Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CMD 21-H107Q

File/dossier : 6.01.07
Date : 2021-09-09
e-Docs pdf : 6637962

UNPROTECTED

Questions from Commission Panel Members

In the Matter of

Application for a licence amendment to authorize activities related to the production and possession of Molybdenum-99 (Mo-99) at the Darlington Nuclear Generating Station (NGS)

Public Hearing - Hearing in writing based on written submissions

September 2021

NON PROTÉGÉ

Questions des membres de la formation de la Commission

À l'égard de

Demande de modification de permis en vue d'obtenir l'autorisation de produire du molybdène 99 (Mo-99) à la centrale nucléaire de Darlington

Audience Publique - Audience fondée sur des mémoires

Septembre 2021

Canada

INTRODUCTION

The Panel of the Commission, in conducting hearing in writing 2021-H-107[1] has reviewed the written submissions provided by CNSC staff, OPG, and 10 intervenors. In its consideration of whether to amend, under subsection 24(2) of the *Nuclear Safety and Control Act*, the Power Reactor Operating Licence for the Darlington Nuclear Generating Station to authorize the production of Molybdenum-99, the Panel of the Commission requires additional information with respect to CMD 21-H107, CMD 21-H107.1, and CMD 21-H107.1A.

QUESTIONS

The Panel's questions for CNSC staff attention and response are set out in Table 1. The Panel's questions for OPG attention and response are set out in Table 2.

Table 1 – CMD 21-H107Q Questions for CNSC Staff

#	Commission Panel Questions
1.	Some interveners have raised the point that this proposal [i.e. first-of-a-kind (FOAK) initiative], relatively speaking, is more technically complicated than other extant neutron irradiation [i.e. 98 Mo (n, gamma) 99 Mo] systems. The point has also been raised that there is no operational experience (OPEX) with this design. Relative to striving to use "best available technology" (BAT), and lack of OPEX for this process, the Panel would suspect that the confidence margins on the safety case are much broader than on other existing similar technologies/processes. What is the role of the regulator when there are multiple applicable options relative to preferentially supporting the safest approach?
2.	An intervener (CMD 21-H107.2) raised the question of why an empiric, real-world demonstration of how the proposed target apparatus will respond to irradiation, e.g. in a research reactor setting, is not required versus a more theoretical "proof of principle" approach. Please respond.
3.	It is the Panel's understanding, from CNSC staff CMD 21-H107, that the recommendation to allow installation of additional 98 Mo target units on other NPP units would depend on the safety case of the first install and CNSC staff would make a decision as to whether or not to refer the issue to the Commission. Is this correct?
4.	Please confirm that BWXT is the shipper, transporter, and receiver of the product and that they hold ultimate accountability to manage such in a manner prescribed by applicable regulations and that they are also responsible to respond and mitigate any transport accidents or incidents. Has BWXT presented information to CNSC to inform the opinion that they are in compliance with all packaging and transportation regulations?

[1] Notice of Hearing in Writing 2021-H-107, May 4, 2021

Table 2 – CMD21-H107Q Questions for OPG

#	Commission Panel Questions
1.	Some interveners have raised the point that this proposal (i.e. first-of-a-kind (FOAK) initiative), relatively speaking, is more technically complicated than other extant neutron irradiation (i.e. 98 Mo (n, gamma) 99 Mo) systems. The point has also been raised that there is no operational experience (i.e. OPEX) with this design. Why was a more technically complicated process with no OPEX chosen?
2.	An intervener (CMD 21-H107.2) raised the question of why an empiric, real-world demonstration of how the proposed target apparatus will respond to irradiation, e.g. in a research reactor setting, is not required versus a more theoretical "proof of principle" approach. Please respond.
3.	What is the ultimate fate of an irretrievable 98 Mo target and associated apparatus relative to the target itself and to operations of the involved unit?
4.	From CMD 21-H107, p.15: "During harvesting, the targets will be held for period of time under the RMD out of the flux fields of the reactor, a stage referred to as the dwell period, to allow for decay of some short-lived high energy activation products to reduce the radiation hazard." Please clarify how long this dwell period storage will be and how much reactivity is expected to remain from non- 99 Mo sources after this period. What are the major remaining activation isotopes and what are their half-lives?
5.	As BWXT is the shipper and transporter, if a transport accident, incident, were to occur while still on OPG property how would it be managed? Is there a protocol which clearly outlines roles and responsibility of the shipper and OPG while the product is still on site?
6.	Please clarify, with specific examples, Indigenous engagement activities completed by OPG related to the transportation route between OPG and the BWXT Kanata facility. As BWXT will, in essence, be the shipper, transporter and receiver for the neutron activated product, is OPG aware of specific engagement activities completed by BWXT Indigenous communities along the transportation route?

REQUEST

Responses from CNSC staff and OPG shall be submitted by way of supplementary CMD by September 24, 2021 if possible. The Secretariat should be informed of any concerns respecting this deadline within 5 working days of receiving this request.

Name:	Marc Leblanc, Commission Secretary *On behalf of the Panel of the Commission*	Date: 2021-09-09
Signature: