

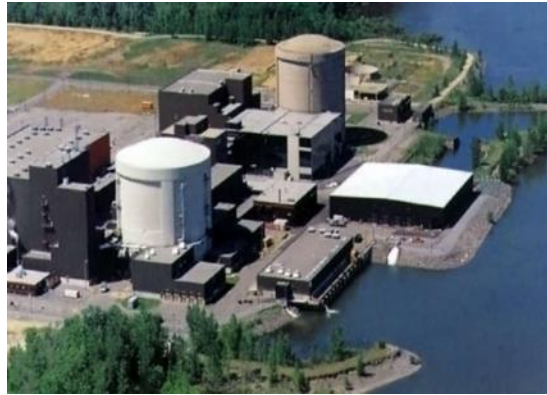
## **Translation to English of Section 3.8 of [CMD 22-M34](#), pertaining to Gently-2**

CMD 22-M34, Regulatory Oversight Report on Nuclear Power Generating Sites: 2021 for November 1-3 ,2022 Commission Meeting

## 3.8 Gentilly-2

### 3.8.0 Introduction

[Gentilly-2](#) is located on the south shore of the St. Lawrence River in Bécancour, Quebec, around 15 km east of the city of Trois-Rivières. The Gentilly-2 site is located on the traditional territory of the Wôlinak and Odanak Abenaki, as well as the Huron-Wendat. The facility is owned and operated by Hydro-Québec. The Gentilly-2 CANDU reactor had a nominal capacity of 675MWe. It went into commercial operation in 1983 and was permanently shut down on December 28, 2012.



In December 2020, Gentilly-2 completed the transfer of all its irradiated fuel to CANSTOR dry storage modules.

### Authorization

In 2016, the Commission [issued](#) a power reactor decommissioning licence to Hydro-Québec for the Gentilly-2 facilities. The licence is valid from July 1, 2016, to June 30, 2026.

### Fisheries Act Authorization

Hydro-Québec conducted a self-assessment under the [Fisheries Act](#) before its licence was issued in 2016. CNSC staff reviewed the self-assessment and concluded that authorization under the Act was not required. Fisheries and Oceans Canada is in agreement with the conclusions of CNSC staff.

### Compliance Verification Program

Two inspections of the Gentilly-2 facility were done in November 2021. However, since the inspection report was not sent by February 1, 2022, the report's findings will be included in the 2022 annual report.

### 3.8.1 Management System

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements, and that its performance met the expectations of CNSC personnel regarding Management System Safety and Control Areas (SCA) at Gentilly-2 in 2021.

### **3.8.2 Human Performance Management**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA Human Performance Management at Gentilly-2 in 2021.

CNSC staff were satisfied with the progress achieved in 2021 on the Hydro-Québec corrective measures plan.

Hydro-Québec no longer has initial exam programs or certified personnel recertification tests at Gentilly-2 facilities. The only persons still certified at Gentilly-2 are those serving as senior health physicists (SHPs), and they are assessed directly by CNSC staff.

In 2021, a recertification exam for the senior health physicist position at Gentilly-2 was administered by the CNSC certification team. Certification of those staff members acting as health physicists was renewed by CNSC for five years.

Hydro-Québec met the applicable regulatory requirements, and its performance met the expectations of CNSC staff for SCA fitness for duty at Gentilly-2 in 2021.

In 2021, CNSC staff determined that the implementation of new requirements in the fitness for duty program met the requirements of CNSC personnel. The annual report for hours-of-work exceedances was submitted in 2021. CNSC personnel were satisfied with the report.

### **3.8.3 Operating Performance**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA operating performance at Gentilly-2 facilities in 2021.

Quarterly, bi-annual, and annual reports submitted by Hydro-Québec in 2021 documenting what had been done showed compliance with licence requirements. During CNSC staff review of these reports, no gaps or situations indicating the occurrence of unsafe activities or activities below CNSC staff standards were found at Gentilly-2. Hydro-Québec provided satisfactory answers within an acceptable time frame to CNSC staff, who then examined the reports. Additionally, Hydro-Québec notified CNSC regarding events that occurred at Gentilly-2 facilities in 2021 and made corrective measures that met CNSC staff standards.

### **3.8.4 Safety Analysis**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA safety analysis at Gentilly-2 facilities in 2021.

In 2021, Hydro-Québec submitted the new version of its safety report. This report combined the nuclear facility safety report and the safety report for Gentilly-2 solid radioactive waste and irradiated fuel facilities. This resulted in only one safety report

being needed for all Gentilly-2 facilities moving forward. CNSC staff is currently reviewing the report.

### **3.8.5 Physical Design**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA physical design at Gentilly-2 facilities in 2021.

The performance information from technical reviews and quarterly and annual reports met CNSC staff expectations with respect to electrical systems.

In November 2021, Hydro-Québec submitted a request to CNSC staff to commence the draining of the coil cooling system and vessel. In February 2022, CNSC staff concluded that this request was acceptable.

### **3.8.6 Fitness for Service**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA fitness for service at Gentilly-2 facilities in 2021.

CNSC staff were satisfied with the report on safety system pressure boundary degradation for 2021.

### **3.8.7 Radiation Protection**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA radiation protection at Gentilly-2 facilities in 2021.

In 2021, there were no regulatory limit exceedances for doses received by Gentilly-2 workers. There were also no exceedances of regulatory action levels reported.

The safety performance indicator for personnel contamination incidents revealed some minor incidents, but no significant incidents were reported in 2021. The safety performance indicators for unintended doses all indicated 0 for the 2021 fiscal year. Loose contamination events took place at Gentilly-2 in 2021. However, none of these events indicate a loss of control in the radiation protection program. This indicates that there was no problem related to these aspects in 2021 with Hydro-Québec.

### **3.8.8 Conventional Health and Safety**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA conventional health and safety at Gentilly-2 facilities in 2021.

CNSC staff notes that no report was submitted in 2021 disclosing accidents with lost time, accidents requiring medical care or lost workdays.

### 3.8.9 Environmental Protection

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA environmental protection at Gentilly-2 facilities in 2021.

Staff examined Gentilly-2 environmental monitoring reports that were submitted quarterly, as well as the 2021 annual report on the environmental monitoring program. The amounts of radioactive and non-radioactive discharge in the environment were vastly inferior to the set limits. In 2021, the dose to the public in the vicinity of the Gentilly-2 facility (0.001mSv) was less than the regulatory dose limit of 1mSV/year, and remained similar to that of the previous year, demonstrating that environmental concentrations of radionuclides remain low. Given that Hydro-Québec met the provincially authorized limits, there is a negligible risk to human and environmental health from discharge of non-radioactive substances from Gentilly-2 operations.

Information on performance from the technical evaluation of these reports shows that Hydro-Québec met the requirements in terms of effluent and emissions control for 2021.

### 3.8.10 Emergency Management and Fire Protection

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA emergency management and fire protection at Gentilly-2 facilities in 2021.

CNSC staff reviewed the safety performance indicators in relation to the participation index for the emergency response organization exercise and the emergency response resources completion index and were satisfied with the results shared by Hydro-Québec in 2021.

CNSC staff concluded that Hydro-Québec continued to maintain the ability to respond in case of a fire, and a fire protection program that met applicable regulatory requirements. Emergency response in case of a fire is now provided by surrounding municipalities; specifically, an agreement was renewed in 2021 with the Bécancour fire department to officialise and bolster emergency response in case of fire and rescue by the fire department at the G2 site.

In April 2021, Hydro-Québec communicated their intent to modify the number of annual joint exercises between the Gentilly-2 facilities and the Bécancour fire department from 2 exercises to 1, while familiarization visits were maintained at 2 per year. CNSC staff confirmed that this proposal is satisfactory.

In November 2021, CNSC staff observed, both in person and online, a fire response exercise held by Hydro-Québec and [Bécancour fire department](#) at the G2 site. Since the inspection report was not sent to HQ by February 1, 2022, the findings of this inspection will be included in the 2022 annual report.

### **3.8.11 Waste Management**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA waste management at Gentilly-2 facilities in 2021.

CNSC staff examined the two semi-annual reports on the management of Gentilly-2 solid radioactive waste and irradiated fuel facilities for 2021. The two reports satisfied regulatory requirements and CNSC staff had no comments.

In 2020, CNSC staff reviewed the preliminary decommissioning plan for the Gentilly-2 facilities, the financial guarantees, and the storage with surveillance plan. These plans were not modified in 2021 and remain valid.

In April 2020, in light of the COVID-19 pandemic, CNSC staff asked Hydro-Québec to conduct a current market value analysis of its financial guarantee, including a comparison with the minimum required value under paragraph 12(2) of the General Nuclear Safety and Control Regulations. Additionally, an update every three months of the current market value of its financial guarantee for decommissioning the Gentilly-2 facilities was requested.

Hydro-Québec demonstrated the validity of its financial guarantee through the requested quarterly reports. On that basis, CNSC staff considered that a quarterly report on the state of financial guarantee for Gentilly-2 was no longer necessary and communicated with Hydro-Québec in September 2021 that this was no longer a requirement.

### **3.8.12 Security**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA security at Gentilly-2 facilities in 2021.

CNSC staff reviewed the site's security reports, annual threat and risk assessment report as well as the four quarterly security reports of Gentilly-2 and confirmed that Hydro-Québec met all applicable regulatory requirements regarding facilities and equipment in 2021.

Despite having implemented its Business Continuity Plan (BCP), Gentilly-2 was able to maintain an effective training program. Performance information from the quarterly reports and the licensee's drill and exercise program met regulatory expectations and CNSC staff expectations.

### **3.8.13 Safeguards and Non-Proliferation**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA safeguards and non-proliferation at Gentilly-2 facilities in 2021.

CNSC staff concluded that the accountancy and control of nuclear material at Gentilly-2 met all relevant regulatory requirements in 2021.

Hydro-Québec provided CNSC and the International Atomic Energy Agency (IAEA) the nuclear material accountancy and control reports required for safeguard activities, including inspections, in 2021.

In 2021, Hydro-Québec provided the necessary access and assistance for the IAEA's activities, including inspecting and maintaining the IAEA's equipment.

CNSC staff concluded that the operational information and descriptive information at Gentilly-2 complied with all the applicable regulatory requirements in 2021. Hydro-Québec provided the operational information and descriptive information required to facilitate the IAEA's Safeguards and Non-Proliferation activities. Following confirmation that all fuel was transferred to the dry storage pool in 2021, CNSC staff updated their requirements for Gentilly-2 safeguards.

Hydro-Québec provided the assistance required for the IAEA's safeguard, containment, and surveillance equipment, including inspections.

During an activity in September 2021, the IAEA confirmed that all fuel on site was transferred to the dry storage facility and proceeded with the removal of the remaining surveillance equipment in the used fuel storage pool.

A minor incident occurred in September 2021 when an IAEA seal was damaged on the surface during work on a dry fuel storage module. Hydro-Québec coordinated the replacement of the IAEA seal during a subsequent site visit, to the satisfaction of CNSC staff.

#### **3.8.14 Packaging and Transport**

CNSC staff concluded that Hydro-Québec met the applicable regulatory requirements and that its performance met CNSC staff expectations regarding SCA packaging and transport at Gentilly-2 facilities in 2021.

Hydro Québec maintains a packaging and transport program at Gentilly-2 that ensures compliance with the [Packaging and Transport of Nuclear Substances Regulations 2015](#), and the [Transportation of Dangerous Goods Regulations](#).

The program was put in place in an effective manner, and the transportation of nuclear substances coming from and going to the facility was done in a safe manner. Throughout 2021, there were no packaging and transport inspections at Gentilly-2 nor were there any incidents reported.