Responsible Management of Nuclear By-Products

Darlington Community Advisory Committee

April 25, 2023

ONTARIO POWER GENERATION

Nuclear Sustainability Services – Waste Management

- A strong focus on waste minimization, emphasizing the three Rs – Reduce, Reuse and Recycle.
- Reducing the physical size of the nuclear waste footprint in Ontario.
- 50 years of safe management of nuclear waste and materials.
- Responsibilities Include:
    - Occupational health and safety
    - Environmental protection
    - Preservation of public security and safeguards
    - Adhering to Nuclear Sustainability Services Three Pillars

Operations

NSS-Pickering (PWMF)

- In 2022, Used Fuel from Pickering Nuclear Generating Station continued to be removed from the station, and stored safely and on time.
- In 2022, Pickering loaded 65 Dry Storage Containers (DSCs), hitting their target of 65.
- Current 10-year operating licence to 2028.

Operations

NSS-Darlington (DWMF)

- In 2022, Used Fuel from Darlington Nuclear Generating Station continued to be removed from the station, and stored safely and on time.
- In 2022, DWMF loaded 57 Dry Storage Containers (DSCs), hitting the target of 57.
- The Retube Waste Storage Building provides on-site storage in support of Darlington Refurbishment.
- Awaiting outcome of January 26, 2023 CNSC Licence Renewal Hearing

Above: Retube Waste Storage Building.

Below: DWMF, seen at lower left of photo.

Nuclear Safety

- Public and employee safety remains OPG's top priority.
- Safety Analysis demonstrates that public and worker dose remains within CNSC regulatory limits during normal operations, and within Safety Report acceptance criteria due to credible accidents and malfunctions.
- OPG's exemplary record of public and employee safety is supported by the Waste Management Facility Safety Report summary, available on Reporting > Regulatory reporting - OPG

Radiation Safety

- Radiation Protection has four key objectives:
  - Keeping individual doses below regulatory limits.
  - Preventing unplanned exposures.
  - Maintaining individual risk from lifetime radiation exposure at an acceptable level.
  - Ensuring collective doses are As Low As Reasonably Achievable (ALARA).

Isotope Production

- Both Pickering and Darlington nuclear generating stations play a role in ensuring a steady supply of an array of life-saving isotopes.
- About half of the world's **Cobalt-60 (Co-60)** comes from Ontario nuclear plants
  - Primary method to sterilization of single-use medical devices.
  - Pickering reactors currently produce Co-60, and Darlington reactors will soon be Co-60 capable.
- OPG subsidiary Laurentis Energy Partners along with BWXT Medical have installed mechanisms to produce and extract **Molybdenum-99 (Mo-99)** from Darlington Unit 2
- **Helium-3 (He-3)** is also extracted at Darlington.
  - The unique design of Darlington's CANDU reactors allow isotopes to be removed while the reactor is still online.

Waste Minimization

- Volume reduction through sorting and processing.
  - At source
  - Through sorting
  - Through incineration
- OPG subsidiary Laurentis Energy Partners and McMaster University are jointly researching innovations in sorting and recycling, at new laboratory in Hamilton.
- Construction of the Western Clean-Energy Sorting and Recycling Facility – due to open in Spring 2023.

Exterior of the Western Clean Energy Sorting and Recycling Facility

Interior of Hamilton, ON facility

Questions?

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