



Decommissioning and Waste
Management Services



About Our Services

Calian Nuclear is committed to the safe management of radiological waste and decommissioning of nuclear facilities to ensure the protection of the public and our environment. Our team works with licensees to plan, analyse, execute and evaluate decommissioning and waste management (D&WM) operations to demonstrate that objectives have been met in accordance with regulatory requirements and industry best practices. In addition to providing D&WM services, we also provide services to support planning for Small Modular Reactors (SMRs) and various deployment options. Calian Nuclear is a participant on numerous Canadian Standards Association (CSA) committees including N292.8: Characterization of radioactive waste and irradiated fuel and N294: Decommissioning of facilities containing nuclear substances, as well as being an Industry Catalyst with the Centre for Canadian Nuclear Sustainability (CCNS).

Quality Culture

Quality is held as a core value of Calian Nuclear and manifests itself across the organization. We maintain a Quality Management System that is certified to the ISO 9001:2015 Standard and is compliant with CSA N299.1-16, CSA N286-12 and CSA N286.7-16 Standards. Every year, Calian Nuclear undergoes several internal and external audits to ensure that the implementation and effectiveness of the quality system is maintained and up to date with industry requirements.



Waste Characterization

Calian Nuclear has comprehensive expertise in planning, performing, and evaluating the results of final status and characterization surveys in accordance with industry best practices (MARSSIM, MARSAME, CSA, EPRI). This includes the following services:

- Development of conceptual, preliminary, and detailed decommissioning plans
- Performance of historical site assessments and site walk-downs to support scoping, waste stream definition as well as health and safety planning
- Planning, execution and reporting of scoping, characterization and final status surveys for nuclear and hazardous substances
- Support for decommissioning activities and other regulatory affairs to clients in the nuclear, military, academia and government sectors

In addition to the services listed above, our team also provides the scientific background to support clients with their licensing submissions to regulatory agencies and the technical skills to analyse survey data to provide hard evidence that clearance levels or waste acceptance criteria have been achieved.

As part of Calian Nuclear's waste characterization service, we provide industry-leading expertise in all four phases of the Data Life Cycle: Planning, Implementation, Assessment and Decision-Making. The Planning phase includes following the Data Quality Objectives (DQO) Process as described in MARSSIM which meets the requirements of the CSA N294 Standard. During planning, the seven steps of the DQO Process are followed and documented. The Planning phase also includes the development of a Quality Assurance Project Plan (QAPP) for which Calian Nuclear's Quality Culture ensures an excellent resulting QAPP.



Case Study: Characterization of Gentilly-1 Service Building Process Equipment

Calian Nuclear was contracted in 2019-20 to plan and evaluate the in-situ characterization of the active liquid waste system (ALWS) for the Gentilly-1 (G-1) former nuclear power station. Our team prepared both the Characterization Plan and Characterization Report for this project. Survey planning followed the DQO Process. The problem was defined and a decision statement was developed with input from all stakeholders. A measurement and sampling plan was developed to satisfy the decision statement within acceptable limits for decision errors, and to complete the Characterization Plan. The Characterization Report developed by Calian Nuclear included analyzation of all measurement and sampling data to demonstrate that the decision statement was satisfied and that the ALWS met all waste acceptance criteria.

Waste Transportation

Calian Nuclear has extensive experience with the safety and licensing of packaging and transportation of radioactive materials. With a thorough understanding of packaging and transportation regulations, we provide expertise to clients across the nuclear industry. Our team has prepared safety analysis reports for packages used for transporting used nuclear fuels. We have also provided consulting services to clients developing procedures and documentation for transportation of radioactive materials.

In developing safety analysis reports for packages transporting nuclear fuels, Calian Nuclear has provided services in all aspects of the safety analysis which includes:

- Shielding and criticality evaluations using nuclear analysis codes
- Thermal performance and containment evaluations
- Structural evaluations using FEA analysis

Additionally, we have expertise with various non-CANDU fuels including ceramic and mixed oxide fuel sources. Our team has developed the safety analysis report for transportation of these fuel types which included establishing the safety case in terms of chemical reactions of the non-CANDU fuels.



Safety and Licensing of Waste Facilities

Calian Nuclear has years of experience supporting nuclear safety and licensing activities for nuclear facilities and processes. This includes experience in deterministic and probabilistic safety assessments. We have several qualified users for various nuclear analysis codes such as SCALE/ORIGEN, MCNP, MicroShield, ADDAM, MACCS and COSYMA. With this experience, our team has the ability to offer comprehensive nuclear safety and licensing services including hazard identification (HAZID), Failure Mode & Effects Analysis (FMEA), licensing requirements, on-site and off-site dose consequences, shielding evaluations, criticality evaluations, regulatory compliance, and internal process compliance.

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