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Workshop on Establishing and Operating a National Nuclear Security Support Centre Hypothetical Scenario:

"Centralia Nuclear Security Support Centre Strategy Implementation Plan"

James Conner

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CENTRALIA NUCLEAR SECURITY SUPPORT CENTRE

STRATEGY IMPLEMENTATION PLAN

Approved by:	Title	Signature
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CONTENTS

1. OVERVIEW

1.1. INTRODUCTION

In prior years, as a part of efforts to strengthen and better sustain nuclear security within the State, Centralia requested through the Integrated Nuclear Security Support Plan (INSSP) framework that the International Atomic Energy Agency (IAEA) conduct an expert mission on establishing and operating a national nuclear security support centre (NSSC). After the IAEA conducted the NSSC expert mission, members of the Centralia Committee on Nuclear Security (CNS) agreed to initiate the feasibility determination phase of establishing an NSSC, in line with the systematic process recommended by the IAEA [1]. Centralia Nuclear Regulatory Authority (CNRA), as the designated lead organization for coordinating the feasibility determination process, prepared a Feasibility Report in collaboration with members of the CNS and based on input gathered among relevant national stakeholders. The report was presented to the National Security Advisor (NSA), who reviewed and approved the proposal for Centralia to proceed with establishing an NSSC.

After Centralia moved into the planning phase for the Centralia Nuclear Security Support Centre (CNSSC), per REF [1], the primary stakeholders of the centre jointly developed this strategy implementation plan, which provides an outline of the organizational structure, needs analysis, programme objectives, financial and project management, risk management, and other key aspects of the centre. This document will be reviewed and updated as necessary on a semi-annual basis during the project implementation period of establishing CNSSC (see Section 6).

1.2. STRATEGY MAP

Strategy development is an essential part of the planning phase within the systematic process for establishing an NSSC and begins with the development of a strategy map [1]. The strategy map provided in Appendix I outlines CNSSC's mission and values, which inform its strategic objectives and perspectives that will guide the establishment and operation of the centre in a sustainable manner. The strategy map offers a visual representation of how Centralia is developing CNSSC core activities and services in alignment with stakeholders' needs, budget and financial arrangements, policy and administrative processes, and learning and growth goals. These aspects of the centre are outlined in further detail in Sections 2 – 11.

2. ORGANIZATIONAL STRUCTURE

The institutional model that Centralia selected is a decentralized concept, whereby CNRA will serve as the Coordination Chair of the NSSC, will lead on many aspects of programme planning, development and implementation, and will host many of the activities conducted by the centre. Other CNSSC stakeholders will at times be recipients of the centre's services, but also occasionally lead or make significant contributions to NSSC programmes and activities. In this institutional model, the centre will not be developed as or housed in a single new building or organization, but rather as a hub-and-spoke concept based on refurbishment of existing infrastructure and enhancement of existing HRD, technical support and scientific support programmes within multiple institutions. The primary stakeholders of CNSSC, who will also comprise the members of a CNSSC Sub-Committee within the CNS, are as follows:

- CNRA
- Centralia Border Guards (CBG)
- Centralia National Police (CNP)
- Centralia Ministry of Interior (CMI)
- Centralia Coast Guard (CCG)
- CentAtom/Centralia Nuclear Power Plant (CNPP)

- Centralia Nuclear Energy Agency (CNEA)
- National Technical University of Centralia (NTUC)

Figure 1 presents the planned general organizational structure for CNSSC, with lead stakeholder organizations indicated for each programme area where as applicable.
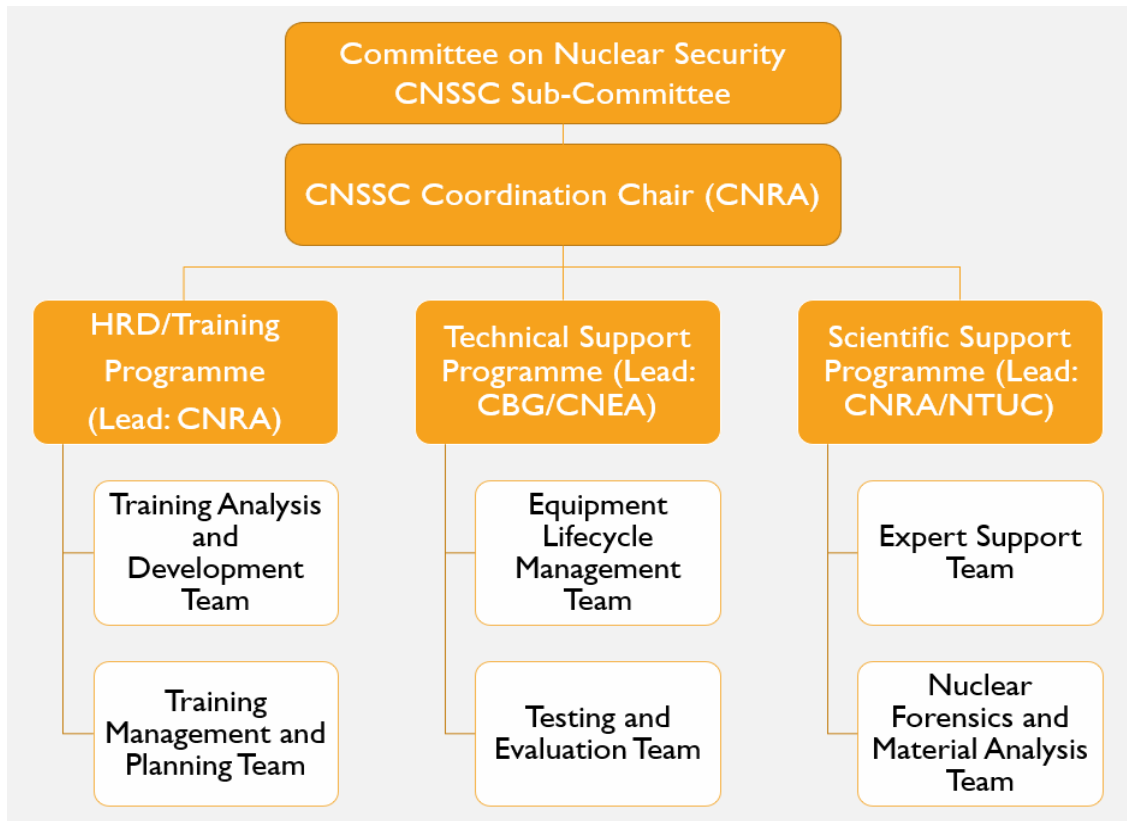

FIG. 1 - CNSSC Organizational Structure

3. NEEDS ANALYSIS

During the feasibility determination phase of the systematic approach to establishing an NSSC, CNS members conducted a resource assessment and gap analysis, per REF [1], to identify sustainability needs across the national nuclear security regime that could potentially be addressed through establishment of an NSSC. As captured in the Feasibility Report, the members of CNS determined that Centralia's nuclear security sustainability needs and gaps could effectively be addressed through the establishment of an NSSC. Such a centre will need to feature programmes in all three core functions of HRD, technical support, and scientific support to close identified gaps and strengthen coordination and collaboration. Based on needs identified during the feasibility determination phase, the CNSSC training programme will focus primarily on the following areas:

- radiation detection equipment operation and maintenance;
- physical protection equipment preventive maintenance, performance testing and evaluation;
- nuclear security culture;
- insider threat mitigation;
- transport security; and
- interagency exercises and training on response to nuclear security events.

Given its strong experience with implementing a systematic approach to training (SAT), CNRA will lead the CNSSC HRD/training programme and will coordinate with other stakeholders to conduct a more detailed HRD and training needs analysis (TNA) as a key initial task in the national project to

establish the centre. CCG and CNPP will support CNRA in this effort, based on their respective experience in applying an SAT. Key subject matter experts and current instructors from each stakeholder agency will also contribute to the initial TNA and ongoing application of an SAT as the centre becomes operational.

CBG will serve as the lead for the CNSSC technical support programme, based on its significant experience and demonstrated good practices in taking a systematic approach to lifecycle management for radiation detection equipment, in particular for preventive maintenance. CNEA will serve as co-lead for technical support, however, to support physical protection equipment lifecycle management needs among stakeholders. CBG and CNEA will carry out a more detailed technical support needs assessment, as an initial task in the national project to establish the centre, by conducting an inventory of the equipment owned and operated by the various NSSC stakeholders and identifying criteria to determine which equipment can be managed with technical support from CNSSC [1].

For scientific support, CNRA and NTUC will serve as the lead, with CNRA primarily managing a Expert Support Team, while NTUC will build on its established capabilities and infrastructure to lead a Nuclear Forensics and Material Analysis Team.

4. PROGRAMME OBJECTIVES

According to the findings from and gaps identified through the feasibility determination process, Centralia has identified the following objectives and activities to be conducted at CNSSC.

4.1. HUMAN RESOURCE DEVELOPMENT

Objective: To support development of qualified and competent staff in competent authorities and authorized persons with nuclear security responsibilities through a systematic training programme based on stakeholders' needs.

Training courses to be developed or improved through CNSSC:

- Detection of and response to criminal and unauthorized acts involving nuclear material out of regulatory control
  - Radiation detection equipment operations for Front Line Officers
    - Target stakeholders: CBG, CNP, CCG
  - Radiation detection equipment preventive and corrective maintenance
    - Target stakeholders: CBG, CNP, CCG
  - Application and integration of radiological crime scene management and nuclear forensics
    - Target stakeholders: CNP, NTUC, CNRA
  - Interagency Table-top and field exercises on response to nuclear security events (performance test of NRP)
    - Target stakeholders: CBG, CNP, CCG, CNRA
- Security of nuclear and other radioactive material, in storage, use, and transport
  - Physical protection equipment preventive and corrective maintenance
    - Target stakeholders: CNPP, CNEA, authorized users of radioactive sources
  - Physical protection equipment performance testing and evaluation
    - Target stakeholders: CNPP, CNEA
  - Development of a nuclear security culture programme

- Target stakeholders: CNPP, CNEA, authorized users of radioactive sources
    - Protective and preventive measures to mitigate against insider threats
        - Target stakeholders: CNPP, CNEA, authorized users of radioactive sources
    - Interagency training and exercises on security of nuclear material in transport
        - Target stakeholders: CNPP, CNEA, CNRA, CNP, CBG, CCG
    - Training of nuclear security inspectors
        - Target stakeholders: CNRA

4.2. TECHNICAL SUPPORT

Objective: To support effective and efficient equipment lifecycle management among competent authorities and authorized persons with nuclear security responsibilities through a systematic technical support program based on stakeholders' needs.

Equipment lifecycle management support to be offered by CNSSC:

- Development and management of a CNSSC Technical Support Plan, outlining a common approach among relevant stakeholders for:
    - maintenance scope and task selection
    - configuration management
    - radioactive check source management
    - spare parts management
    - continuous improvement
- Development of internal preventive maintenance program
    - Target stakeholders: CNP, CCG, and CNPP
- Management of contract for external provider of corrective maintenance for radiation detection equipment
    - Target stakeholders: CBG, CNP, CCG
- Support on acceptance testing and evaluation of new equipment
    - Target stakeholders: CBG, CNP, CNPP, CNEA

4.3. SCIENTIFIC SUPPORT

Objective: To support effective implementation of The Act and NRP through provision of expert advice to competent authorities and analytical support in response to a nuclear security events.

Scientific support services to be offered by CNSSC:

- Remote support on alarm assessment using expert advice and remote spectra evaluation
- Remote or on-site analytical or operational support
- Operational support to field teams of stakeholders in response to material out of regulatory control
- Support for the development of CONOPS and SOPs in implementation of the NRP
- Provide expertise for in-field categorization of nuclear and other radioactive material

- Provide nuclear forensics activities and expertise, including through advanced laboratories equipped with various analytical techniques to analyse nuclear and other radioactive material

- Operate a national nuclear forensics library or registries of nuclear and other radioactive materials

5. FINANCIAL MANAGEMENT

Financial management for CNSSC will cover life cycle costs of infrastructure, operation, maintenance, staffing, and training, as well as system upgrades costs. Costs include capital, procedures and programme development costs as well as direct and indirect costs. CNSSC will be financed through a unique cost-sharing agreement and funding model within the Government of Centralia.

As CNSSC will be based on a decentralized model, funding will be allocated to various agencies according to their agreed role within the CNSSC programme structure. CNRA will be allocated additional resources for administrative, planning, and management functions for the centre, as well as refurbishment of training and meeting rooms, based on its role as the CNSSC Chair and lead for the HRD programme. Over the first three years of CNSSC operationa, CNRA will phase in a gradual minor increase its licensing fees to authorized users of nuclear and other radioactive material to offset operational costs and will request a one-time budget surplus for refurbishment of facilities. CBG will likewise receive a one-time budget surplus for refurbishment of classrooms, but will require a sustained increase in operational budget from CMI to cover additional staffing costs. CNEA and NTUC will not require any additional funding for infrastructure refurbishment, but will require an increase in operational budget from CMES to cover additional staffing costs. Lastly, CNRA, CBG, CNEA, and NTUC will develop operational requirements for technical equipment required in order to carry out CNSSC programme activities, which Centralia will plan to share with donors – including the IAEA – for possible external support.

Monitoring and reporting of fund utilization and expected outcomes will ensure implementation in line with CNSSC stakeholders' integrated management systems, including assessment against key performance indicators (KPI). Stakeholders will be required to report to the CNSSC Coordination Sub-Committee of the CNS on accounting records and invoices of relevant transactions. Financial reports will be provided to the National Security Advisor and will be included in annual reports to both the Ministry of Finance and to the Prime Minister. Table 1 presents a high-level estimate of total infrastructure and equipment costs and annual operational costs, and Appendix II provides a more detailed breakdown of estimated costs.

Table 1 - Estimated CNSSC Costs (in Centralia Dollars)

INFRASTRUCTURE REFURBISHMENT COSTS	0.8M
EQUIPMENT PROCUREMENT COSTS	1.923M
TOTAL INFRASTRUCTURE AND EQUIPMENT COSTS	**2.723M**
ANNUAL STAFFING COSTS	1.115M
ANNUAL TRAINING COSTS	0.640M
ANNUAL TECHNICAL SUPPORT COSTS	0.260M
ANNUAL SCIENTIFIC SUPPORT COSTS	0.200M
TOTAL ANNUAL OPERATIONAL COSTS	**2.215M**

6. PROJECT MANAGEMENT

CNRA, as CNSSC Chair, is leading the overall CNSSC project management process and has developed the following project tasks and timelines in cooperation with other CNSSC stakeholders.

Separate project initiation documents, including but not limited to technical specifications and general requirements for procurement, will be developed as necessary.

TASK NAME	Duration
1. Planning and needs analysis	12 months
1.a. Training needs analysis	12 months
1.b. Technical support needs analysis	9 months
1.c. Establishing plans and procedures for sustainable operations	9 months
2. Procurement and development of resources	24 months
2.a. Training course design and development	24 months
2.b. Definition of equipment requirements and development of technical specifications	6 months
2.c. Procurement or donor provision of equipment	12 months
2.d. Equipment delivery, installation, testing, and commissioning	1 month
3. Infrastructure refurbishment	12 months
3.a. Definition of general requirements	6 months
3.b. Bidding and issue of contract for refurbishment	3 months
3.c. Completion of refurbishment and handover	6 months

CNSSC will likely commence operations in a limited manner after completion of infrastructure refurbishment tasks are complete, and will begin implementing HRD, technical support, and scientific support functions on a rolling basis as training course material is developed and as equipment is procured.

7. COOPERATION AND COLLABORATION

CNSSC programmes in training and technical support will be evaluated for effectiveness against key performance indicators through annual self-assessment and periodic technical exchange with other NSSCs. CNSSC will actively participate in the IAEA NSSC Network, including by contributing to Working Group activities and leadership, when possible, and regularly updating the Centralia profile in the NSSC Network Database, Calendar, and Library of Lessons Learned and Case Studies.

8. COMMUNICATION PLAN

As Centralia applies the systematic process to establishing and operating CNSSC as described in Ref. [1], coordination and communication will be essential to its success, and relationships among stakeholders will become more structured and formalized across each phase of the process. The primary stakeholders of CNSSC will communicate and make decisions through the CNSSC Sub-Committee within the CNS, and will put in place Memoranda of Understanding to establish protocols for communication and to document roles and responsibilities. Regular feedback is solicited from stakeholders through the CNSSC Sub-Committee and coordinated by CNRA as CNSSC Chair, to help identify areas for further performance improvements. The CNSSC Sub-Committee will meet bi-weekly during the project initiation phase and then transition to a monthly or quarterly meeting thereafter, as the centre moves into a fully operational status.

9. RESOURCE MANAGEMENT

All resources for CNSSC will be based on needs identified in the Feasibility Report and as outlined in Sections 3 and 4 above. Requirements and performance specifications for any equipment to be procured will be further clarified and developed during the analysis and design phase of the CNSSC

human resource development programme and technical support plan, as indicated in Section 6. Procurement processes will adhere to the Government of Centralia's rules and regulations to ensure fairness and competitiveness. The CNSSC Technical Support Plan will outline key aspects of equipment lifecycle management, including configuration management, in support of the centre's activities. Appendix II also provides an initial list of equipment needs and associated procurement costs.

10. COMPETENCE MANAGEMENT

CNSSC competencies will be aligned with the centre's strategy implementation plan and stakeholder needs. Staff members are expected to maintain their qualifications and improve their competencies continuously. These expectations can be supported by individual development plans that enable staff to increase their knowledge, skills and experience in all necessary areas. CNSSC will identify and evaluate competencies as part of its initial and recurring training needs analysis process, self-assessments, and performance assessments. Feedback from CNSSC stakeholder organization on staff performance and tracking of KPIs will be essential to competence management for the centre. CNRA, as lead for the CNSSC HRD programme, will coordinate with stakeholders to ensure that job profiles are up to date and contain relevant competencies, and to lead in evaluation of effectiveness to determine whether CNSSC training programme has been effective in developing individual and organizational competence. The CNSSC Training Management Plan will further outline procedures and processes for competence management for the centre in greater detail. Appendix II also provides an initial list of staffing needs and associated annual salary costs.

11. RISK MANAGEMENT

In order to manage risks and mitigate their impact, Centralia will conduct a risk assessment, document all risks identified in a risk register and apply the risk management process outlined in Fig.2. A preliminary risk register is provided in Appendix III and will be updated as necessary by the CNSSC Sub-Committee.
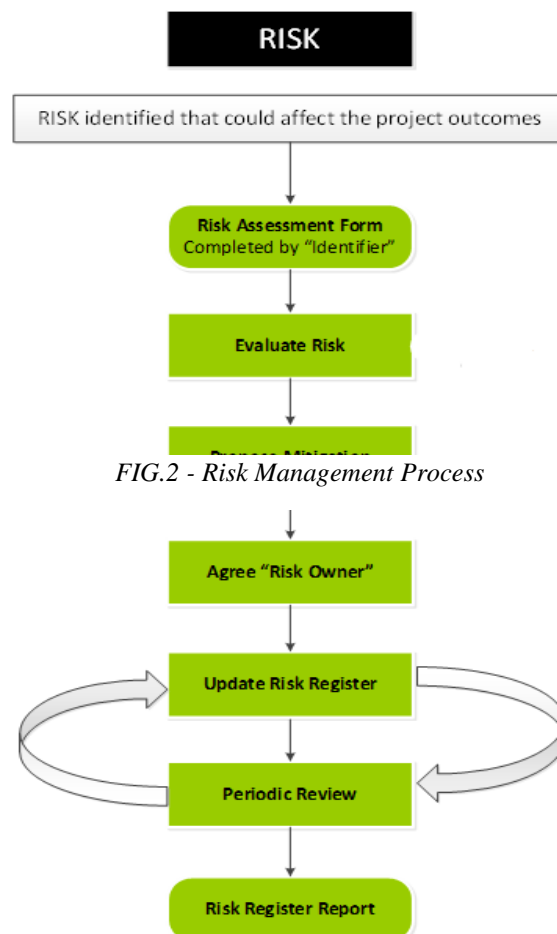

FIG.2 - Risk Management Process

APPENDIX I STRATEGY MAP

CENTRALIA NUCLEAR SECURITY SUPPORT CENTRE (CNSSC)

MISSION: To strengthen and sustain nuclear security in Centralia, through training, technical support, and scientific support for key stakeholders
VALUES: Enhanced coordination and communication, and continuous improvement of individual and organizational performance to achieve optimal effectiveness and efficiency

STRATEGIC OBJECTIVES

	CNRA	CBG	CNP	CMI	CCG	CNPP	CNEA	NTUC	The Public
Stakeholders/ Customers	Qualified and competent inspectors and other regulatory staff, full resources to provide systematic HRD and training support to competent authorities and authorized users of nuclear and other radioactive material, in particular for insider threat mitigation and security culture	Qualified and competent front-line officers, systematic and sustainable training system in place to address new and recurring training needs, full resources available to provide technical support services for radiation detection equipment across Centralia	Qualified and competent front-line officers, systematic and sustainable training system in place to address new and recurring training needs, sustainable radiation detection equipment lifecycle programme in place	Effective coordination on implementation of the National Response Plan, and harmonization of training and technical support practices among front-line organizations	Effective coordination on implementation of and conduct of interagency exercises in support of the National Response Plan	Qualified and competent nuclear security operational staff, effective and sustainable preventive maintenance, testing and evaluation program for physical protection system equipment	Qualified and competent nuclear security operational staff, ssufficient resources to provide training and scientific support to authorized users of radioactive sources	Ssufficient resources to provide scientific support for nuclear forensics and response to nuclear security events, effective coordination on implementation of and conduct of interagency exercises in support of the National Response Plan	People, property, society, and the environment are better protected from possible harmful consequences of a potential nuclear security event, while also making optimally efficient use of public funding and resources

	NSSC Coordination Sub-Committee			Budget and Funding			Stakeholder Engagement		
Financial	Resource and cost-sharing agreements among stakeholders are agreed and approved by the CNSSC Sub-Committee and National Security Adviser. All equipment, staff, and other resources procured or otherwise obtained for CNSSC are based on coordinated, systematic analysis of needs			Stable and sufficient funds are allocated through Ministry of Treasury to stakeholders, based on CNSSC Sub-Committee requests, to effectively establish and operate CNSSC sustainably over the long-term			Feedback from stakeholders on actual costs are shared and evaluated among CNSSC Sub-Committee. Achievement of key performance indicators are evaluated to demonstrate effectiveness and measure value and impact of CNSSC services		

	Training		Technical Support		Scientific Support		Integrated Management Systems		
Processes	All training courses and other activities are based on The Act, NRP, relevant international legal instruments, and consistent with IAEA NSS publications and Safety Standards. A Systematic Approach to Training is applied, coordinated by CNRA as CNSSC Chair, and documented in the CNSSC Training Management Plan		Technical support is coordinated by CBG and CNEA, implemented in a systematic manner according to IAEA guidance and relevant Centralia SOPs and CONOPS, and documented in the CNSSC Technical Support Plan		CNRA and NTUC coordinate scientific support services according to The Act, NRP, relevant regulations, SOPs, and CONOPS		CNSSC activities are implemented by CNRA and other stakeholders according to Integrated Managements Systems, where applicable. Quality Management is reinforced by establishment and evaluation of KPIs.		

	Staffing Professional Development		Annual Performance Evaluation and Technical Exchange		NSSC Network Collaboration		Stakeholder Feedback		
Learning and Growth	CNSSC stakeholders are sufficiently staffed and equipped to meet programme needs, and development needs for additional SMEs, instructors, technicians and other staff are regularly assessed and evaluated		Training and technical support practices are evaluated for effectiveness against key performance indicators through annual self-assessment and periodic technical exchange with other NSSCs		CNSSC actively participates in the IAEA NSSC Network, including by contributing to Working Group activities and leadership, when possible, and regularly updating the Centralia profile in the NSSC Network Database, Calendar, and Library of Lessons Learned and Case Studies		Regular feedback is solicited from stakeholders through the CNSSC Sub-Committee and coordinated by CNRA as CNSSC Chair, to help identify areas for further performance improvements		

APPENDIX II DETAILED CNSSC COST ESTIMATES

CNSSC INFRASTRUCTURE REFURBISHMENT COST ESTIMATES

Description	Average Unit Costs	CNRA	CBG	NTUC	CNEA	CNP	CCG	TOTALS
Refurbishment of classrooms and laboratories	N/A	$ 550,000	$ 250,000					$ 800,000
TOTAL		$ 550,000	$ 250,000	$ -	$ -	$ -	$ -	$ 800,000

CNSSC EQUIPMENT PROCUREMENT COST ESTIMATES

Equipment	Average Unit Costs	CNRA	CBG	NTUC	CNEA	CNP	CCG	TOTALS
High-resolution RID	$ 75,000	$ 300,000	$ 300,000	$ 150,000				$ 750,000
Low-resolution RID	$ 10,000	$ 100,000	$ 100,000	$ 50,000				$ 250,000
PRD	$ 3,000	$ 60,000	$ 150,000	$ 30,000				$ 240,000
PRS Backpacks	$ 10,000	$ 50,000	$ 100,000	$ 30,000				$ 180,000
PPE, lab supplies etc	$ 10,000	$ 30,000	$ 20,000	$ 20,000				$ 70,000
PPS	$ 100,000				$ 100,000			$ 100,000
Gamma spectrometry	$ 100,000			$ 200,000				$ 200,000
XRF spectrometry	$ 50,000			$ 50,000				$ 50,000
Radioactive sources	$ 5,000	$ 15,000	$ 15,000					$ 30,000
Work benches	$ 2,000	$ 20,000	$ 10,000		$ 8,000			$ 38,000
Cabinets	$ 500	$ 5,000	$ 2,500		$ 2,000			$ 9,500
Safes	$ 1,000	$ 2,000	$ 2,000	$ 2,000				$ 6,000
Computers/IT	$ 1,500	$ 15,000						
TOTAL		$ 582,000	$ 699,500	$ 532,000	$ 110,000			$ 1,923,500

CNSSC STAFFING COST ESTIMATES (ANNUAL)

Positions	Average Salary	CNRA	CBG	NTUC	CNEA	CNP	CCG	TOTALS
Admin support	$ 30,000	$ 90,000	$ 30,000	$ 30,000	$ 30,000			$ 180,000
IT support	$ 60,000	$ 60,000	$ 60,000					$ 120,000
Technician	$ 45,000	$ 45,000	$ 135,000	$ 45,000	$ 45,000			$ 270,000
Engineer/Physicist/Chemist	$ 85,000	$ 170,000	$ 85,000	$ 85,000	$ 85,000			$ 425,000
Instructor/ISD specialist	$ 60,000	$ 120,000						$ 120,000
TOTAL		$ 485,000	$ 310,000	$ 160,000	$ 160,000			$ 1,115,000

CNSSC TRAINING IMPLEMENTATION COSTS (ANNUAL)

Activity/Event Type	Average Costs	CNRA	CBG	NTUC	CNEA	CNP	CCG	TOTALS
Radiation detection equipment operations for FLO	$ 20,000	$ 20,000	$ 80,000					$ 100,000
Radiation detection equipment maintenance	$ 15,000		$ 30,000					$ 30,000
Radiological crime scene management & forensics	$ 20,000	$ 20,000		$ 40,000				$ 60,000
Interagency Table-top & field exercises on response	$ 150,000	$ 37,500	$ 37,500			$ 37,500	$ 37,500	$ 150,000
PP equipment preventive and corrective maintenance	$ 20,000							$ -
PP equipment performance testing and evaluation	$ 15,000	$ 30,000						$ 30,000
Development of a nuclear security culture programm	$ 10,000	$ 40,000						$ 40,000
Mitigating against insider threats	$ 15,000	$ 30,000						$ 30,000
Interagency training and exercises on security of nuc	$ 150,000	$ 50,000	$ 30,000		$ 25,000	$ 25,000	$ 20,000	$ 150,000
Training of nuclear security inspectors	$ 10,000	$ 50,000						$ 50,000
TOTAL		$ 277,500	$ 177,500	$ 40,000	$ 25,000	$ 62,500	$ 57,500	$ 640,000

CNSSC TECHNICAL SUPPORT IMPLEMENTATION COSTS (ANNUAL)

Activity Type	Average Costs	CNRA	CBG	NTUC	CNEA	CNP	CCG	TOTALS
Preventive maintenance support	TBD		$ 50,000		$ 50,000			$ 100,000
Maintenance contracts	TBD		$ 100,000					$ 100,000
Acceptance testing and evaluation	TBD		$ 50,000		$ 10,000			$ 60,000
TOTAL		$ -	$ 200,000	$ -	$ 60,000	$ -	$ -	$ 260,000

CNSSC SCIENTIFIC SUPPORT IMPLEMENTATION COSTS (ANNUAL)

Activity Type	Average Costs	CNRA	CBG	NTUC	CNEA	CNP	CCG	TOTALS
Remote or on-site expert support	TBD	$ 100,000						$ 100,000
Nuclear forensics and material analysis support	TBD			$ 100,000				$ 100,000
TOTAL		$ 100,000	$ -	$ 100,000	$ -	$ -	$ -	$ 200,000

APPENDIX III RISK REGISTER

	1-5 / low risk
	6-10/ medium risk
	11-20/high risk
	21-25/issue

Number	Risk	Risk Description	Impact 1-5	Likelihood 1-5	Score I*P	Risk Response	Risk Status	Risk Response Owner
1	Refurbishment Delays	Delays in refurbishment of CNRA and CBG classrooms and laboratories could impact procurement of equipment and conduct of activities at CNSSC	4	2	8	Review of change of requirements and overview of impact on cost and schedule	No design change at this time	CNRA CBG
2	Communication challenges	Lack of effective communciation among stakeholders could cause delays, require changes to project timeline	3	1	3	Establishment of Project Initiation Document, CNSSC Coordination Sub-Committee meeting schedule, and MOUs	PID in development, coordination sub-committee established, MOUs in development	NSA CNRA (as Chair)

3	Change of Government Administration	Change of key government and contractor personnel could impact project management effectiveness, and could impact sustainability of CNSSC	4	2	8	Adherence to project management approach and IAEA-TDL-010 methodology, as set out in, SIP as well as clear documentation and project filing system.	Ongoing	NSA
4	Funding	Insufficient funds would cause delays in completing the project and implementing future programmes	5	2	10	Carefully document needs, processes, and reports for NSA, Prime Minister, and Ministry of Treasury; Continuously engage stakeholders through CNSSC Sub-committee to ensure buy-in	Ongoing	CNRA CMI CMES NSA

5	Equipment procurement challenges	Donor organizations may not be able or willing to provide support for equipment procurement	3	1	3	Prepare SIP and equipment specifications, avoiding sensitive information, to demonstrate that equipment requirements are based on real needs	Equipment specifications in development	CNRA CBG NTUC CNEA
6	Equipment sustainability	CNSSC equipment may be unsustainable if stakeholders do not plan properly, establish relevant procedures, and allocate sufficient human resources for maintenance and other related technical support tasks	4	2	8	Adherence to IAEA-TDL-010 methodology, development and consolidation of procedures and plans for technical support, including for staffing	TSP in development	CBG CNEA

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