5	
On Hold:	13	
Withdrawn by proponent:	9	
Rejected:	2	

The fifty-five projects (with approved funding) had a total budget requirement of approximately $1,990K. As a result, $420K of the original Research budget ($2,320K) was returned to Finance for redistribution within the CNSC, of which $160K was from the special Security funds.

In January 2003, an additional $401K was returned to Finance after a detailed program review. Due to the number of Level 1 projects that had yet to be initiated by the project managers, these funds could not be spent before the end of the fiscal year. An additional $30K was transferred out in late February and $15K of security funds at the end of the fiscal year bringing the final Program budget to $1,454K. There were also several joint-project agreements entered into that resulted in $110K being cost recovered.

1.2 Fiscal Performance

Fiscal performance is very much dependant upon two factors:

- timeliness of project initiation
- number of unexpected carryovers (UCOs)

The overall Program budget is set based on the anticipated project duration and budget requested by the Proponent. The majority of the projects in the program are originally designed to be completed within one fiscal year but some are planned multi-year projects.

For many projects the time needed to develop a Statement of Work, advertise for bids and select a contractor results in the project running into the following fiscal year. When this occurs in the first or second quarter of the fiscal year, the Program budget can be adjusted and funds reallocated or returned to Finance. These are known as planned carryovers. In some cases, proponents are not able to initiate projects until the later part of the fiscal year, which affects the ability to expend the project funds within the fiscal year. Provided there is sufficient time to re-allocate funds, these are still known as planned carryovers.

Some carryovers are not planned and are a result of changes made to the scope of work or difficulties encountered in the project which cause the schedule to slip into the next fiscal year. When these changes or difficulties occur near the end of the fiscal year the projects are considered unexpected carryovers (UCOs). The number of UCOs and their funding requirement greatly affects the fiscal performance as there is no time to reallocate funds.

Figure 1 on page 5 shows the timelines of the projects in the 2002-2003 Program. Approximately half of the projects had already been carried over from the previous year. Of the remaining, two-thirds did not start until the third or fourth quarter. What the figure does not reveal is that six approved projects were not initiated by the project managers.

Figure 1 (pdf file)

Actual spending lagged behind the plan, the final expenditure being $1,215K after taking into consideration the funds recovered from third-parties who we entered into agreements with. The Program lapse was $239K. All values have been rounded to nearest $1K.

Expenditures for the year were as follows:

a) Research and Support projects, including staff travel for project management	$1134K	78%
b) Contributions to international projects	$ 81K	6%
c) Amount lapsed	$ 239K	16%

The breakdown of expenditures between in-progress, planned and new projects can be seen in Table 1. The completed projects are listed in Appendix A, along with the actual expenditures on each. Fourteen research reports were published during the year, two of which were from projects which had completed in the previous fiscal year. A complete listing of the reports can be found in Appendix B.

Table 1 Breakdown of Expenditures

Project Source	Number of Projects		Expenditure ($K)
In-progress projects	Completed	16	465
	Terminated	1	0
	On-going	9	165
New Projects in Program (Level 1 approved)	Completed	6	177
	Cancelled	1	0
	On-going	14	389
Projects advanced from Level 2 approval	Completed	0	
	On-going	1	0
Unplanned Carry-overs	Completed	2	17
	On-going	0	
New Projects not in Program	Completed	4	32
	On-going	6	81
Cost Recovered Funds			-110
Total		60	1,215

1.3 Comparison with Previous Years

The budget, expenditure, lapse and proportion spent on in-progress projects in fiscal year 2002-2003, compared with previous years, were:

Table 2 Financial Comparison with Previous Years

	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
Final Budget	2473	2020	2320	1784	1560	1454
Expenditure	2224	1861	2146	1730	1417	1215
Lapse	249	159	174	54	143	239
Lapse (%)	10.1	7.9	7.5	3.0	9.1	16
In-progress projects	891	907	1055	798	861	631
In-progress projects %	36	45	49	46	61	52

The size of the lapse is a measure of the efficiency with which the Program has been managed, since funds unspent in one year must be found from the following year's budget. The target is to achieve a lapse of less than 5%, since this is the maximum percentage of funds that the organization as a whole can carry forward to the next fiscal year, although the Program itself is not permitted to carry forward lapsed funds. The greater the proportion of the budget committed to projects carried over from the previous year, the less is the ability of the Program to respond to requests for new work.

The 16% lapse is large compared to previous years. The lapse can be explained, in part, by several cost recovering agreements. Although it was anticipated that $60K would be recovered from several parties with interest in the Saskatchewan Uranium Miners' Cohort Study, the agreements were not finalized until late in the third quarter. This accounts for 25% of the total lapse.

The lapse can also be attributed to delays in seven projects which resulted in their completion being pushed into the next fiscal year and one project which encountered significant problems during the contracting process. These eight projects account for $156K not being expended or 65% of the total lapse.

Had the late agreements, project amendments and delays at PWGSC not occurred, the program lapse would have been within the target range of 1 to 5%.

1.4 Program Effectiveness Review

The 2002-2003 Program addressed a high demand for research and support work, comprising sixty active projects, of which twenty-eight had been in-progress at the start of the year. A total of thirty projects were completed during the fiscal year, although one had been terminated early due to changes in work requirements. There was also one project that was cancelled just as the RFP was about to be issued.

The number of UCOs included in the 2002-2003 Program was two. This was a great improvement over previous years, for example the 2000-2001 Program included eleven UCOs. The reduced number was a result of the changes made by RSRD to improve program management. However, the number of UCOs from fiscal year 2002-2003 into 2003-2004 is seven.

Originally twenty-eight projects (over and above those already in progress) were planned in the Program (i.e., Level 1 approval). However, only twenty-one were actually initiated by the project managers. Delays in the initiation or project schedule resulted in funds being available for additional projects. As a result, one project with Level 2 approval and ten new projects were started in 2002-2003. The decision to fund these new proposals over those already approved as Level 2 in the Program was based on the urgency of the project or due to their greater ability to start late and expend funds in the fiscal year. The number of new projects was comparable to previous years.

Of the twenty-four Post Project Evaluations which have been received from the proponents, twenty-one rated the quality of their final report as Very Good or Excellent. When ranking the outcome (for which more than one vote was permitted) eighteen felt that their project had contributed to the knowledge base of staff; six that they created contacts with experts outside the CNSC; three that results would be used to resolve generic action items; nineteen that they would contribute to the preparation of a Regulatory Policy, Standard, Procedure or Guide; eight that results would be used in license conditions; and nine that the results would be published in a scientific or engineering meeting abstract, proceedings or journal.

2 The Research and Support Program for Fiscal Year 2003-2004

2.1 Objectives and Organization of the Program

Since the CNSC's planning horizon had been increased from one year to two, to make it consistent with the Strategic Planning and Budget Planning Processes, the Call for Proposals was once again issued for two fiscal years (2003-2004 and 2004-2005).

The mandate of the Program remained unchanged (to generate knowledge and information to support CNSC staff in its regulatory mission); however the objectives were changed slightly. The objectives for the 2003-2004 and 2004-2005 Program were:

- to address issues raised by Central Government Agencies (such as the Office of the Auditor General);
- to support regulatory decision-making or refine a staff position;
- to contribute to the independence of the regulator;
- to address problems of potential safety significance;
- to supplement staff's knowledge with specialist expertise;
- to induce a licensee to address an issue; and
- to work towards an Operations Branch Strategic Priority.

2.2 Program Approval and Budgeting Process

The demand for research and support work for the new Program years was low compared to previous years with only thirty-three new proposals being received. Of the thirty-three, five were projects that had been approved at Level 1 last fiscal year and never initiated and three were for 2004-2005. There were also twenty-two projects continuing from fiscal year 2002-2003, one of which was an approved Level 1 project that failed to find a successful contractor on the first RFP attempt and was to be reissued (R131.1).

The Research and Support Committee began preliminary program discussions at its January 6, 2003 meeting and finalized the Program at its February 28, 2003 meeting. Since that time, there have been four new project requests and seven unexpected carryovers.

The final disposition of the proposals received for the 2003-2004 Program is as follows:

In-progress (from FY02/03) projects:	22	
Unexpected carryovers (from FY02/03):	7	
Level 1 approved (immediate initiation):	21	includes R131.1
Level 2 approved (in principle):	6	
On Hold:	2	
New:	2	+ 2 still waiting decision
Rejected:	2	

Appendix C lists those projects that are already in-progress and Appendix D lists those projects planned for this year (Level 1 and Level 2). The fifty-two projects with approved funding have a total budget requirement of approximately $1,822K. In the expectation that significant new work is in the pipeline (e.g. on the licensing basis for the Advanced CANDU Reactor review), the surplus funds (of approximately $500K) are not being returned to corporate coffers at this time. RSC will review the situation monthly.

Appendix A:
Projects Completed in Fiscal Year 2002-2003

R101.1	$3K	Lattice Database Development for Static and Transient Analyses
R104.1	$56K	Guidelines for Assessment of Electromagnetic Interference in the CANDU Plant – Phase 2
R108.1	$10K	State-of-the-Art Report on Moderator as a Heat Sink
R112.1	$23K	The Determination of Radiation Damage in the Sub-Populations of Human White Blood Cells
R115.1	$25K	Simulation of the FEBEX Experiment as a Test Case for DECOVALEX III
R119.2	$15K	ICDE Project – Preparation of Data to be Submitted to the Clearing House
R124.1	$10K	CNSC Regulatory Control of Landfills, Hazardous Waste and Scrap Metal Sites
R134.1	$20K	Reactor Physics Aspects of LOCA Analysis – Phase 2
R140.2	$40K	The Effects of Ageing on Reactor Physics Parameters – Phase 2
R145.1	$96K	Verification of Process Zone Model for Assessing Delayed Hydride Cracking of CANDU Pressure Tubes
R147.6	$9K	Finalization of the Nominal Roll and Work Histories for Part I of the SUMC Study
R147.7	$2K	Preliminary Meeting for the Analysis Phase of the SUMC Study
R148.1	$17K	Comparison and Validation of Several Methods that Determine Neutron Dose Equivalents
R156.1	$2K	Information on the Health Effects from Ambient Levels of Tritium in the Environment
R170.1	$11K	Power Reactor Regulatory Standards Development – Phase 1
R171.1	$47K	Doses to Transport Workers – Phase 1
R177.1	$14K	Paleothermometry of Canadian Shield Groundwaters

R191.1	$17K	Independent Expert Panel Review of Canadian Best-Estimate and Uncertainty Analysis Methodology for CANDU Reactors
R203.1	$68K	Independent Expert Panel review on Reactor Physics Uncertainties
R210.1	$4K	CNSC Working Group on External Dosimetry
R211.1	$17K	CNSC Working Group on Internal Dosimetry
R213.1	$17K	Implementation of Geographic Information System (GIS) – Idle Mines, Elliot Lake
R215.1	$13K	2nd Workshop on the Remediation of Legacy Uranium Mines in Canada
R219.1	$75K	Vital Areas Study
R220.1	$50K	DBT Update
R223.1	$5K	Presentation of Results of the Independent Review of NB Power's Cable Quantification Tests
R225.1	$5K	Loss of all Heat Sinks
R231.1	$20K	Review of CHF Technical Base for MAPLE Moly Targets

Total expenditure in fiscal year 2002-2003 on projects which completed during the year = $691K. Values above have been rounded to the nearest $1K and include Project Manager's travel where applicable.

Appendix B:
Reports Issued in Fiscal Year 2002-2003

RSP-0151, Review of the Experimental Support for the Analysis of Fuel Channel Integrity and Heat Transfer to the Moderator during Accidents in which the Moderator Serves as a Heat Sink, G.E. Gillespie, Gillespie Consulting

RSP-0152, International Common Cause Data Exchange (ICDE) Project: Preparation of Data to be Submitted to the Clearing House, R.I. Lounsbury, J.M. Mark, N. Demers, Suretech Development Limited

RSP-0153-1, Tritium in the Canadian Environment: Levels and Health Effects, R.V. Osborne, Ranasara Consultants Inc.

RSP-0153-2, Tritium in the Canadian Environment: Questions and Answers, R.V. Osborne, Ranasara Consultants Inc.

RSP-0154, Canadian Waste Site Database – Inventory of Landfills, Hazardous Waste Disposal Sites and Scrap Metal Yards in Canada, Intera Engineering Ltd.

RSP-0155, Comparison and Validation of Methods that Determine Neutron Dose Equivalent, Dr. E.Waller, Science Applications International Corporation (SAIC Canada)

RSP-0156, Guidelines for the Assessment of Electromagnetic Interference in the CANDU Plant – Phase 2, Mr. T. Jamieson, Science Applications International Corporation (SAIC Canada)

RSP-0157, Power Reactor Regulatory Standards Development – Phase 1, Mr. T. Jamieson, Science Applications International Corporation (SAIC Canada)

RSP-0158, Doses to Transport Workers: Phase 2, ECOMatters Inc.

RSP-0159, Paleothermometry of Canadian Shield Groundwaters, I. Clark, N. Battye, University of Ottawa; T.G. Kotzer, Atomic Energy of Canada Limited

RSP-0160, Independent Expert Peer Review Canadian Industry Best Estimate Analysis and Uncertainty Methodology, Dr. H.G. Glaeser, Dr. L.E. Hochreiter, Dr. J.A. Wickett, CANDU Owners Group Inc.

RSP-0161, Proceedings – Second Workshop on Remediation of Idle Uranium Mines in Canada, Elliot Lake, Ontario, A. Vivyurka

RSP-0162, Detection of Radiation Damage in Sub-Populations of Human White Blood Cells, R.C. Wilkins, B. Kutzner, M. Truong, D. Wilkinson, Consumer and Clinical Radiation Protection Bureau

RSP-0163, Independence Expert Panel Review of Reactor Physics Uncertainties, M.C. Brady Raap, Pacific Northwest National Laboratory; D.J. Diamond, Brookhaven National Laboratory; H.L. Dodds, University of Tennessee; A. Okazaki, Consultant; R.J.J. Stamm'ler, Studsvik Scandpower AS

Appendix C:
Projects Currently Active in Fiscal Year 2003-2004

The expenditures given, for each project, are the actual total previous expenditures followed by the anticipated expenditure in FY03/04, including CNSC Project Manager's travel where applicable (rounded to nearest $1K).

R109.2 - $151K; $77K	Lattice Database Development for Static and Transient Analyses
R110.1 - $250K; $10K	International Study on Nuclear Industry Workers (Contribution)
R116.1 - $48K; $13K	Laboratory Investigation of the In-Pit Disposal Concept for Uranium Mines Tailings
R119.3 - $21K; $25K	Canadian Participation in the ICDE (International Common-Cause Data Exchange) (Contribution)
R139.1 - $52K; $33K	Review of the Coverage Limit in the Canadian Liability Act – Phase 2
R140.1 - $43K; $11K	The Effects of Ageing on Reactor Physics Parameters - Phase 1
R144.1 - $24K; $23K	OECD Piping Failure Data Exchange Project (OPDE) (Contribution)
R146.1 - $9K; $14K	Development of Draft Regulatory Guides for Nuclear Security Regulations
R147.1 - $29K; $4K	Saskatchewan Uranium Miner's Study - Preparation of Cohort
R147.2 - $41K; $19K	Saskatchewan Uranium Miner's Study
R147.5 - $10K; $5K	Un-Duplicate the Eldorado Cohort – Part 1 of the Saskatchewan Uranium Miners' Cohort Study
R147.5b - $6K; $17K	Un-Duplicate the Eldorado Cohort – Linkage to the National Dose Registry
R161.1 - $46K; $53K	Uranium Concentrations in Port Hope Soils, Vegetation and Soil Organisms
R177.2 - $0K; $28K	Paleothermometry of Canadian Shield Groundwaters: Phase 2

R178.1 - $0K; $30K	Technical Review Panel for the Saskatchewan Uranium Miners' Cohort (SUMC) Study
R178.3 - $3K; $8K	Study Working Group for the Saskatchewan Uranium Miners' Cohort (SUMC) Study
R178.5 - $30K; $14K	Feasibility Study for Part II of the Saskatchewan Uranium Miners Cohort (SUMC) Study
R188.1 - $151K; $10K	CNSC's Participation in DECOVALEX III (Contribution)
R200.1 - $24K; $5K	Validation of Fuel Computer Codes Used in Safety Analysis
R202.1 - $34K; $11K	International Regulatory Practices in Fuel Design Qualification
R205.1 - $0K; $75K	Toxicity of Uranium to Aquatic Organisms in Water Representative of Canadian Freshwater Environments
R206.1 - $24K; $59K	Background Radionuclide Concentrations in Major Environmenta Compartments of Natural Canadian Terrestrial Ecosystems
R212.1 - $7K; $24K	Comprehensive Review of the Effectiveness of Waste Rock Management and Decommissioning Practices
R214.1 - $30K; $30K	Assessment of Radiation Doses Arising from Civilian or Military Vehicle Use of Radium Luminous Devises in Operating or Static Display Vehicles
R215.2 - $0K; $33K	3rd Workshop on the Remediation of Legacy Uranium Mines in Canada
R217.1 - $0K; $55K	Guidelines for Safety Assessments Using Best-Estimate and Uncertainty Analysis for Power and Research Reactors
R219.2 - $0K; $7K	Vital Areas Study – Presentation to Licensee
R221.1 - $15K; $8K	Information on Technologies Available for the Reduction of Tritium Emissions
R224.1 - $6K; $7K	IAEA ASAM Coordinated Research Project
	Condition Assessment and Life Cycle Management of Aging

R226.1 - $24K; $40K	Steam Generators after Lay-up and Long Term Operation
R227.1 - $4K; $25K	Appraisal of Industry Analysis of Scaling of Coolant Voiding during Early-Blowdown Phase of LLOCA and its Applicability to CANDU Reactors
R232.1 - $0K; $152K	Characterization of Northern Transportation Route Sites Under Institutional Controls
R234.1 - $0K; $61K*	Status of Canadian Research Related to the Mandate of the CNSC (Research Review Group) *co-funded, amount represents RSP expenditures only
R238.1 - $0K; $30K **	UNENE (Contribution) ** inherited ongoing agreement in FY03/04, amount represents RSP expenditures only

Appendix D:
New Projects Planned for Fiscal Year 2003-2004

Level 1 - Approved for Immediate Initiation

R105.2 - $90K	Loss of Reactivity Control Analysis Methodology – Phase 2
R119.4 - $50K	Data Collection for the ICDE Project
R120.1 - $51K	Review of the Validation Matrices for Reactor Physics Methods – Phase1
R131.1 - $115K *	Probabilistic Assessment of Leak Rates through Steam Generator Tubes * multi-year project
R140.3 - $90K *	The Effect of Aging on Reactor Physics Parameters – Phase 3 * multi-year project
R147.3 - $30K	Updated Analysis of the Eldorado Uranium Miners Cohort
R147.4 - $27K	Case-Control Study of the Eldorado Uranium Miners Cohort – Ontario Miner Database Search
R178.2 - $7K	Ethical Review of the SUMC Study
R178.4 - $60K	Worker Survey for Part II of the SUMC Study
R198.2 - $57K	Fuel Experimental Program Review – Phase 2
R200.2 - $50K	Validation of the ELESTRES-IST 1.0 Safety Analysis Computer Code
R200.3 - $48K	Validation of the FACTAR Safety Analysis Computer Code
R201.1 - $59K	Adequacy of Intra-Bundle Power Profile Treatment in Large LOCA Analysis
R210.2 - $9K	CNSC Working Group on External Dosimetry
R211.2 - $19K	CNSC Working Group on Internal Dosimetry
R229.1 - $30K	Survey of CANDU Fuel Bundle Experiments Under High Temperature Conditions

R230.1 - $46K Reactor Physics Aspects of Low Void Fuel – Phase 1

R233.1 - $50K Analysis of Contact Boiling Experimental Data

Level 2 - Approved in Principle

R120.2 - $66K Review of the Validation Matrices for Reactor Physics Methods – Phase

R125.1 - $30K Compliances with Bulk Reactor Power Limits

R133.1 - $50K Reactor Core Simulation of Fuel Burnup

R138.1 - $54K Safety Analysis Review Guides for Non-Power Reactors

R154.1 - $54K Performance Demonstration of NDE Techniques

R170.2 - $157K * Power Reactor Regulatory Standards Development – Phase 2
* multi-year funding