



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

REGULATORY GUIDE

G-206

FINANCIAL GUARANTEES
FOR THE DECOMMISSIONING
OF LICENSED ACTIVITIES

Published by the
Canadian Nuclear Safety Commission
June 2000

REGULATORY DOCUMENTS

The Canadian Nuclear Safety Commission (CNSC) operates within a legal framework that includes law and supporting regulatory documents. Law includes such legally enforceable instruments as acts, regulations, licences and directives. Regulatory documents such as policies, standards, guides, notices, procedures and information documents support and provide further information on these legally enforceable instruments. Together, law and regulatory documents form the framework for the regulatory activities of the CNSC.

The main classes of regulatory documents developed by the CNSC are:

Regulatory policy: a document that describes the philosophy, principles and fundamental factors used by the CNSC in its regulatory program.

Regulatory standard: a document that is suitable for use in compliance assessment and describes rules, characteristics or practices which the CNSC accepts as meeting the regulatory requirements.

Regulatory guide: a document that provides guidance or describes characteristics or practices that the CNSC recommends for meeting regulatory requirements or improving administrative effectiveness.

Regulatory notice: a document that provides case-specific guidance or information to alert licensees and others about significant health, safety or compliance issues that should be acted upon in a timely manner.

Regulatory procedure: a document that describes work processes that the CNSC follows to administer the regulatory requirements for which it is responsible.

Document types such as regulatory policies, standards, guides, notices and procedures do not create legally enforceable requirements. They support regulatory requirements found in regulations, licences and other legally enforceable instruments. However, where appropriate, a regulatory document may be made into a legally enforceable requirement by incorporation in a CNSC regulation, a licence or other legally enforceable instrument made pursuant to the Nuclear Safety and Control Act.

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**Financial Guarantees
for the Decommissioning
of Licensed Activities**

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FINANCIAL GUARANTEES FOR THE DECOMMISSIONING OF LICENSED ACTIVITIES

1.0 PURPOSE

This regulatory guide provides guidance regarding the establishment and maintenance of measures to fund the decommissioning of activities licensed by the Canadian Nuclear Safety Commission (CNSC).

2.0 SCOPE

This guide presents information for those who have incurred, or expect to incur, obligations with respect to the decommissioning of activities licensed by the CNSC. Licences issued by the CNSC may contain conditions with respect to the requirements for the submission of decommissioning plans and their associated financial guarantees. Regulations made by the CNSC may also contain requirements related to these.

3.0 BACKGROUND

The Nuclear Safety and Control Act and its regulations require that applicants and licensees make adequate provisions for the safe operation and decommissioning of existing or proposed operations. Safe operation and decommissioning include the development of acceptable decommissioning plans, the provision of credible estimates of the costs of implementing such decommissioning plans, the provision of corresponding measures to ensure that the costs of decommissioning will be met, and, ultimately, the implementation and completion of accepted decommissioning plans.

The Nuclear Safety and Control Act and its regulations do not prescribe specific decommissioning methods or the types of funding to be established. Applicants and licensees that are required to submit decommissioning plans maintain the flexibility to propose those decommissioning plans and financial guarantees that they consider appropriate to their individual situations.

Financial guarantees must be sufficient to cover the cost of decommissioning work resulting from licensed activities that have taken place prior to the licence period, or will take place under the current licence.

4.0 PLANNING AND IMPLEMENTATION

4.1 Preparation of decommissioning plans

Decommissioning plans can be expected to vary in approach, complexity, and detail in accordance with specific circumstances but must be sufficiently detailed so as to:

- demonstrate that the planned decommissioning activities will remediate all significant impacts and hazards to persons and the environment in a technically feasible fashion;
- assure compliance with all applicable requirements and criteria established in or under acts or regulations; and
- enable credible estimates of the amount of financial guarantees.

The potential impacts of the activities to be conducted over the period of the licence should be predicted and the predictions supported by reasoned arguments and credible data.

The CNSC Regulatory Guide G-219, *Decommissioning Planning for Licensed Activities*, provides guidance on the preparation of plans for the decommissioning of activities licensed by the CNSC.

4.2 Costing

Estimates of the costs of implementing proposed decommissioning plans should address all decommissioning activities required during operations and after shutdown, including management or disposal of all wastes, including spent nuclear fuel, monitoring and ongoing maintenance of any institutional controls. The CNSC will not permit credit for the salvage of equipment or materials in costing the implementation of proposed decommissioning plans. Consequently, such equipment or materials should be considered as waste.

Estimates should include unit costs for each phase of the decommissioning plan, and should be prepared in accordance with generally accepted accounting and quantity-surveying methods and procedures. These estimates should accurately reflect local construction rates for labour and materials, should be sufficiently detailed as to demonstrate accuracy, and facilitate independent verification, and should assume that the work will be completed by competent independent contractors. Appendix I provides the criteria for determining whether an estimate of the decommissioning costs can be categorized as Grade A, B or C. “Grade A” estimates are the most accurate and therefore require the smallest associated “contingency allowance” (10%). “Grade C” estimates are considered to be the least accurate and consequently require a contingency allowance of

25% to 30%. “Grade B” estimates are of intermediate accuracy requiring a contingency allowance of 15% to 20%. The applicant should indicate the grade of the estimate and include the appropriate contingency allowance in the total cost estimate. Appendix II provides an example of the level of detail expected for estimating the costs for decommissioning a typical uranium mining facility. Other types of nuclear facilities will require different levels of detail and the level of detail is normally a function of the facility’s complexity.

If the impacts of proposed operations, or the effectiveness of specific decommissioning options, are difficult or impossible to estimate with precision, or to substantiate with confidence, it may be cost-effective or necessary to offset these deficiencies by estimating or funding credible worst-case scenarios.

4.3 Funding

To be acceptable to the CNSC, a funding measure must provide assurance that adequate resources will be available to fund decommissioning activities based on information provided to the CNSC.

The financial guarantee must be at arm’s length from the licensee and the CNSC must be assured that it or its agents can, upon demand, access or direct adequate funds if a licensee is not available to fulfil its obligations for decommissioning.

4.4 Implementation of decommissioning

To minimize residual liabilities, licensees are encouraged to undertake ongoing decommissioning as part of normal operations to the extent permitted by the licence and other applicable requirements.

Decommissioning plans that assume delays in implementation must also include financial and physical provisions for any necessary interim care and maintenance.

Decommissioning plans that assume the need for post-closure licensing, monitoring, surveillance and maintenance of the decommissioned activities must include financial provisions for these actions.

5.0 FINANCIAL GUARANTEES

5.1 Acceptance criteria

The CNSC must be assured that it or its agents can, upon demand, access or direct adequate funds if a licensee is not available to fulfil its obligations for decommissioning.

Measures to fund decommissioning may involve various types of financial security. The acceptability of any of these measures will be determined by the CNSC on the basis of the general criteria of liquidity, certainty of value, adequacy of value and continuity.

5.1.1 Liquidity

The proposed financial guarantees should be such that the vehicle can be drawn upon only with the prior acceptance of the CNSC, and such that pay-out for decommissioning purposes is not prevented, unduly delayed, or compromised for any reason.

5.1.2 Certainty of value

Licensees should select funding or security instruments or arrangements which provide full assurance of their value.

5.1.3 Adequacy of value

Financial guarantees should be linked to the plans for decommissioning the licensed activity and should be sufficient to fund the decommissioning plans for which they are intended.

5.1.4 Continuity

The required financial guarantees for decommissioning should be maintained on a continuing basis. This may require periodic renewals, revisions or replacements of securities provided or issued for fixed terms. Where necessary to ensure continuity of coverage, financial guarantees should include provisions for advance notice of termination or intent to not renew. See section 5.3 for more specific guidance.

5.2 Examples of financial guarantees

The following are examples of acceptable financial guarantees: cash, irrevocable letters of credit, surety bonds, insurance and expressed commitments from a government (either federal or provincial).

Parent company guarantees and pledges of assets do not satisfy the acceptance criteria listed above and are not acceptable as a financial guarantee.

5.2.1 Cash funds

Cash funds include cash as well as other equivalent securities such as certified cheques, bearer bonds and guaranteed investment certificates. These instruments can provide certainty and adequacy of value, ease of liquidity, and continuity of protection. Such instruments provide maximum protection against default.

Subject to applicable legislation, funds may be structured in various manners, including appropriately defined trusts.

5.2.2 Letters of credit

Letters of credit are agreements between institutions and second parties, such as companies. A letter of credit can provide for specific sums of money to be paid on demand to designated parties or their agents should a triggering event occur, such as a licensee defaulting on its obligation to decommission.

Letters of credit can provide certainty of value, may be easily liquidated, and may be rewritten or revised as the required amount of security changes. They have been used by several licensees as a financial guarantee mechanism. Appendix III provides an example of a letter of credit.

5.2.3 Bonds

Surety bonds are widely used in the construction industry. They include bid bonds, performance bonds, labour and material payment bonds and maintenance bonds. Variations of these bond types may be appropriate as primary security, or to complement other guarantees.

For example, under the terms of a performance bond agreement, a surety company could commit to responsibility for all claims and expenses for decommissioning up to a specified limit.

5.2.4 Insurance

Insurance policies to cover all otherwise unfunded aspects of decommissioning would be acceptable to the CNSC subject to their meeting the acceptance criteria in section 5.1.

5.2.5 Expressed commitments from a government

Expressed commitments from a government (either federal or provincial) to cover all otherwise unfunded aspects of decommissioning would be acceptable to the CNSC.

5.3 Administration of financial guarantees

The administration of financial guarantees should be accomplished by clearly defined and legally-enforceable arrangements acceptable to the CNSC.

These arrangements should be structured so as to ensure that the funds or securities provided by the applicant or licensee to guarantee funding for an approved decommissioning plan are separated from its other assets. This might require the inclusion of terms restricting access to, or use of, monies realized from the fund or securities. Withdrawals from a fund, or access to monies realized from other security vehicles, should only be permitted for approved purposes; in particular, to pay for approved decommissioning activities, or to refund excess monies to the licensee.

The term of a surety, insurance or other security vehicle should be open-ended, or, if written for a specified term, should be renewed automatically unless 30 days or more prior to the renewal date the issuer notifies the CNSC, the beneficiary, and the licensee of any intention not to renew. If the licensee or applicant fails to provide a replacement acceptable to the CNSC within 10 days after receipt of notification of cancellation, the terms of arrangement should further provide that the full face value of the instrument may automatically be paid to a trustee prior to expiration, without proof of forfeiture required. The value of the instrument should be payable, for purposes of funding decommissioning activities, to a trustee acceptable to the CNSC. This trustee could be any person or organization acceptable to the government.

5.4 Review of financial guarantees

Periodic reviews of financial guarantees for decommissioning will be required by the CNSC and the licensee to ensure that these financial guarantees remain adequate, or to justify changes in their value.

Changes to financial guarantees will be required and permitted by the CNSC in proportion to outstanding liabilities for decommissioning and related activities.

Licensees can request a review of their financial guarantees at any time.

**APPENDIX I
DETERMINATION OF “GRADE” OF ESTIMATE
AND CONTINGENCY ALLOWANCE**

The American Institute of Cost Engineers and the Construction Industry Institute have established guidelines and procedures for estimating costs. These guidelines rank cost estimates as grades A, B or C depending on their level of accuracy.

Grade C (+/- 25% to 30%)

These estimates are generally performed quickly by using short cut techniques, such as escalating and/or scale up from previous estimates, cost curves, and/or preliminary process design and equipment sizing, without plot plans or major equipment quotations.

Grade B (+/- 15% to 20%)

These estimates can be developed for large projects as soon as the preliminary process flow diagrams, preliminary plot plans, and equipment sizing have been completed. On smaller projects, some 10% of the engineering should be completed.

Grade A (+/- 10%)

These estimates are known as “definitive cost estimates”. A “grade A” estimate cannot be developed for a large project until the engineering flow diagrams, plot plans, and equipment lists are completed, and detailed design has progressed to the stage required for the bidding process. For small projects, more engineering detail is necessary, and 30% to 50% of the engineering may be required to be completed.

| | Unit cost | per | No. of units | Lump sum | Sub total | Notes |
|-------------------------------------|-----------|-----|--------------|----------|-----------|-------|
| Building demolition | | | | | | |
| - mill | | | | | | |
| - subsite no. 1 | | | | | | |
| - subsite no. 2 | | | | | | |
| - subsite no. 3 | | | | | | |
| - camp | | | | | | |
| - powerhouse | | | | | | |
| - maintenance | | | | | | |
| - other | | | | | | |
| - lump sum demolition | | | | | | |
| Concrete demolition | | | | | | |
| Till cover over concrete pads | | | | | | |
| Pipelines/ditches | | | | | | |
| Dewatering/monitoring wells | | | | | | |
| Portal and raise caps | | | | | | |
| Ponds | | | | | | |
| Borrow pits/laydown | | | | | | |
| Stockpiles/pads | | | | | | |
| Misc covers (eg. landfill) | | | | | | |
| Excavations (eg. diversion ditches) | | | | | | |
| Salvage factor (burial on site) | | | | | | |
| Contingency | | | | | | |

ANCILLARY FACILITIES DECOMMISSIONING

| | | | | | | |
|---|--|--|--|--|--|--|
| Communications | | | | | | |
| - cable, towers, dishes | | | | | | |
| Roads/airstrips | | | | | | |
| - scarify, culvert removal, cross ditch | | | | | | |
| Electric power | | | | | | |
| - lines, substations, generators | | | | | | |
| Portable water supply | | | | | | |
| - intake, plant, distribution system | | | | | | |
| Sewage | | | | | | |
| - lift stations, plant, ponds, distribution | | | | | | |
| Fuel (gas, diesel, propane, heating, etc.) | | | | | | |
| - tanks, dikes, lines, pumps | | | | | | |
| Contingency | | | | | | |

SITE CLEANUP AND RESTORATION

| | | | | | | |
|--|--|--|--|--|--|--|
| Mine(s) flooding | | | | | | |
| Watershed remediation | | | | | | |
| Contaminated soil removal | | | | | | |
| - survey and soil analyses | | | | | | |
| - soil removal and disposal | | | | | | |
| Remove culverts/restore stream courses | | | | | | |
| General grading and contouring | | | | | | |

| | Unit cost | per | No. of units | Lump sum | Sub total | Notes |
|-----------------|-----------|-----|--------------|----------|-----------|-------|
| Fish restocking | | | | | | |
| Core storage | | | | | | |
| Contingency | | | | | | |

REVEGETATION

| | | | | | | |
|------------------------------|--|--|--|--|--|--|
| Surface preparation | | | | | | |
| - scarifying, amendments | | | | | | |
| Planting | | | | | | |
| - application and materials | | | | | | |
| Maintenance | | | | | | |
| - program evaluation | | | | | | |
| - replant and/or refertilize | | | | | | |
| Contingency | | | | | | |

MONITORING/TREATMENT/REPAIRS POST DECOMMISSIONING

| | | | | | | |
|--|--|--|--|--|--|--|
| Contaminated water treatment | | | | | | |
| Special studies and land/gamma surveys | | | | | | |
| Sample collection, equipment, analysis | | | | | | |
| - water, air, soil, plants, fish, runoff | | | | | | |
| Containment structures monitoring | | | | | | |
| Sealed mine openings | | | | | | |
| Flooded and backfilled pits | | | | | | |
| Runoff diversion works | | | | | | |
| Engineered wetlands | | | | | | |
| Consultant – evaluation | | | | | | |
| Repairs/additional work needed | | | | | | |
| Regulatory reporting | | | | | | |
| Contingency | | | | | | |

MISCELLANEOUS/CONTINGENCY

| | | | | | | |
|--------------|--|--|--|--|--|--|
| TOTAL | | | | | | |
|--------------|--|--|--|--|--|--|

**APPENDIX III
EXAMPLE LETTER OF CREDIT***

1. The undersigned, hereinafter called the Bank, irrevocably guarantees to pay to the Beneficiary, an amount not exceeding xxx Canadian dollars including interest, costs and accessories, upon receipt of a written demand by the Beneficiary certifying that the Applicant has failed to fulfil its obligations with respect to decommissioning resulting from, or under the Nuclear Safety and Control Act, its regulations or licence no. xxx.
2. This Guarantee is effective from its issuance and shall terminate and automatically expire no later than on the expiry date.
3. Upon expiry of this Guarantee, by payment in favour of the Beneficiary or by lapse of time, the Beneficiary must return to the Bank the original of the Guarantee, bearing clear mention of its cancellation.
4. Any demand for payment shall be signed by the Beneficiary or by a person purporting to act on his behalf.
5. The Bank will honour the demand of the Beneficiary without enquiring whether the Beneficiary has the right as between itself and the Applicant to make such demand and without acknowledging any claim of the Applicant.
6. The Bank's liability under this Guarantee shall in no event exceed the sum mentioned in paragraph 1 herein, and such liability shall terminate if a demand for payment made strictly in accordance with the requirements of these presents has not been received at the above branch no later than on the expiry date.
7. This Guarantee is not assignable.
8. This Guarantee is governed by the laws of xxx, and the Courts of that province shall have exclusive jurisdiction on all matters relating to this Guarantee and all recourses resulting therefrom.
9. This Guarantee sets forth in its entirety all of the obligations of the Bank and these obligations cannot be modified, interpreted or increased by any document or agreement mentioned herein, and any reference to any such document or agreement shall not be construed as incorporating same to this Guarantee.

* Note: This is an example only and not the form of any specific financial institution. In any specific case, additional or varied clauses may be used or required.

