Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CMD 21-M43

Date: 2021-08-23
File / dossier : 6.02.04
Edocs pdf : 6640681

Update from Ontario Power Generation

Mise à jour d'Ontario Power Generation

Follow up from April 27, 2021 Commission meeting

Suivi suite à la réunion de la Commission du 27 avril 2021

Update from Ontario Power Generation to provide statistics on damage to the irradiated fuel bundles

Mise à jour d'Ontario Power Generation pour fournir des statistiques sur l'endommagement des grappes

Commission Meeting

Réunion de la Commission

October 5, 2021

Le 5 octobre 2021

Canada

ONTARIO POWER GENERATION

MEMORANDUM

OPG Proprietary

August 23, 2021

File No.: N-CORR-33100-0940452 P

OPG Review: Out-of-Core Fuel Damage

The purpose of this memorandum is to respond to a question raised at a recent virtual public meeting on April 27, 2021 regarding frequency of damage to irradiated fuel.

OPG undertook a review of historical Pickering reports and the Station Condition Record (SCR) database from the past 20 years regarding the frequency of irradiated fuel damage (Reference 1). The review identified over 340,000 fuel bundles were discharged from the reactor cores at Pickering Nuclear Generating Station (PNGS). A very small fraction (less than 0.0001%) of the total fuel bundle population at the station was identified as having irradiated fuel bundle damage. Of the small number of damaged bundles, almost all fuel sheaths on the bundles remained intact and were able to perform their design function of retaining fission products. For those few cases involving breaches in the sheath, all releases were kept contained and within applicable limits. Much of the damage occurred during fuel handling activities in the Irradiated Fuel Bay (IFB). The vast majority of fuel bundles are discharged and stored without out-of-core damage. Newly acquired tooling has significantly added more control during fuel handling activities. In all instances, the fuel remained in a safe, analyzed state; with no increased risk to the public, employees or the environment.

Guidelines for documenting abnormal incidents, parameters or trends related to nuclear fuel performance are based on industry expert recommendations are found in N-INS-37000-10001 Fuel Program Detailed Instruction, and issues are tracked until resolution within the OPG Fuel Program. In conjunction with OPG's Performance Improvement Program, all observed damage is closely monitored and corrective actions are rapidly implemented via the OPG Fuel Program (Reference 2). The existing governance ensures a systematic process is in place for integrating information on fuel inspections, operations, research, manufacturing and the SCR database. Any incident involving fuel in an unanalyzed state would be a cause to pause, assess, and comply with all reporting requirements under the OPG Fuel Program.

Please contact me if you need any more information on this topic.

Sara Irvine

Sara Irvine
Manager, Regulatory Affairs
Pickering Nuclear Generating Station

REFERENCES:

[1] OPG Document, “Out-of-Core Fuel Damage Review”, July 19, 2021, CD# N-CORR-37000-0937659.

[2] OPG Document, "OPG Fuel Program," October 9, 2020, CD# N-PROG-MA-0016.