May 28, 2026

BP-CORR-00531-07536

Ms. Candace Salmon
Commission Registrar
Canadian Nuclear Safety Commission
P.O. Box 1046
280 Slater Street
Ottawa, Ontario
K1P 5S9

Dear Ms. Salmon:

<u>Central Maintenance Facility: Evidence for the Record for Commission Approval</u>

The purpose of this letter is:

- to provide evidence for the record, at the request of CNSC staff, to support the request for Commission approval related to the hot cell proposed for Bruce Power's Central Maintenance Facility (Reference 1); and,
- to request the Commission take measures to protect confidential technical information, pursuant to Canadian Nuclear Safety Commission Rules of Procedure, Rule 12, and in accordance with the Directive on Requesting Confidentiality, published September 15, 2025.

CNSC staff have prepared a Commission Member Document related to this request and have referenced Bruce Power information. CNSC staff have requested that Bruce Power provide some of the referenced information as evidence for the record.

Attachment A itemizes the contents of each reference, and indicates which portions are considered confidential. For the portions of the references that are considered confidential, Bruce Power requests that the Registry take measures to protect information contained in this submission, pursuant to the Canadian Nuclear Safety Commission Rules of Procedure, Section 12(1), and in accordance with the Directive on Requesting Confidentiality. Accordingly, Bruce Power submits the Request for Confidentiality as Attachment B.

To assist the Registry in ensuring that these protective measures do not unduly affect the openness of the proceeding, non-confidential summaries or redactions have been provided in Attachments C through L, respectively. The referenced information is provided in Enclosures 1 through 4.

This cover letter, including Attachments A through L, may be made public. Enclosures 1 through 4 are confidential and may not be released to the public, as discussed in the Request for Confidentiality.

Maury Burton, Senior Director, Regulatory Affairs
177 Tie Rd, Tiverton ON N0G 2T0
Telephone 519-386-2394
maury.burton@brucepower.com

If you require further information or have any questions regarding this submission, please contact Mr. Maury Burton, Senior Director, Regulatory Affairs, at 519-386-2394, or maury.burton@brucepower.com.

Yours truly,

Lisa Clarke Digitally signed by Lisa Clarke
Date: 2026.05.28
15:08:13 -04'00'

Maury Burton
Senior Director, Regulatory Affairs
Bruce Power

cc: CNSC Forms / Formulaires
Ms. Anupama Bulkan, CNSC – Ottawa
Dr. Alexandre Viktorov, CNSC – Ottawa
registry-greffe@cnsc-ccsn.gc.ca

Attach.

Enclosures:

1. Letter, M. Burton to A. Bulkan, “Bruce A and B: Design of the Hot Cell for the Isotope Program”, September 15, 2025, BP-CORR-00531-06456.
2. Letter, M. Burton to A. Bulkan, “Central Maintenance Facility: Generic Final Safety Analysis Report for the Operation of a Hot Cell”, November 27, 2025, BP-CORR-00531-06926.
3. Letter, M. Burton to A. Bulkan, “Central Maintenance Facility: Notification of Program/Procedure for the Hot Cell (HC#06)”, March 25, 2026, BP-CORR-00531-07239.
4. Letter, M. Burton to A. Bulkan, “Central Maintenance Facility: Radiological Consequences of Bounding Events of the Hot Cell”, March 31, 2026, BP-CORR-00531-07336.

Reference:

1. Letter, M. Burton to C. Salmon, “Central Maintenance Facility: Commission Approval to Operate a Hot Cell”, November 28, 2025, BP-CORR-00531-06949.

Attachment A

Summary of Referenced Information

Attachment A: Summary of Referenced Information

Reference	Title	Contents	Confidentiality	Location
BP-CORR-00531-06582, Reference A1	Bruce B: Notice of Intent to Seek Commission Approval to Operate a Hot Cell and to Produce New Isotopes	Cover letter	This submission is not confidential and may be made public.	This submission has already been provided to the Commission and therefore is not included in this letter.
BP-CORR-00531-06949, Reference A2	Central Maintenance Facility: Commission Approval to Operate a Hot Cell	Cover letter Attachment A: Supporting Information	This submission is not confidential and may be made public.	This submission has already been provided to the Commission and therefore is not included in this letter.
BP-CORR-00531-07200, Reference A3	Central Maintenance Facility: Supplemental Information for the Commission Approval Related to the Hot Cell	Cover letter	This submission is not confidential and may be made public.	This submission has already been provided to the Commission and therefore is not included in this letter.
BP-CORR-00531-06456, Reference A4	Bruce A and B: Design of the Hot Cell for the Isotope Program	Cover letter	This cover letter is not confidential and may be made public.	A redacted copy of the correspondence is provided in Attachment C. The reference, in its entirety, is provided in Enclosure 1.
		Attachment A: Location Attachment B: Design Attachment C: Design Assessment Form	The attachments contain technical information that is consistently treated as confidential and contains some third-party intellectual property. The request for confidentiality is in Item#1 of Attachment B.	
BP-CORR-00531-06926, Reference A5	Central Maintenance Facility: Generic Final Safety Analysis Report for the Operation of a Hot Cell	Cover letter	This cover letter is not confidential and may be made public.	The cover letter is provided in Attachment D. A summary of the enclosure is provided in Attachment E. The reference, in its entirety, is provided in Enclosure 2.
		Enclosure 1, NK37-REP-31790-00002, Generic Final Safety Analysis Report	The enclosure contains technical information that is consistently treated as confidential and contains some third-party intellectual property. The request for confidentiality is in Item#2 in the Request for Confidentiality in Attachment B.	

Reference	Title	Contents	Confidentiality	Location
BP-CORR-00531-07239, Reference A6	Central Maintenance Facility: Notification of Program/Procedure for the Hot Cell (HC#06)	Cover letter	This cover letter is not confidential and may be made public.	The cover letter is provided in Attachment F. A summary of the attachments is provided in Attachment G. Summaries of the enclosures are provided in Attachments H, I and J, respectfully. The reference, in its entirety, is provided in Enclosure 3.
		Attachment A and Attachment B, Proposed Changes to the Licence Conditions Handbook	The attachments contain draft information, which is consistently treated as confidential. The request for confidentiality is in Item#3 in the Request for Confidentiality in Attachment B.	
		Enclosure 1, BP-PROG-18.01, Irradiation Services Enclosure 2, BP-PROC-01120, Management of Lutetium-177 Production Enclosure 3, BP-PROC-15043, Management of Central Maintenance Facility Hot Cell	The enclosures contain commercial information that is consistently treated as confidential. The request for confidentiality is in Item#4 in the Request for Confidentiality in Attachment B.	
BP-CORR-00531-07336, Reference A7	Central Maintenance Facility: Radiological Consequences of Bounding Events of the Hot Cell	Cover letter	This cover letter is not confidential and may be made public.	The cover letter is provided in Attachment K. A summary of the enclosure is provided in Attachment L. The reference, in its entirety, is provided in Enclosure 4.
		Enclosure 1, NK37-REP-31790-00004, Radiological Consequences or Bounding Events	The enclosure contains technical information that is consistently treated as confidential and contains some third-party intellectual property. The request for confidentiality is in Item#5 in the Request for Confidentiality in Attachment B.	
BP-CORR-00531-07381, Reference A8	Supplemental Application for Waste Strategy and Security Impacts	Cover letter Attachment A, Waste Strategy Attachment B, Nuclear Security Information Attachment C, Request for Confidentiality Attachment D, Summary of the Nuclear Security Information	Portions of this submission are confidential. The request for confidentiality has already been provided, therefore this item has not been included in Attachment B.	This submission has already been sent to the Commission and therefore is not included in this letter.

<u>References:</u>

A1. Letter, M. Burton to C. Salmon, "Notice of Intent to Request Approval for a Hot Cell and Submit an Application to Amend the Power Reactor Operating Licence for New Isotopes", September 26, 2025, BP-CORR-00531-06582.
A2. Letter, M. Burton to C. Salmon, "Central Maintenance Facility: Commission Approval to Operate a Hot Cell", November 28, 2025, BP-CORR-00531-06949.
A3. Letter, M. Burton to C. Salmon, "Central Maintenance Facility: Supplemental Information for the Commission Approval Related to the Hot Cell", January 23, 2026, BP-CORR-00531-07200.
A4. Letter, M. Burton to A. Bulkan, "Bruce A and B: Design of the Hot Cell for the Isotope Program", September 15, 2025, BP-CORR-00531-06456.
A5. Letter, M. Burton to A. Bulkan, "Central Maintenance Facility: Generic Final Safety Analysis Report for the Operation of a Hot Cell", November 27, 2025, BP-CORR-00531-06926.
A6. Letter, M. Burton to A. Bulkan, "Central Maintenance Facility: Notification of Program/Procedure for the Hot Cell (HC#06)", March 25, 2026, BP-CORR-00531-07239.
A7. Letter, M. Burton to A. Bulkan, "Central Maintenance Facility: Radiological Consequences of Bounding Events of the Hot Cell", March 31, 2026, BP-CORR-00531-07336.
A8. Letter, M. Burton to C. Salmon, "Central Maintenance Facility: Supplemental Application for Waste Strategy and Security Impacts", April 28, 2026, BP-CORR-00531-07381.

Attachment B

Request for Confidentiality

Request for Confidentiality

of Material Submitted in Relation to

Application to change the lutetium-177 production process at Bruce A and B Nuclear Generating Stations
CMD: 26-H110

This form supports the Directive on Requesting Confidentiality. Review the Directive for important information about completing this form and the documents that must be submitted with it.

The completed form and attachments **must be submitted to** the Commission Registrar.

With regard to: **Application to change the lutetium-177 production process at Bruce A and B Nuclear Generating Stations**

I, Lisa Clarke, am an authorized representative of Bruce Power. I understand that:

- material provided to the Canadian Nuclear Safety Commission ("the Commission") as part of a public hearing will be made publicly available unless the Commission makes a decision to protect it; and
- regardless of any request for confidentiality and decision by the Commission, the material may be disclosed if the Commission is required by law to disclose it (for example, after a request under the Access to Information Act).

I hereby request that the Commission take measures to prohibit the publication and disclosure of the following information under rule 12 of the Canadian Nuclear Safety Commission Rules of Procedure (the Rules).

NOTE 1: Any additional protective measures being requested must be identified in a letter attached to this form.

Material for which a request for confidentiality is submitted:

The material that is subject to this request for confidentiality is clearly identified in Table 1, below.

NOTE 2: Where the request for confidentiality applies only to part of a document, relevant portions must be clearly identified "CONFIDENTIAL" to distinguish them from content that is non-confidential.

NOTE 3: The Commission is not responsible for any copyright infringement due to its publication on the CNSC website of documents that have been written by a third party.

Table 1: Material subject to the request for Confidentiality				
	Item Name	**Portion(s) covered by the Request for Confidentiality**	**Applicable Criteria** Check all that apply	**Rationale** Explain how the criteria in Rule 12 applies and how the summary or redacted version satisfies the public interest
1.	BP-CORR-00531-06456, Attachments A and B	☐ Entire content ✓ Redacted content as clearly identified in the document	☐ The information involves national or nuclear security elements ☐ The information pertains to Indigenous Knowledge The information is: ☐ Financial, ☐ Commercial, ☐ Scientific, ✓ Technical, ☐ Personal, or ✓ Other (specify), and ✓ Is consistently treated as confidential and the person affected has not consented to disclosure. Or: ☐ Disclosure of the information would likely endanger the life, liberty, or security of a person or person(s)	These attachments contain **technical information** that Bruce Power **consistently treats as confidential**. In addition, it also contains some intellectual property and confidential information of a third party (**other**). The figures in the attachment include the arrangement, dimensions and design elements of the hot cell and target assembly and could reasonably be expected to prejudice Bruce Power's competitive position or result in financial loss to Bruce Power if publicized. A copy of the Item requested, with the figures redacted, has been prepared, to allow public understanding of the hot cell design and support the openness of the proceeding.

Table 1: Material subject to the request for Confidentiality				
	Item Name	**Portion(s) covered by the Request for Confidentiality**	**Applicable Criteria** Check all that apply	**Rationale** Explain how the criteria in Rule 12 applies and how the summary or redacted version satisfies the public interest
2.	BP-CORR-00531-06926, Enclosure 1	✓ Entire content ☐ Redacted content as clearly identified in the document.	☐ The information involves national or nuclear security elements ☐ The information pertains to Indigenous Knowledge The information is: ☐ Financial, ☐ Commercial, ☐ Scientific, ✓ Technical, ☐ Personal, or ✓ Other (specify), and ✓ Is consistently treated as confidential and the person affected has not consented to disclosure. Or: ☐ Disclosure of the information would likely endanger the life, liberty, or security of a person or person(s)	This report contains detailed **technical information** related to the design, safety analysis and operational assumptions for the hot cell activities associated with lu-177 production. In addition, it also contains intellectual property or confidential information of a third party (**other**). This information is **consistently treated as confidential** due to its commercial sensitivity, technical specificity and use intellectual property. Disclosure could reasonably be expected to provide insight into site-specific vulnerabilities, prejudice Bruce Power's competitive position or result in financial loss. A non-confidential summary of the Item requested has been prepared to describe the purpose, scope, and key conclusions of the safety analysis. The summary provides sufficient information to allow public understanding of the hot cell analysis and support the openness of the proceeding.

Table 1: Material subject to the request for Confidentiality				
	Item Name	**Portion(s) covered by the Request for Confidentiality**	**Applicable Criteria** Check all that apply	**Rationale** Explain how the criteria in Rule 12 applies and how the summary or redacted version satisfies the public interest
3.	BP-CORR-00531-07239, Attachment A and B	✓ Entire content ☐ Redacted content as clearly identified in the document.	☐ The information involves national or nuclear security elements ☐ The information pertains to Indigenous Knowledge The information is: ☐ Financial, ☐ Commercial, ☐ Scientific, ☐ Technical, ☐ Personal, or ✓ Other (specify), and ✓ Is consistently treated as confidential and the person affected has not consented to disclosure. Or: ☐ Disclosure of the information would likely endanger the life, liberty, or security of a person or person(s)	These attachments contain suggested changes to the Licence Conditions Handbook, which will be considered by CNSC staff. Draft information is **consistently treated as confidential** by Bruce Power since it can be misleading when released before it is finalized. This topic is addressed in sufficient detail through evidence for the record that is not treated as confidential, including the overall description of the impacts on safety and control areas in both Bruce Power's and CNSC staff Commission Member Documents.

Table 1: Material subject to the request for Confidentiality				
	Item Name	**Portion(s) covered by the Request for Confidentiality**	**Applicable Criteria** Check all that apply	**Rationale** Explain how the criteria in Rule 12 applies and how the summary or redacted version satisfies the public interest
4.	BP-CORR-00531-07239, Enclosures 1, 2 and 3	✓ Entire content ☐ Redacted content as clearly identified in the document	☐ The information involves national or nuclear security elements ☐ The information pertains to Indigenous Knowledge The information is: ☐ Financial, ✓ Commercial, ☐ Scientific, ☐ Technical, ☐ Personal, or ☐ Other (specify), and ✓ Is consistently treated as confidential and the person affected has not consented to disclosure. Or: ☐ Disclosure of the information would likely endanger the life, liberty, or security of a person or person(s)	These documents form part of Bruce Power's management system and contain **commercially sensitive information** regarding internal methodologies, program implementation, and business practices. This information is **consistently treated as confidential** by Bruce Power. Disclosure of this information would provide detailed insight into Bruce Power's internal approaches and could reasonably be expected to prejudice Bruce Power's competitive position, without contributing meaningfully to public understanding of safety or regulatory compliance. Non-confidential summaries have been prepared to describe the purpose, scope and outcomes of the governance. These summaries provide sufficient information for the public to understand how safety and regulatory requirements are met.

Table 1: Material subject to the request for Confidentiality				
	Item Name	**Portion(s) covered by the Request for Confidentiality**	**Applicable Criteria** Check all that apply	**Rationale** Explain how the criteria in Rule 12 applies and how the summary or redacted version satisfies the public interest
5.	BP-CORR-00531-07336, Enclosure 1	✓ Entire content ☐ Redacted content as clearly identified in the document.	☐ The information involves national or nuclear security elements ☐ The information pertains to Indigenous Knowledge The information is: ☐ Financial, ☐ Commercial, ☐ Scientific, ✓ Technical, ☐ Personal, or ✓ Other (specify), and ✓ Is consistently treated as confidential and the person affected has not consented to disclosure. Or: ☐ Disclosure of the information would likely endanger the life, liberty, or security of a person or person(s)	This report contains detailed **technical information,** including technical methodologies, modelling approaches, and software applications (e.g., ORIGEN-S and ORCA) and details design, material inventories and scenarios specific to Bruce Power's site and operations. In addition, it also contains intellectual property or confidential information of a third party (**other**). This information is **consistently treated as confidential** due to its commercial sensitivity, technical specificity and use third-party intellectual property. Disclosure could also reasonably be expected to provide insight into site-specific vulnerabilities, prejudice Bruce Power's competitive position or result in financial loss Non-confidential summaries of the Items requested have been prepared to describe the purpose, scope, and key conclusions. These summaries provide sufficient information to allow public understanding and support the openness of the proceeding.

Attestation:

1. I confirm that the above-noted material is not available through any public sources.
2. I have attached a **summary** or **redacted** version of the material that minimally impairs the public nature of this proceeding.
3. I understand that if this request is not approved by the Commission, I will have the option of withdrawing the material.
4. I further understand that if the material is not withdrawn it will be part of the public record as per rule 15 of the Rules.
5. I understand that upon receipt of this request, the Commission Registrar will treat the material that is subject to this request as confidential unless and until the Commission makes a ruling.

Attachments:

- Redacted or summarized attachments:
  - Redacted Copy of BP-CORR-00531-06456, Bruce A and B: Design of the Hot Cell for the Isotope Program
  - Cover Letter of BP-CORR-00531-06926, Central Maintenance Facility: Generic Final Safety Analysis Report for the Operation of a Hot Cell
    - i. Summary of NK37-REP-31790-00002, Generic Final Safety Analysis Report
  - Cover letter of BP-CORR-00531-07239, Central Maintenance Facility: Notification of Program/Procedure for the Hot Cell (HC#06)
    - i. Summary of Proposed Changes to the Licence Conditions Handbook
    - ii. Summary of BP-PROG-18.01, Irradiation Services
    - iii. Summary of BP-PROC-01120, Management of Lutetium-177 Production
    - iv. Summary of BP-PROC-15043, Management of Central Maintenance Facility Hot Cell
  - Cover Letter of BP-CORR-00531-07336, Central Maintenance Facility: Radiological Consequences of Bounding Events of the Hot Cell
    - i. Summary of NK37-REP-31790-00004, Radiological Consequences or Bounding Events
- Confidential attachments:
  - Letter, M. Burton to A. Bulkan, “Bruce A and B: Design of the Hot Cell for the Isotope Program”, September 15, 2025, BP-CORR-00531-06456.
  - Letter, M. Burton to A. Bulkan, “Central Maintenance Facility: Generic Final Safety Analysis Report for the Operation of a Hot Cell”, November 27, 2025, BP-CORR-00531-06926.
  - Letter, M. Burton to A. Bulkan, “Central Maintenance Facility: Notification of Program/Procedure for the Hot Cell (HC#06)”, March 25, 2026, BP-CORR-00531-07239.
  - Letter, M. Burton to A. Bulkan, “Central Maintenance Facility: Radiological Consequences of Bounding Events of the Hot Cell”, March 31, 2026, BP-CORR-00531-07336.

Authorized signature:

Bruce Power L.P., by its general partner, Bruce Power Inc.

Lisa Clarke Digitally signed by Lisa Clarke Date: 2026.05.28 12:01:22 -04'00'

BRUCE POWER
LAW DIVISION

Name: FT
Date: May 28, 2026

Lisa Clarke, Director, Regulatory Affairs Date

Attachment C

Redacted Copy of BP-CORR-00531-06456, Bruce A and B: Design of the Hot Cell for the Isotope Program

September 15, 2025

BP-CORR-00531-06456

Ms. Anupama Bulkan
Regulatory Program Director
Bruce Regulatory Program Division
Canadian Nuclear Safety Commission
P.O. Box 1046
280 Slater Street
Ottawa, Ontario
K1P 5S9

Dear Ms. Bulkan:

Bruce A and B: Design of the Hot Cell for the Isotope Program

The purpose of this letter is to provide CNSC staff with an overview of the design of a proposed center of site hot cell. This is the initial submission, prepared for CNSC staff review, following prior informal discussions.

Bruce Power embarked on a new business venture in 2022, focusing on the production of short-lived medical isotopes, currently the beta emitter lutetium-177, described in more detail in Reference 1. In 2024, Bruce Power, in collaboration with Isogen (Kinectrics and Framatome), established and began operating a second production line in Unit 7, as discussed in Reference 2. The program is currently active at Unit 7 in Bruce B, where the Isotope Production System (IPS) is used to produce lutetium-177.

Bruce Power is now pursuing projects aimed at optimizing production, such as increasing the amount of target material (i.e. ytterbium-176) in the core and reducing the irradiation period to seven days (from 14 days) for both production lines, as well as expanding production, by both installing an IPS in additional units and diversifying to produce new isotopes (Reference 3).

To support these enhancements to the lutetium-177 program, Bruce Power, in partnership with Kinectrics, plans to install and operate a hot cell. The hot cell will be located on-site at the Central Maintenance Facility (CMF; building B12). The hot cell will initially be used for target carrier removal (TCR), commonly referred to as "decanning", and packaging prior to the lutetium-177 targets being shipped offsite for processing.

Removing the outer carrier (i.e., aluminum or titanium) on-site will reduce transfer time, minimize operator dose, and optimize the specific activity of the targets before shipment to the downstream client. The hot cell has been designed for TCR activities of irradiated targets from the existing IPS in Bruce B Unit 7 and the next IPS, which is planned for installation in Unit 6 (Reference 3).

The hot cell may be used for additional activities at a future date; however, Bruce Power will ensure that changes remain within the design and licensing basis of the hot cell, and will engage with CNSC staff as appropriate.

Maury Burton, Senior Director, Regulatory Affairs
177 Tie Rd, Tiverton ON N0G 2T0
Telephone 519-386-2394
maury.burton@brucepower.com

Ms. A. Bulkan September 15, 2025

Attachment A describes the hot cell, with an overview of the site and room. A detailed description of the hot cell design and target carrier removal process is provided in Attachment B. The hot cell design is based on REGDOC-2.5.6, Design of Rooms Where Unsealed Nuclear Substances are Used, and BP-PROC-01081, Engineering Change Control (ECC). The applicable design requirements and guidance extracted from REGDOC-2.5.6 are assessed in Attachment C.

These attachments focus on the design of the hot cell and the hot cell room. Additional submissions addressing impacts related to the safety and control areas will be provided prior to operation of the hot cell.

If you require further information or have any questions regarding this submission, please contact Ms. Courtney Sauveur at (226) 930-0002, or courtney.sauveur@brucepower.com.

Yours truly,

Digitally signed by Maury Burton
Date: 2025.09.15 14:49:53 -04'00'

Maury Burton
Senior Director, Regulatory Affairs
Bruce Power

cc: CNSC Forms / Formulaires

Attach.

References:

1. Letter, M. Burton to L. Sigouin, "Bruce B Unit 7: Lu-177 Isotope Project – Regulatory Communication Plan and Hold Point, FISAR and Updated Design Plan Responses", September 15, 2021, BP-CORR-00531-01895.
2. Letter, M. Burton to M. Hornof, "Bruce B Unit 7: Regulatory Communication Plan for Isotope Production System Modification", November 8, 2023, BP-CORR-00531-04477.
3. Letter, J. Scongack to R. Jammal, "Bruce A and B: Expanding Canadian Isotope Capability at Bruce Power", October 31, 2024, BP-CORR-00531-05956.

Attachment A

Proposed Hot Cell Location

Attachment A:
Proposed Hot Cell Location

The hot cell will be installed on-site at the Central Maintenance Facility (CMF; building B12) to reduce transfer time and packaging requirements, minimize dose to operators, and optimize the specific activity of the targets before shipment to the downstream client. Within the B12 facility, the hot cell will be installed in the loading bay (M183/M185), within its own dedicated area.

The rationale for this region is that a central location can service isotope production at both Bruce A and Bruce B once the isotope program has grown. This facility was designed for radiation work and has all the necessary components required, such as contaminated exhaust, adequate space, and electrical services. Site modifications are planned as described below to suit the hot cell activities.

Please note: Some of the figures provided below for a visual representation of the facilities location where the hot cell will be installed may change prior to installation of the hot cell.

A1. Key Features

Area Layout

The hot cell will be located in the loading bay of the Central Maintenance Facility, B12. The hot cell will be placed at a minimum of 1.5 m away from the east edge of the loading bay to not overload the existing foundation wall. The west offset is defined by the required 4.00 m clearance for PADIRAC[1] operations. The large retaining wall separating the M183 soil from the basement of M185 is the dominant factor in the north-south position of the hot cell within the loading bay. The operator will stand on the south side of the hot cell and will use the manipulators to move material within the hot cell. There will also be a personnel entry door as described in Attachment B. This door is located on the north side.

See Figure 1 below for a sketch of the layout.

[1] The PADIRAC is a shielded flask that is expected to be used with the Unit 6 IPS to receive and shield all targets harvested from the core at once. The PADIRAC allows the Unit 6 IPS design to be simplified but requires the use of a hot cell to safely repackage the targets for public shipment.

[redacted]

Figure 1 – Layout

Civil Work

The foundation design will be integrated into the overall elevation increase of the M183 loading bay from EL. 98.650 to EL. 99.950, which will be accomplished through a new concrete pad spanning the 9.00 m width of the loading bay. Additionally, a hydraulic dock leveler will be moved to the north-west edge of the new loading bay threshold immediately south of the new staircase.

As seen in Figure 2, a CMU (concrete masonry unit) wall runs between M183 and M185. The wall will interfere with the proposed hot cell concept and require partial removal up to the new edge of the loading bay.

[redacted]

Figure 2 – CMU Wall Arrangement

Electrical Interfaces

Power Supply:

The hot cell requires a permanent supply to provide reliable power to the cell. This will consist of 600 VAC power to supply electrical equipment. Room M183/M185 provides three main options for power panels, all of which are within close proximity to the proposed location.

Backup Power:

To achieve the requirement of backup power, a generator will be placed on the west exterior of the building. The generator is proposed to be powered by natural gas due to the maintainability requirements. An automatic transfer switch (ATS) will be used to ensure that required loads are automatically switched to the backup source if the primary source fails.

Contaminated Exhaust

The main purpose of the contaminated exhaust system design is to prevent the release of potentially radioactive materials from the hot cell and fume hood. A contaminated exhaust line has been designed to tie into the duct immediately upstream of the existing stack. The new contaminated exhaust system draws air from the hot cell and fume hood to maintain sufficient negative pressures. Negative pressure is achieved inside the hot cell to maintain containment of radioactive materials.

The components being added to the line connecting the hot cell to the existing contaminated exhaust stack will include:

Fans

Two fans have been designed for the system with each fan having 100% capacity. One fan is designed to be on standby. The fans will be installed inside mechanical room M268.

HEPA Filters

A total of three HEPA filters have been designed. One filter is located right next to the hot cell to capture airborne radioactive particulates. Two filters will be installed upstream of the two fans to minimize any particulates flowing into the stack. The filters contain monitoring instruments for identifying the presence of radioactive materials.

Dampers

Dampers will be located on either side of the fans, and either side of the filters to allow for maintenance of the out of service components.

The existing B12 contaminated exhaust system, and effluent monitoring system, will be used by the hot cell and will not require any modifications.

Overhead Doors

The hot cell requires access to a nearby door to facilitate material ingress/egress for both construction and continued target carrier removal (TCR) operations. Nearby overhead doors CM-29465-M183A and M183B are situated at the west end of the loading.

Attachment B

Hot Cell Design

Attachment B:
Hot Cell Design

B1. Hot Cell Target Carrier Removal and Packaging

Lutetium-177 targets are presently produced in the Isotope Production System in Unit 7 of Bruce B and flasked into transport containers in the target interface skid. When the hot cell becomes operational, the targets will be flasked and transferred from Bruce B Unit 7 to B12, Central Maintenance Facility, via a truck. This transfer will occur exclusively on Bruce Power site property. Irradiated targets will be securely contained in a shielded flask.

The truck will then unload the shielded flask(s) at a large overhead door, and the shielded flask(s) will be directly moved to the hot cell area via crane or forklift/pallet mover. The shielded flask will be opened outside of the hot cell; the tungsten insert will be removed using a magnet and pushed through a fume hood into the hot cell. A wrench will then be used to remove the lid, and a magnet will be employed to lift the lid.

A metal honeycomb (containing ampules within carriers) will be lifted from the insert to the workspace (inside the hot cell), and a decanning tool will then be used to cut the carrier away from the glass ampule (Figure 3). Only one target may be loaded in the decanning tool at any given time. The ampule cutting operation will generate nearly no dust (i.e., not a grinding operation).

The carrier body will then be stored to allow for decay and ultimate disposal, while the ampule is packaged into a separate honeycomb.

Once the target carrier removal (TCR) process is completed, followed by placement into a suitable outbound transport container (e.g., ISORAD[2] or Croft), leak tests are conducted (outside of the hot cell), and then the container is shipped to the downstream client.

[redacted]

Figure 3: Lu-177 Target Assembly

Targets irradiated within the Unit 6 IPS will be directly extracted from the reactor core into a shielded transfer flask (PADIRAC RD20), which directly interfaces with Unit 6 IPS via a docking station.

[2] Bruce Power is not currently a registered user of the ISORAD container and understands that prior to use it is necessary for Bruce Power to apply to become a registered user of the transport container.

The PADIRAC RD20 flask is engineered to safely store and transfer radioactive materials including beta and gamma emissions, while ensuring containment. Once the flask is loaded, it can then be transferred onsite to the hot cell located at Central Maintenance Facility (CMF) (B12), where the hot cell interfaces with the PADIRAC transfer flask. Upon docking at the hot cell, targets will then be retrieved using manipulator arms. The PADIRAC system is scheduled for use in Unit 6 IPS operations, which are expected to commence in 2027, pending an appropriate licensing decision.

B2. Design Overview

The hot cell measures approximately 13 ft L x 11 ft W x 16 ft H and is constructed by joining modular ceiling and wall weldments to form a single cohesive structure. Internally, the cell footprint is approximately 8 ft L X 6 ft W, providing ample workspace for TCR operations inclusive of waste handling. It features a worktable at operator height, designed to use the required tooling and facilitate operational tasks efficiently. The cell walls are 2.5 ft thick and composed of high-density concrete encased in steel plates, ensuring effective radiation shielding and structural integrity.

Manipulators are located above the shielded glass assembly to allow for operator actions to be replicated within the hot cell, while ensuring dose to operators is minimized.

Shielding analysis and dose assessments will be provided in a future submission discussing impacts of all safety and control areas.

One wall of the cell is designated for PADIRAC operations (from the Unit 6 IPS), while the opposing wall has a fume hood to allow for passthrough of smaller shielded flasks from Unit 7 IPS and the outbound transport containers (the Croft or ISORAD Type B(U) containers). The top of the cell is equipped with a penetration bank for passthrough of required services inclusive of electrical, data, pneumatic and contaminated exhaust. The cell is designed to be under constant negative pressure to ensure the internal volume is ventilated—in the event of an ampule breakage—by the existing CMF active exhaust system, which is designed to always be available. The effluent release is prevented by use of passive High Efficiency Particulate Air (HEPA) filters. The operations within the hot cell are managed through a control panel, situation adjacent to the hot cell, which provides precise control and monitoring of applicable systems.

Please note: Some of the figures provided below for a visual representation of the hot cell may change prior to the installation of the hot cell.

[redacted]

Figure 4: Hot Cell Design

B3. Key Modules

Hot Cell Weldment

The hot cell structure is comprised of carbon steel-plate composite modules. This design allows for simplified component mounting and shop fabrication of critical parts. There are six (6) main modules: four (4) wall modules, one (1) ceiling and one (1) personnel door. The rear module is the heaviest weighing almost 22,000 lbs prior to concrete pour.

The modules are to be field fitted and welded to form a complete structure. They are designed to include provisions for lifting and to aid field assembly and fitment. All weldments (including floor plating) will be constructed such that their surfaces are smooth, and without crevices, to support ease of decontamination.

[redacted]

Figure 5: Typical Wall SC Module

[redacted]

Figure 6: Personnel Entry Door (Rear)

Steel-Plate Composite (SC) Modules

The hot cell design utilizes steel plate composite modules, with concrete poured internally, to create a highly durable and effective containment structure. The steel plates provide mechanical strength and resistance to environmental stresses, while the concrete enhances radiation shielding and thermal stability, crucial for safe handling of hazardous materials. A typical picture of steel-place composite module can be seen below.

[redacted]

Figure 7: Typical SC Wall

The walls and ceiling will be constructed using this SC methodology. Four (4) SC wall modules and one (1) SC ceiling module are to be fabricated off site and then shipped to the site for final assembly and welding. Each module consists of two steel faceplates, steel headed shear studs, and tie bars. Steel tie bars and shear studs are provided to transfer shear forces and ensure the concrete-steel composite action, respectively. There are two types of connections designed for the hot cell structure:

Wall to Foundation: Walls are connected to the reinforced concrete (RC) foundation via large reinforcement bars to transfer SC wall forces to the RC foundation. A general arrangement of this connection design can be seen in Figure 8.

[redacted]

Figure 8: Typical SC Wall-to-RC Foundation Connection

Wall to Wall/Ceiling: The SC wall-to-SC wall and SC wall-to-SC roof connections are designed to have a fillet or groove weld on the connection areas.

In Cell Penetrations

Currently, the hot cell is designed to have all penetrations on the ceiling. The penetration manifold consists of seven (7) openings with the proposed purposes as follows: HVAC (x2), assay probe (including associated I&C cables/connectors) (1x), in-cell crane power/control and passthrough door pneumatics (including associated I&C cables/connectors) (x1), general power (x1), decanning tool operations (x1), and spare (x1).

The penetrations are engineered to incorporate fittings and adapters on both the hot and cold sides, where applicable, enabling secure and efficient transfer of the necessary connections into the cell. Each penetration includes flanged features for future customization or isolation via a blind flange. The penetration manifold includes lead block shielding while still allowing for services to enter the cell.

Pass Through Access

A pass-through access door is designed for access of shielded flask designs from Unit 7 and outbound Croft/ISORAD flasks. Passthrough doors are located on both the cold and hot sides of the cell and are pneumatically operated via a control box on the hot cell panel.

The operational sequence is carefully designed to ensure safety and efficiency. First, the cold-side door is opened, and a sliding tray is manually extended using a long-reach hook. The containers are then loaded onto the tray, which is pushed back inside, and the cold-side door is securely closed. Subsequently, the hot-side door is opened, and the sliding tray is pulled into the cell using manipulator arms, completing the transfer process. Interlocking logic is provided to ensure both passthrough doors are not unintentionally opened at once.

Personnel Door

A step-shielded, hinged personnel access door is located at the back of the cell to facilitate equipment entry, maintenance, and waste management operations. The door is constructed of a steel plate stack and features a cammed locking mechanism, comprising of locking components on the wall and a corresponding locking and retaining system on the door itself. It is equipped with roller bearings and a mechanical advantage bar to break the seal and open the door.

The door is designed in a way that it can be opened by a single operator. Provisions are also provided for locking the door in an open position. Additional features include a door stop to prevent slamming, heavy duty hinges sized for the assembly, and adjustable hinge leaves to allow for precise fitment before locking in the final position with dowel features.

Manipulators

The hot cell is equipped with La Calhène MT200 Master-Slave Manipulators, designed to handle up to 40 lbs with precision. They feature mechanically linked members with motorized telescoping and wrist pivoting on the slave arm, operated via master handle buttons for ease of use. The jaws provide operator force feedback through a chain mechanism, offer a locking capability, and have been rigorously tested for handling both carrier bodies and bare ampules. Additionally, the tongs are interchangeable via a toolhead station within the cell, and optional pads can be added to enhance versatility and adaptability for various tasks.

Shielded Window

The hot cell features a lead glass viewing window that incorporates several critical components to ensure safety, functionality, and durability. The window is constructed with high-density lead glass panes, providing effective radiation shielding while maintaining optical clarity for monitoring operations. A robust frame secures the glass and integrates seamlessly with the cell structure. A thin protective lead glass pane is included on the hot side to safeguard the main lead glass panes from scratches and impacts during operation. The assembly is embedded into the wall for a secure fit, enhancing both structural integrity and shielding. A cold side barrier glass assembly further strengthens the window, and a gas purging system is employed to prevent condensation or contamination between the panes, ensuring clear visibility over time.

Fume Hood

The hot cell includes a fume hood installed on the right side, strategically aligned with the cold side passthrough access door to facilitate the safe loading of flask inserts into and out of the cell. This fume hood is connected to a dedicated branch of the contaminated exhaust system, ensuring effective ventilation during operations. It is important to note that vapors or fumes are not anticipated in the fume hood; however, there could be a risk of loose contamination on the flask inserts.

Waste Management

The hot cell incorporates portable waste receptables that can be managed through the passthrough. The system operates on a rotational concept: portable waste receptables will collect target carrier material until full and remain in the hot cell until decayed to levels appropriate to remove.

PADIRAC Flasking System

The left side of the hot cell features the PADIRAC flask docking interface, designed specifically for the safe and efficient handling of radioactive materials harvested from the Unit 6 IPS. This interface facilitates the transfer and retrieval of materials into and out of the cell while maintaining full containment. The PADIRAC system is securely attached to its docking station (via use of an overhead crane) which connects directly to the hot cell via a large, shielded door assembly. The cell is equipped with a through-tube sleeve and an internal door, designed to maintain containment integrity. The internal door is operated using manipulators, allowing operators to safely access and retrieve inserts from the PADIRAC system without direct exposure to the hazardous materials.

In-Cell Crane

The hot cell is equipped with a 3-axis crane designed for lifting and maneuvering any heavier hot cell equipment. The crane is motorized and operated via a pendant. It features extended travel capabilities to maximize its reach within the cell, enabling it to handle a variety of tasks. In addition to moving the honeycomb inset, the crane is also used to lift the primary waste alcove lid. The Y-axis (up and down motion of the hoist) is specifically designed to reach both the table's top surface and the cell floor, ensuring flexibility and accessibility for a wide range of operations within the hot cell.

Control Panel and Hot Cell Monitors

The hot cell will be equipped with HEPA filter monitors for gamma and differential pressure, contaminated exhaust flow meter, a target assay device assembly (if required to support Unit 6 operation), a beta particulate monitor, and an internal dose monitor. The probes for each respective monitor are inserted from the respective penetrations through the ceiling. The gamma monitors are used to indicate the presence of radioactive material in the local HEPA filter located within the contaminated exhaust line.

The front of the cell features control pendants for the decanning tool and in-cell hoist. Additionally, the hot cell is operated via a dedicated 120 VAC/ 24 VDC control panel. The control panel includes a multitude of indicating lights to make the operator aware of door states, contaminated exhaust operation, local UPS status, building backup power status, and more. Hand switches are located on the control panels for manipulating equipment such as the fume hood pass through doors, in-cell lighting, and the local UPS. The control panels house interlocks to prevent the operator from opening both fume hood passthrough doors simultaneously. This is to ensure that shielding protects the operator at all times during hot cell operation.

Attachment C

Design Assessment Form of the Hot Cell

Attachment C:
Design Assessment Form of the Hot Cell

The following table has been taken directly from REGDOC-2.5.6 and includes all sections of the Design Assessment Form with requirements based on a Containment-Level Room (a room where the quantity of unsealed nuclear substances exceeds 500 times its Annual Limit on Intake). This form provides a structured framework for evaluating the physical design of the room where the hot cell will be installed and unsealed nuclear substances will be managed, packaged and stored.

R – Requirement
G – Guidance

Section B	Finishing and Fixtures	Yes	No	N/A	Justification
B1	Use flooring, work surfaces, chairs, cupboards and shelving that have a smooth, impervious and washable finish in areas where unsealed nuclear substances are used.	R			The work surface located within the hot cell is constructed as a single piece (welded connections smoothed) to allow for effective decontamination.
B2	Flooring should have a 1-piece design. If the flooring is more than 1 piece, all joints in the flooring material should be sealed. The joint between the flooring and the walls should be rounded to prevent spills from getting underneath them. Flooring should have a strippable coating to make decontamination easier should an accident occur.	G			The flooring within the hot cell is constructed using four sections of steel plating. These sections are welded together and ground smooth to allow for effective decontamination.
B3	All joints on work surfaces, including bench tops, should either be sealed or have a seamless 1-piece design.	G			All joints of work surfaces located within the hot cell are constructed as a single one-piece design. Where necessary, welds are used and ground smooth to allow for effective decontamination.
B4	Countertops should include a lip or raised edge to prevent runoff onto the floor. If the countertop abuts a wall, the joint should also be rounded or the countertop should have a backsplash.	G			The working surface within the hot cell has a raised lip to prevent runoff onto the floor.
B5	Walls should be finished with a smooth and washable surface, and all joints should be sealed. This can make cleanup easier if a room is contaminated by back-spray from a vial or some other similar event occurs.	G			The hot cell walls and ceiling are constructed using carbon steel plate modules and include a seamless (welded and ground smooth where required) design to allow for effective decontamination.

Section B	Finishing and Fixtures	Yes	No	N/A	Justification
B6	The ceiling should be finished with a smooth, washable surface, and all the joints should be sealed. Easily replaceable modular ceilings (e.g., drop ceiling with tiles) are also acceptable.	G			The hot cell walls and ceiling are constructed using carbon steel plate modules and include a seamless (welded and ground smooth where required) design to allow for effective decontamination.

Section C	Emergency facilities and general contamination control considerations	Yes	No	N/A	Justification
C1	Areas for food and drink preparation, consumption or storage are not located inside any room in which unsealed nuclear substances are used.	R			As per BP-PROG-12.05, Radiation Protection Program, no food or drinks are permitted in zone 2 area. The area around the hot cell is currently zone 2.
C2	Have personnel decontamination facilities appropriate to the activities and the nuclear substances and chemicals used.	R			The location will be outfitted with radiation detection equipment, as required, for personnel, tools, equipment and material. Decontamination facilities and supplies are also available at the Central Maintenance Facility (CMF) even though the contamination control risk is extremely low during normal operation and well contained within the hot cell in abnormal situations.
C3	Have emergency lighting.	R			Emergency lighting is supplied by means of backup power within the hot cell and in the area immediately surrounding the hot cell in the event of a power loss.
C4	An accessible area should be designated to store materials and equipment used for decontamination and monitoring. Materials and equipment should include spill kits, survey meters and contamination meters appropriate for the nuclear substances and chemicals being used.	G			Bruce Power has a mature contamination control program under BP-PROG-12.05. The hot cell area is stocked with appropriate decontamination supplies and monitoring equipment.
C5	Decontamination facilities should include a separate hand-washing sink near the entrance to the room.	G			Contamination control risks associated with normal hot cell operation are very low. Appropriate showers, sinks, and decontamination facilities are reasonably close to the hot cell area.
C6	An emergency eye-wash station and an emergency shower should be located in or near the room.	G			Contamination control risks associated with normal hot cell operation are very low. Appropriate showers, sinks, and decontamination facilities are reasonably close to the hot cell area.

Section C	Emergency facilities and general contamination control considerations	Yes	No	N/A	Justification
C7	Personal contamination monitoring equipment suitable for the nuclear substances being used should be available at all points of entry/exit.	G			Whole body monitors and portable contamination meters are available in the hot cell area.
C8	Amenities like coat hooks, active laundry bins, storage lockers, etc., should be provided in the room near the entrance. This can facilitate the removal and proper storage of potentially contaminated personal protective equipment, such as lab coats, before leaving the room.	G			Contamination control risks associated with normal hot cell operation are very low. Lab coats are not necessary. The CMF is a large facility with adequate personal storage areas.
C9	Nuclear medicine departments should have washrooms dedicated for use by patients undergoing nuclear medicine procedures.			N/A	The hot cell will be used as described in Attachment B. Only authorized site staff will be present around the hot cell.
C10	Due to the potential for contamination, if patients need to stay at the hospital after the radioisotope is administered, they should stay in a classified room.			N/A	The hot cell will be used as described in Attachment B. Only authorized site staff will be present around the hot cell.

Section D	Plumbing	Yes	No	N/A	Justification
D1	Where routine releases occur via the sewer, or where the potential for accidental releases exists, have mechanisms in place to ensure that these releases are ALARA and meet applicable clearance levels.	R			There is no potential for sewer releases as there are no drains located within the hot cell.
D2	Each in-patient room shall have its own dedicated washroom.			N/A	The hot cell will be used as described in Attachment B. Only authorized site staff will be present around the hot cell.
D3	Sinks should be made of material that is readily decontaminated.		G		There are no sinks located within the hot cell.
D4	Each sink should have an overflow outlet.		G		There are no sinks located within the hot cell.
D5	Faucets should be operable by a means that does not require direct hand contact.		G		There are no sinks located within the hot cell.

Section D	Plumbing	Yes	No	N/A	Justification
D6	Faucets with vacuum or cooling line attachments should include backflow protection devices.		G		There are no sinks located within the hot cell.
D7	Drains should be constructed of a corrosion-resistant material suitable for the chemicals used in the room.		G		There are no sinks located within the hot cell.
D8	Drains and sink traps that may contain transient quantities of nuclear substances must be marked accordingly and be clearly identified on any plans provided to maintenance personnel or contractors.		G		There are no sinks located within the hot cell.

Section E	Access Control	Yes	No	N/A	Justification
E1	Have an access control system (key, keypad, key fob, other) in place to ensure that only authorized workers can enter the restricted room.	R			The hot cell is located on Bruce Power site, where only site staff are able to access the hot cell location. Direct access to the contents of the hot cell will be locked, and only authorized workers are given access to enter.
E2	Ensure that rooms that give access to nuclear substances have lockable doors.	R			The hot cell is locked, and only authorized workers will be given access to enter. The locking mechanism can hold the man door either closed or open. Other hot cell entry points (including the fumehood passthrough, or PADIRAC passthrough) are either controlled by the control panel or require control of the manipulator arms to access. When not in service, the hot cell control panel will be locked to prevent unauthorized access.
E3	Have a secondary lockable storage area (refrigerator, freezer, cupboard) for rooms that are shared with workers who are not authorized to use nuclear substances. The secondary storage container must be secured such that it cannot be easily removed from the room.	R			The hot cell is located on Bruce Power site, where only authorized site staff can access the hot cell location. Direct access to the contents of the hot cell will be locked, and only authorized workers will be given access to enter. Any stored nuclear substances will be locked.
E4	Have clearly delineated designated areas where unsealed nuclear substances are used when an area in the room is also to be used for other types of work.	R			The area has a delineated designated area, by way of barriers, around the hot cell. Targets outside of the hot cell are always contained within engineered shielded containers. Furthermore, the hot cell exists within a contamination-controlled area where eating and drinking is not allowed.

Section E	Access Control	Yes	No	N/A	Justification
E5	Ensure that accessible windows are secure to prevent unauthorized access to the room.	R			The hot cell is located on Bruce Power site, where only site staff are able to access the hot cell location. Any nuclear substances will be contained within either the hot cell, under direct supervision of authorized workers, or in a designated locked storage area. No accessible windows will be present on either the hot cell or storage areas.

Section F	Shielding and Dose Control	Yes	No	N/A	Justification
F1	Include the dose estimates to nuclear energy workers (NEWs) and non-NEWs in the proposed room and adjacent areas.	R			A dose assessment will be provided in a follow up submission.
F2	Localized shielding should be used in areas where nuclear substances are to be used or stored. The extent of shielding depends on the quantities of nuclear substances that emit penetrating radiation. It may be necessary to reinforce surfaces to bear the weight of any shielding material required.	G			The hot cell and shielded transfer/transport containers are used at all times. Additional localized shielding may be implemented based on conclusions from the dose assessment. The complete dose assessment will be provided in a follow up submission.
F3	When appropriate, shielding should be incorporated into the structure of the room.	G			The hot cell and shielded flasks are used at all times. Additional localized shielding may be implemented based on conclusions from the dose assessment. The complete dose assessment will be provided in a follow up submission.
F4	To minimize the movement of nuclear substances, areas between which nuclear substances are to be moved should be located as close to each other as operationally possible.	G			The loading bay access is located within the hot cell area and limits the movement of transfer/transport containers.
F5	A separate waiting room should be available for patients to whom nuclear substances are administered.			N/A	The hot cell will be used as described in Attachment B. Only authorized site staff will be present around the hot cell.
F6	The in-patient room used for therapeutic purposes should not be adjacent to another occupied room; preferably, it should be located at the end of the hall and have the fewest shared walls possible.			N/A	The hot cell will be used as described in Attachment B. Only authorized site staff will be present around the hot cell.

Section G	Waste	Yes	No	N/A	Justification
G1	Adequate space should be available for radioactive waste generated by work within the area where unsealed nuclear substances are used. This space may be in the classified room or in a separate dedicated storage area for radioactive waste.	G			Any waste generated as a part of the target carrier removal (TCR) activities are temporarily stored within designated waste containers located in the hot cell.
G2	Potential doses to persons occupying adjacent areas should be addressed explicitly as part of the shielding and dose assessment.	G			Adose assessment will be provided in a follow up submission. Where necessary, additional shielding may be erected to minimize dose to personnel in adjacent areas.
G3	Storage areas that contain volatile nuclear substances should be connected to the dedicated ventilation system.	G			The hot cell is connected to the existing contaminated exhaust system, and will include its own dedicate booster fans, High Efficiency Particulate Air (HEPA) filters, and dampers. It should be noted that nothing volatile will be present during the decanning activities.

Section H	Room Ventilation and Air Flow	Yes	No	N/A	Justification
H1	Ensure that air flow is always from areas of lower concentrations of volatile, aerosolized or gaseous nuclear substances to areas of higher concentrations, except when any contaminated air is taken to a dedicated ventilation system.	R			The hot cell is in an existing within zone 2 area that has adequate ventilation to ensure airflow is traveling from the lower concentrations to areas of high concentrations.
H2	Ensure that fume hoods or hot cells, including exhaust fans, are supported by automatic backup or emergency power.	R			A means of temporary backup power is supplied to the hot cell for various critical equipment using a backup generator.
H3	Ensure that fume hoods are not the sole means of room air exhaust. If this is unavoidable, a bypass shall be installed to ensure ventilation when the sash is closed.	R			The hot cell and adjacent fume hood will have its own connection to the contaminated exhaustion system in additional to being located in a zone 2 area with its own tie into ventilation.

Section H	Room Ventilation and Air Flow	Yes	No	N/A	Justification
H4	Ensure that air exhausts systems for fume hoods or hot cells are only connected to the dedicated ventilation system in such a way that airborne radioactivity cannot recirculate to unclassified areas.	R			The hot cell and adjacent fume hood will have its own connection to contaminated exhaustion system in additional to being located in a zone 2 area with its own tie into ventilation
H5	Provide detailed information about all filtration used, including filtration monitoring, shielding and filter exchange.	R			Contaminated exhaust connections to the hot cell and fume hood are routed through a nuclear grade pre-filter and 0.3 micron nuclear grade HEPA filter outfitted with differential pressure and gamma monitoring..
H6	Each fume hood or hot cell should have an alarm, either visual or audible, to indicate reduced air flow.	G			Each HVAC connection at the hot cell and fume hood have an alarm, visual and/or audible, to indicate reduced air flow and reduced negative pressure.
H7	Exhaust systems for fume hoods or hot cells should incorporate filtration, gas storage decay tanks or other measures appropriate to the activities and types of nuclear substances used, to eliminate or minimize releases to the environment.	G			Contaminated exhaust connections to the hot cell and fume hood are routed through a HEPA filter outfitted with differential pressure and gamma monitoring. The design includes detailed documentation regarding all filtration used, including filtration monitoring, shielding, and filter exchange.
H8	The minimum face velocity of the fume hood should be higher than the velocity of air currents in the room to prevent any airborne radioactivity from escaping the fume hood.	G			The minimum face velocity of the fume hood exhaust is higher than the velocity of air currents in the room.
H9	The energy-saving systems of automatic fume hoods (automatic flow reduction according to a programmed schedule) should include a local override function in the event that the fume hood needs to be used after hours.	G			The energy saving systems of automatic fume hoods includes a local override function in the event that fume hood needs to be used after hours.
H10	No additional means of ventilation (portable filtration system or fan) should interfere with the performance of the fume hood or hot cell.	G			Other HVAC supply air vents, fans, or portable filtration in the area surrounding the hot cell fume hood are installed away from the fume hood to avoid interference.
H11	Fume hoods or hot cells should be located away from air currents or turbulence, such as high traffic areas, doors, operable windows and air supply (vents, windows, etc.).	G			Other HVAC supply air vents, fans, or portable filtration in the area surrounding the hot cell fume hood are installed away from the fume hood to avoid interference.
H12	Fume hoods or hot cells should not be adjacent to the exit of the room due to the possible volatility of contents.	G			Other HVAC supply air vents, fans, or portable filtration in the area surrounding the hot cell fume hood are installed away from the fume hood to avoid interference.

Section H	Room Ventilation and Air Flow	Yes	No	N/A	Justification
H13	Supply air vents should be installed or directed away from fume hoods to avoid interference.	G			Other HVAC supply air vents, fans, or portable filtration in the area surrounding the hot cell fume hood are installed away from the fume hood to avoid interference.

Section I	Ducts, Vents and Stacks	Yes	No	N/A	Justification
I1	Ensure that all ductwork is constructed of corrosion-resistant materials appropriate for the nuclear substances used in the fume hood or hot cell.	R			All ductwork connected to the hot cell and fume hood is constructed of corrosion-resistant materials.
I2	Ensure that all connections and joints are sufficiently sealed to prevent nuclear substances from leaking into adjacent air spaces.	R			All ductwork connected to the hot cell and fume hood have their connections sealed to prevent nuclear substances from leaking into adjacent air spaces.
I3	Clearly identify nuclear exhaust ducts on both the ducts themselves and any plans provided to maintenance personnel or contractors.	R			All ductwork connected to the hot cell and fume hood are identified as nuclear exhaust ducts on both the ducts themselves and any plans provided to maintenance personnel or contractors.
I4	Demonstrate via atmospheric dispersion modelling or other calculations, including calculations set out in REGDOC-2.9.1 that doses to the public arising from both routine releases and foreseeable worst-case scenarios are ALARA and will not exceed the applicable dose limits.	R			In addition to specific shielding requirements, the hot cell design considers additional provisions, where possible, to ensure radioactive releases and dose to both operators and the public is kept ALARA. Detailed information will be provided in a future submission.
I5	Rain caps on stacks should not be used because they limit vertical dispersion.	G			Hot cell ventilation is tied into an existing contaminated exhaust stack.
I6	Stack velocity should be at least 1.5 times the average wind velocity to avoid entrapping any radioactive releases on the downwind side of the stack.	G			Hot cell ventilation is tied into an existing contaminated exhaust stack.
I7	Stack velocity should be more than 5 m/s to reduce the amount of rain falling in; ~90% of rainwater falls in drops with a velocity less than this.	G			Hot cell ventilation is tied into an existing contaminated exhaust stack

Section I	Ducts, Vents and Stacks	Yes	No	N/A	Justification
I8	Ensure that the stack height is at least 3.0 m above the highest point on any adjacent roofline. It should be above head height so that there is no risk that anyone will lean over the stack.	G			Hot cell ventilation is tied into an existing contaminated exhaust stack
I9	Locate exhaust stacks or vents on the roof as far away as possible and downwind from the prevailing wind direction to prevent recirculating the nuclear substances being released.	G			Hot cell ventilation is tied into an existing contaminated exhaust stack
I10	Post a cautionary sign and contact information where the stack is located on the roof.	G			Hot cell ventilation is tied into an existing contaminated exhaust stack

Section J	Fume hood design	Yes	No	N/A	Justification
J1	Have fume hoods constructed of smooth, impervious, washable and chemical-resistant material.	R			The fume hood is constructed of aluminum and steel to provide a smooth, impervious, washable, and chemical resistance surface.
J2	Have fume hoods designed to contain spills so that they cannot readily spread beyond their interior surfaces.	R			The fume hood is designed to contain spills to prevent spread beyond intended surfaces through the use of raised edges around the inner working surface of the fume hood.
J3	Select fume hoods based on adequacy for the intended work.	R			The fume hood located adjacent to the hot cell is used for ingress of irradiated product from the U7 Isotope Production System (IPS), as well as egress of all products following TCR.
J4	The interior of the fume hood should have rounded corners for easy decontamination and cleanup.		G		The fume hood does not utilize rounded corners as any loose contamination is expected to be minimal within the fume hood. Additionally, any loose contamination is expected to remain within the boundary of the spill tray.
J5	Fume hoods should be labelled to show the connection to a specific fan or ventilation system.	G			The fume hood will be labelled to show the connection to the contaminated exhaust system.

Section K	Hot Cell Design	Yes	No	N/A	Justification
K1	Have hot cells constructed of smooth, impervious, washable and chemical-resistant material.	R			The hot cell walls and ceiling are constructed using carbon steel plate modules and include a seamless (welded and ground smooth where required) design to allow for effective decontamination.

Section K	Hot Cell Design	Yes	No	N/A	Justification
K2	Have hot cells designed to contain spills so that they cannot readily spread beyond their interior surfaces.	R			The hot cell has raised edges around all exits of the cell to prevent inadvertent releases.
K3	Select hot cells based on adequacy for the intended work.	R			The hot cell is a custom design intended for performing all activities defined previously in Attachment B.
K4	Have hot cells equipped with manipulators for remotely handling objects inside the hot cell.	R			The hot cell is equipped with two electro-mechanical manipulators.
K5	Hot cells should have a means of transferring radioactivity in and out safely. For example, radioactive solutions may be pumped into the back of the hot cell via transfer lines from an accelerator producing nuclear substances. Once the radioactive material has been processed, it should be placed in a shielded container to be transferred out of the hot cell, usually through a drawer on the side of the hot cell.	G			The hot cell has three methods for transferring radioactive material to and from the cell as previously discussed in Attachment B.
K6	The lid of the shielded container should be securely attached to the body of the shielded container while it is still inside the hot cell. Shielding should be placed between any unprocessed radioactivity and the hands of the person removing the shielded container from the hot cell.	G			The lid of the shielded flask is securely attached to the body of the container. As discussed in Attachment B, the tungsten insert is pushed through the fume hood into the hot cell, where a wrench is used to remove the lid of the container. The lid is then reattached to the container prior to removal from the hot cell.
K7	Hot cells should have a window to allow the visual observation of processes inside the hot cell. The window should have a level of shielding equivalent to that of the hot cell walls. In modern hot cells, windows are usually constructed of lead glass.		G		A lead glass window used on the hot cell meets the following requirements: 1. Equivalent lead thickness greater then 195 mm. 2. Framed at a minimum of 0.92 m x 0.92 m 3. Protected by barrier glass on hot and cold sides. 4. No opening capabilities on the cold side. It should be noted that the walls of the hot cell also follow the same equivalent lead thickness requirements. However, the actual shielding capability of the walls ended up being greater than that of the lead glass. Although less than the walls, the lead glass provides adequate shielding that ensures the dose to operators, and the public is kept ALARA.

Section K	Hot Cell Design	Yes	No	N/A	Justification
K8	Radiation monitors should be installed inside hot cells. This is especially important for protecting staff who may have to open the hot cell in order to install, modify or repair equipment inside.	G			The hot cell will be equipped with a dose rate monitor capable of measuring the anticipated dose rates within the hot cell, as well as having an internal battery supply, configuration and data read out (via a PC), datalogging capabilities, and internal diagnostics.

Attachment D

Cover Letter of BP-CORR-00531-06926, Central Maintenance Facility: Generic Final Safety Analysis Report for the Operation of a Hot Cell

BrucePower™
Innovation at work

November 27, 2025

BP-CORR-00531-06926

Ms. Anupama Bulkan
Regulatory Program Director
Bruce Regulatory Program Division
Canadian Nuclear Safety Commission
P.O. Box 1046
280 Slater Street
Ottawa, Ontario
K1P 5S9

Dear Ms. Bulkan:

Central Maintenance Facility:
Generic Final Safety Analysis Report for the Operation of a Hot Cell

The purpose of this letter is to provide, for CNSC staff review, the generic final safety analysis assessment for the operation of a hot cell (submission HC#02), as outlined in the Regulatory Communication Plan (RCP; Reference 1).

This safety analysis is based on a non-site-specific hot cell located within the Bruce-Grey Area near the community of Tiverton, Ontario. Its intent is to allow CNSC staff the opportunity to review an assessment of the operation of a hot cell during the design process. It was developed consistent with the requirements and expectations in REGDOC 2.4.4. As noted in the RCP, this information will be supplemented by additional submissions that will further develop the analysis for the selected Bruce Power site and the finalized hot cell design. The Bruce Power site-specific safety analysis will instead be compliant with REGDOC-2.4.1, consistent with the other facilities located at site.

The initial purpose of the hot cell will be to remove carrier cladding from lutetium-177 (Lu-177) ampules irradiated at the Bruce Power reactors and to package the encapsulated irradiated material for shipment and processing at a radiopharmaceutical company. This process is referred to as Target Carrier Removal (TCR) and is the focus of the assessment.

A systematic evaluation of the potential hazards associated with TCR activities at the proposed hot cell has been conducted. Enclosure 1 documents the result of this evaluation and concludes that doses to the public and workers will be well below regulatory limits. Given the significant margins to meeting acceptance criteria, it is concluded that the analysis and findings presented in Enclosure 1 are broadly applicable, adequate, and appropriate for a wide range of locations and adaptable to specific project sites.

The final safety analysis report that integrates all safety and operational analysis and assessments for the hot cell at Bruce Power's Central Maintenance Facility will be provided as submission HC#08 per Reference 1.

Maury Burton, Senior Director, Regulatory Affairs
177 Tie Road, Tiverton ON N0G 2T0
Telephone 519-386-2394
maury.burton@brucepower.com

An overview meeting of this submission will be scheduled with CNSC staff in December 2025.

If you require further information or have any questions regarding this submission, please contact Mr. Jason Goldberg, Department Manager, Nuclear Safety Analysis Support, at (416) 867-2927 extension 4310, or jason.goldberg@brucepower.com.

Yours truly,

Lisa Clarke Digitally signed by Lisa Clarke Date: 2025.11.27 09:03:10 -05'00'

Maury Burton
Senior Director, Regulatory Affairs
Bruce Power

cc: CNSC Forms / Formulaires

Enclosure:

1. NK37-REP-31790-00002, R000, Generic Final Safety Analysis Report for Target Carrier Removal

Reference:

1. Letter, M. Burton to A. Bulkan, " Bruce B: Regulatory Communication Plan (RCP) for the Lutetium-177 Program Projects", October 17, 2025, BP-CORR-00531-06455.

Attachment E

Summary of the CMF Hot Cell Generic Final Safety Analysis Report

Attachment E:
Summary of the CMF Hot Cell Generic Final Safety Analysis Report

The following provides a summary of a report providing a Generic Final Safety Analysis Report (GFSAR) on a generic hot cell installation for Target Carrier Removal (TCR) of irradiated lutetium-177 (Lu-177) targets. The facility assessed in the GFSAR was assumed to be located in the Bruce-Grey area near Tiverton, Ontario, Canada. No specific location or address is indicated, and the report is characterized as "generic" and thus requiring site-specific confirmation for final licensing. The report covers normal operations, evaluation of the consequences of potential accidents and malfunctions, and identification of defence-in-depth measures to ensure protection of workers, the public, and the environment in compliance with Canadian Nuclear Safety Commission (CNSC) regulatory requirements. The associated table of contents is provided at the end of this summary.

The GFSAR builds on a previous Final Safety Analysis Report (FSAR) that was developed for a similar hot cell in the Bruce-Grey area for the conduct of the same TCR activity which was submitted and evaluated by CNSC staff. The assessment follows a graded deterministic safety approach consistent with CNSC REGDOC-2.4.1, Deterministic Safety Analysis and REGDOC-2.4.4, Safety Analysis for Class IB Nuclear Facilities, frameworks.

The hot cell is assumed to be installed within a building compliant with Canadian building and fire codes. The hot cell structure primarily consists of concrete walls with carbon steel cladding and a lead glass window for operator viewing. It includes remote handling manipulators, a fume hood, negative pressure ventilation with high-efficiency particulate air (HEPA) filtration, backup power supplies, and interlocks to maintain safety during TCR operations. The TCR procedure involves removing the aluminum or titanium carriers from ampoules containing irradiated lu-177, repackaging the ampoules in certified transport packages in preparation for their shipment to a radio-pharmacy.

The proposed site is assumed to be seismically stable with negligible flooding, tornado and external fire risks. External hazards were screened using regional data for the Bruce Power Nuclear Power Reactor Site. No significant external hazards were identified that would compromise the safety case of the hot cell.

For the hot cell, conservative design targets were established for occupational doses, well below regulatory limits for nuclear energy workers (NEW). Dose rate modeling using MCNP shows the maximum external gamma dose rates for operators conducting TCR are well below the design targets. Operational experience with similar hot cell designs conducting TCR on the same targets has shown negligible airborne and waterborne radioactive releases during normal TCR activities. The irradiated product remains contained within sealed quartz ampoules until it is received for processing by the radio-pharmacy.

A Structured What-If Technique (SWIFT) study was conducted to identify hazards and initiating events (IEs) related to TCR operations. Identified events were screened and grouped into representative initiating events according to their causes, key phenomena, and consequences. Representative events were classified as Anticipated Operational Occurrences (AOOs), Design Basis Accidents (DBAs), and Beyond Design Basis Accidents (BDBAs) based on estimated event frequencies following the recommendations of REGDOC 2.4.1 and REGDOC-2.4.4. Key hazards include radiological exposure from gamma radiation, acute radioactive releases, and industrial hazards such as electrical failures or dropped loads.

The radiological consequences analysis evaluates potential radiological impacts from bounding events at the hot cell involving airborne releases. This includes:

- Selection of bounding events from representative Initiating Events,
- Calculation of airborne radiological source terms for these events, and,
- Estimation of radiological consequences to the public.

Five (5) bounding IEs that impacted the public were identified for detailed consequence analysis as described in Table 1 below:

Table 1: Initiating Events

Event Description	Classification
Release from a single ampoule to the environment with HEPA filter failure	DBA
Human error release of lutetium with HVAC operational	AOO
Mechanical failure release of lutetium with HVAC operational	DBA
Release from up to ten ampoules inside the hot cell	BDBA
Seismic BDBA leading to release of lutetium to the environment from up to ten ampoules.	BDBA

The radiological dose acceptance criteria for members of the public following accidents are presented in Table 2. As per REGDOC-2.4.1, events are categorized into the following three categories:

1. AOOs: these include all events with frequency of occurrence equal to or greater than 10^{-2} per reactor year[1];
2. DBAs: these include events with frequency of occurrence equal to or greater than 10^{-5} per reactor year, but less than 10^{-2} per reactor year; and,
3. BDBAs: these include events with frequency of occurrence less than 10^{-5} per reactor year.

Table 2: Effective Dose Limits for each Event Category

Event	Limit (mSv)
AOO	0.5
DBA	20
BDBA	100

For AOOs and DBAs, the acceptance criteria for members of the public are based on Clause 4.3.2 of REGDOC-2.4.1. For BDBAs, the dose acceptance criterion is based on consideration of safety goals.

For BDBA, 100 mSv effective dose over seven (7) days is used as the dose acceptance criterion, consistent with section 4.2.2 of REGDOC 2.4.1 for small release frequency events

[1] Although the frequencies in REGDOC-2.4.1 are expressed in terms of "per reactor year," the same frequencies are applied in this safety analysis report to the CMF hot cell facility on a per-year basis.

(<10^{-5} occurrence per year). This is aligned with Appendix Q of the Provincial Nuclear Emergency Response Plan (PNERP).

A conservative target radiological inventory was established for all events using the ORIGEN-S software for the target comprising approximately 1.5 g of ytterbium-176 (Yb-176) in ceramic oxide powder form. Radiological releases to the environment were calculated by the ORCA software which simulates atmospheric dispersion and calculates doses considering inhalation, cloudshine, and groundshine pathways. The models used are based on the United States Department of Energy recommended methodology considering Material-at-Risk, Damage Ratio, Airborne Release Fraction/Rate, Leak Path Factor, Respirable Fraction, and weather data appropriate for the Bruce-Grey area.

The analyzed radiological consequence was based on conservative assumptions, including:

- The radionuclide inventory was conservatively calculated for the limiting target (design yielding the highest radioactive inventory), irradiated at 96% full power with conservative irradiation (location with highest neutron field in the Isotope Production System (IPS)) and decay times maximizing radionuclide inventory;
- Releases were assumed to be “cold” and at the ground level with plume broadening by the CMF building (no credit for elevated release from stack or buoyancy);
- Resuspension of the released material in the hot cell was assumed when the active ventilation fans are operational resulting in a continued release for a period of 24 hours;
- The critical group was assumed to be located 100 m from the release point;
- Maximum values of target activities were used based on location of irradiation in the IPS, and decay time before the event;
- No credit was taken for decay during the release period;
- Conservative airborne release fractions and leak path factors;
- Conservative terrain and meteorological conditions were used; and,
- Public protection factors followed CSA N288.1, *Guidelines for Modelling Radionuclide Environmental Transport, Fate and Exposure Associated with the Normal Operation of Nuclear Facilities* recommendations.

The resulting dose estimates demonstrate compliance with dose acceptance criteria with significant margins.

REGDOC-3.5.3, Regulatory Fundamentals, provides the Defence-in-Depth framework used to organize safety measures. Safety measures include the hot cell’s passive shielding, hardwired interlocks on passthrough doors linked to the active ventilation system operation, and operational manuals (OMs) with checklists and procedures. The active ventilation system includes HEPA filters and continuous monitoring systems to maintain negative pressure and prevent contamination spread. Backup power systems ensure continued active ventilation system operation during power loss, and emergency response plans are in place for onsite and offsite contingencies. A summary of the Defence-in-Depth measures is presented in Table 3.

Table 3: Defence in Depth Measures for the CMF Hot Cell

DID Level	Description	DID Provisions
1	Prevent deviations and Structures, Systems, and Components (SSC) failures	Sealed ampoules, tested cutting tools, trained operators, routine radiation dose verification
2	Detect and control deviations to prevent escalation	Operator training, robust ampoules, operational manuals with alarm management
3	Minimize onsite accident consequences	Fail-safe electromagnets, low radioactive material quantities, Active ventilation system
4	Mitigate accident consequences by maintaining containment	HEPA filters, radiation monitoring inside and outside the hot cell
5	Mitigate radiological consequences with emergency response	Emergency plans, offsite protective measures

The defence-in-depth strategy spans five levels, from prevention of deviations to mitigation of accident consequences and emergency response, ensuring that radiological doses remain As Low As Reasonably Achievable (ALARA) and within regulatory limits.

The report concludes that the proposed hot cell design and TCR process provide adequate protection for workers, the public, and the environment. Normal operations produce negligible releases to the public and doses well below regulatory limits. For the accident scenarios discussed above, the results of the radiological analysis demonstrate compliance with dose acceptance criteria with significant margins. The dose results for the three (3) accident scenarios are shown to be well below 1% of the respective acceptance criteria. The report supports the applicability of the safety case to a variety of locations in the Bruce-Grey area and within existing infrastructures, subject to final site-specific confirmatory analysis.

Generic Final Safety Analysis Report – Table of Content

Attachment F

Cover Letter of BP-CORR-00531-07239, Central Maintenance Facility: Notification of Program/Procedure for the Hot Cell (HC#06)

March 25, 2026

BP-CORR-00531-07239

Ms. Anupama Bulkan
Regulatory Program Director
Bruce Regulatory Program Division
Canadian Nuclear Safety Commission
P.O. Box 1046
280 Slater Street
Ottawa, Ontario
K1P 5S9

Dear Ms. Bulkan:

Central Maintenance Facility: Notification of Program/Procedure for the Hot Cell (HC#06)

The purpose of this letter is to:

- Request a revision to Licence Conditions Handbook, LCH-PR-18.04/2028-R005, Sections 7, Radiation Protection and 15.10, Cobalt-60 and Lutetium-177, to incorporate impacts of the hot cell on radiation protection and the lutetium-177 program; and
- Provide, for CNSC staff information, revised versions of BP-PROG-18.01, Irradiation Services, BP-PROC-01120, Management of Lutetium-177 Production, and BP-PROC-15043, Management of Central Maintenance Facility Hot Cell as committed in Reference 1 and in support of the G.1 request in Reference 2.

As part of Bruce Power's proposal to operate a hot cell at the Central Maintenance Facility (CMF) on the Bruce Power site, inclusions and revisions to the Licence Conditions Handbook (LCH), Sections 7 and 15.10, are being proposed to safely manage this change, pending completion of engineering work and Commission approval as requested in Reference 2.

Attachment A provides the proposed changes to Section 7. With the implementation of the hot cell program, there will be an increase in the amount of work taking place in the CMF that meets the definition of radiation work, and modifications have been suggested to Table 7.1. There are anticipated increases in the ambient dose rates at the worker location—for example, while receiving flasks, staging of "kegs" holding carriers, or operating manipulator arms.

Attachment B provides the proposed changes to Section 15.10. These changes summarize how the hot cell will be utilized as part of the lutetium-177 program.

Enclosure 1 provides the draft revised version of BP-PROG-18.01, which has addressed feedback from CNSC staff in Reference 3.

Enclosures 2 and 3 provide the draft revised versions of BP-PROC-01120 and BP-PROC-15043, respectively.

Note that BP-PROG-12.05, Radiation Protection Program, is also being revised to reflect the addition of BP-PROC-15043 and to align with the proposed changes to LCH, Table 7.1. Bruce

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Telephone 519-386-2394
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Power will provide the revised version of BP-PROG-12.05 in a future email notification per standard practice for written notifications pursuant to Licence Condition G.2.

Enclosures 1-3 are planned to be issued following engineering work and Commission approval. Accordingly, should the Commission approve the requested change to the licensing basis, Bruce Power plans to provide email notification to CNSC staff (per standard practice for written notifications pursuant to Licence Condition G.2) with these documents to be issued on the same day.

If you require further information or have any questions regarding this submission, please contact Mr. Peter McDermid, Director, Isotopes and Business Development, at (226) 930-1551 or peter.mcdermid@brucepower.com.

Yours truly,

Lisa Clarke Digitally signed by Lisa Clarke Date: 2026.03.25 12:44:29 -04'00'

Maury Burton
Senior Director, Regulatory Affairs
Bruce Power

cc: CNSC Forms / Formulaires

Attach.

Enclosures:

1. BP-PROG-18.01, R004, Irradiation Services.
2. BP-PROC-01120, R004, Management of Lutetium-177 Production.
3. BP-PROC-15043, R000, Management of Central Maintenance Facility Hot Cell.

References:

1. Letter, M. Burton to A. Bulkan, "Bruce B: Revised Regulatory Communication Plan for the Lutetium-177 Program Projects", February 23, 2026, BP-CORR-00531-07003.
2. Letter, M. Burton to C. Salmon, "Central Maintenance Facility: Commission Approval to Operate a Hot Cell", November 28, 2025, BP-CORR-00531-06949.
3. Email, O. Shykinova to L. Murphy, "CNSC Request for Clarification 7617870 - Bruce B Unit 7: Notification for Target Carrier Material Change (TCMC #04)", March 4, 2026, BP-CORR-00531-07341.

Attachment G

Summary of Proposed Changes to the Licence Conditions Handbook

Attachment G:
Summary of Proposed Changes to the Licence Conditions Handbook

The attachments in Reference G1 present proposed revisions to the Licence Conditions Handbook (LCH) to support the implementation of the Central Maintenance Facility (CMF) hot cell and its integration into Bruce Power’s isotope production program. These revisions primarily focus on strengthening radiation protection controls and formally incorporating the hot cell into the licensed lutetium-177 (Lu-177) production process.

Reference G1, Attachment A) Radiation Protection (LCH Section 7)
Attachment A of Reference G1 outlines proposed updates to Section 7.1 of the LCH, which governs radiation protection requirements across Bruce Power facilities. The revisions are driven by the introduction of the CMF hot cell, which expands the scope and complexity of radiological work being performed at the CMF.

With the addition of the hot cell, the CMF will host a greater volume of activities that meet the definition of radiation work. As a result, the proposed changes update the radiation protection framework to ensure that this work is managed consistently with existing site practices and regulatory expectations.

A key component of the revision is the modification of Table 7.1 (Bruce Power Action Levels) to explicitly include CMF-specific thresholds. These thresholds establish action levels for unplanned worker exposures, aligning CMF controls with those already in place for other site facilities.

Reference G1 Attachment A also expands the list of governed documents under Section 7 to include the newly developed procedure BP-PROC-15043, Management of Central Maintenance Facility Hot Cell, thereby ensuring that hot cell operations are formally integrated into the radiation protection governance framework.

Overall, the revisions ensure that radiation protection controls remain robust and comprehensive considering the increased radiological work associated with hot cell operations. The updated framework supports effective dose management, maintains alignment with As Low as Reasonably Achievable (ALARA) principles, and provides clear thresholds for identifying and responding to off-normal radiological conditions.

Reference J1 Attachment B) Isotope Production (LCH Section 15.10)
Attachment B of Reference G1 proposes revisions to Section 15.10 of the LCH, which governs the production and management of cobalt-60 and lutetium-177 (Lu-177) at Bruce Power. The updates refine the description of isotope production activities to formally incorporate the CMF hot cell into the Lu-177 target handling steps.

For Lu-177, the revised section provides a detailed description of the irradiation service using ytterbium-176 targets, including irradiation within the reactor via the isotope production system (IPS) and subsequent packaging of Lu-177. The most significant addition is the formal inclusion of the CMF hot cell as an intermediate step. Under this updated process, irradiated targets are transported from Unit 7 to the CMF, where the aluminum or titanium carrier is removed from the quartz ampule within the hot cell environment. The resulting ampules are then packaged for shipment to off-site processing facilities.

The revised text also acknowledges that target carrier removal may alternatively be performed off-site; however, the inclusion of the on-site hot cell establishes a new pathway that is expected to enhance operational efficiency and control.

Overall Conclusion
Together, Attachments A and B of Reference G1 establish the necessary updates to the licensing framework to support the safe and compliant implementation of the CMF hot cell. Radiation protection requirements are enhanced and explicitly extended to cover new hot cell operations, and the hot cell is integrated into the Lu-177 irradiation activities, clarifying isotope production scope and controls.

These proposed revisions demonstrate that Bruce Power can incorporate the impacts of the hot cell into both operational and regulatory frameworks, ensuring alignment with CNSC expectations for safety, control, and effective oversight of activities related to the production of nuclear substances.

Reference:

G1. Letter, M. Burton to A. Bulkan, “Central Maintenance Facility: Notification of Program/Procedure for the Hot Cell (HC#06)”, March 25, 2026, BP-CORR-00531-07239.

Attachment H

Summary of BP-PROG-18.01, Irradiation Services

Attachment H:
Summary of BP-PROG-18.01, Irradiation Services Program

BP-PROG-18.01, *Irradiation Services Program*, establishes the governance framework, objectives, responsibilities, and high-level requirements for conducting irradiation activities at the Bruce Power site in support of medical isotope production. The program supports the safe and reliable production of cancer-fighting isotopes for commercial purposes while aligning with Bruce Power's mission to provide clean, and reliable power.

The Irradiation Services Program is part of the broader Bruce Power Management System (BPMS) hierarchy and aligns with the Management System Manual and supporting procedures.

Policy and Purpose
The Irradiation Services Program is committed to the production of medical isotopes strictly for commercial purposes over the life of the facility.

The program establishes a structured framework for irradiating materials in a safe manner and identifies the processes and supporting documents required to oversee and implement requirements within the BPMS.

The program supports the principle that safety is the paramount consideration guiding decisions and actions. It incorporates the four pillars of nuclear safety by:

- Minimizing and managing radiation dose to personnel using shielding and ALARA principles,
- Monitoring and minimizing environmental releases,
- Implementing detailed industrial safety protocols, and,
- Minimizing and monitoring impacts on reactor systems.

The program is implemented in alignment with CSA N286, *Management System Requirements for Nuclear Facilities*, management system principles through associated procedures and internal standards.

Graded Approach
The graded approach within BP-PROG-18.01 is applied by scaling program controls, documentation, and oversight activities to the level of risk and complexity associated with irradiation services. This ensures that higher-risk activities, such as reactor interfacing and radioactive material handling, are subject to more rigorous governance and control, while lower-risk activities are managed with appropriately reduced formality, consistent with CSA N286 management system principles. As a Tier 3 program within the BPMS, PROG-18.01 applies risk-informed oversight through established corporate processes, including Program Effectiveness Reports (PERs), which integrate both self-assessment and independent assessment by senior management. This approach ensures that program effectiveness, compliance, and continuous improvement are maintained in a manner to commensurate with risk, without diminishing the requirements for independent assessment or alignment with regulatory expectations.

Program Objectives
The Irradiation Services Program establishes several key objectives to ensure the safe, compliant, and commercially effective production, handling, and transport of medical isotopes, supported by proper logistics and material control.

The program is intended to:

- Safely produce medical isotopes for commercial purposes,
- Ensure isotope production meets business needs and demand,
- Provide logistical support for the shipment of medical isotopes, and,
- Maintain accurate accounting and control of materials and transport containers on site.

Program Structure and Governance

The program defines governance as the framework of programs, processes, and standards used to direct and control activities. It aligns organizational structures, defines processes, and establishes criteria to guide the operation and support isotope production activities.

The Irradiation Services Program is implemented through a set of supporting procedures that establish specific operational controls. These include:

- Procedures governing the production of isotopes such as lutetium-177, including stages such as target receiving, insertion, harvesting, and shipment; and
- Procedures that define handling processes for other isotopes, including cobalt-60.

The program describes isotope production at a high level, including the irradiation services that convert target materials into commercially valuable isotopes. It also specifies that activities are conducted within defined safety frameworks and recognizes the importance of reactor, industrial, radiation, and environmental safety to the success of production activities.

The program specifies that Bruce Power is not authorized to conduct activities related to nuclear medicine and is prohibited from using nuclear substances in or on human beings.

Standards and Regulatory Alignment

BP-PROG-18.01 aligns with applicable regulatory, statutory, and licensing requirements governing isotope production. The program includes a requirements matrix that identifies the relationship between regulatory obligations and implementing procedures.

It incorporates relevant industry standards and operating experience, including radiological work planning practices and international operating experience from nuclear organizations.

Roles and Responsibilities

The program defines responsibilities across multiple levels of the organization to ensure effective governance and execution:

- The Program Owner is accountable for overall program approval, governance, and compliance with applicable requirements;
- The Program Lead is responsible for developing and maintaining the program framework, including procedures and standards, and for ensuring their communication and implementation;
- The Isotope Expansion Manager is responsible for execution of program activities, coordination with partners, and continuous improvement;

- Operations personnel support day-to-day isotope production activities in accordance with established procedures;
- Safety and radiation protection functions ensure compliance with safety requirements; and,
- A designated SharePoint Library representative manages program-related documentation.

Attachment I

Summary of BP-PROC-01120, Management of Lutetium-177 Production

Attachment I:
Summary of BP-PROC-01120, Management of Lutetium-177 Production

BP-PROC-01120, Management of Lutetium-177 Production, is the procedure for the safe production, handling, and shipment of lutetium-177. The procedure defines the overall process flow, roles, responsibilities, and controls required to produce lutetium-177 in a manner consistent with the Bruce Power Management System (BPMS) and applicable regulatory requirements.

The procedure is an implementing document under the Irradiation Services Program and supports compliance with the Power Reactor Operating Licence and Licence Conditions Handbook requirements related to isotope irradiation. This procedure is supported by referenced procedures, operating manuals, and job aids.

Purpose

The procedure describes the irradiation of ytterbium-176 to lutetium-177 using the Isotope Production System (IPS) located in Unit 7. It provides a structured high-level framework for the irradiation of target materials and outlines the main stages of the irradiation process:

- Receipt of target materials;
- Insertion of targets into the reactor system;
- Harvesting of irradiated targets; and
- Packaging and shipment of the irradiated targets.

Lutetium-177 is produced through neutron activation of ytterbium-176 targets within the reactor. The procedure identifies the key parameters associated with production and establishes that the process is conducted within defined safety frameworks encompassing reactor, radiation, industrial, and environmental safety considerations.

The procedure also specifies that Bruce Power is not authorized to conduct activities related to nuclear medicine and is prohibited from using nuclear substances in or on human beings.

Process Overview

The procedure establishes a lifecycle-based approach to isotope irradiation. Target materials are received, inspected, stored, and prepared prior to irradiation. Targets are inserted into the reactor system and irradiated to produce radioactive isotopes. Following irradiation, the targets are transferred for decay, and packaging prior to shipment. The process includes controls for:

- Inventory management and tracking of targets;
- Inspection and identification of non-conforming materials;
- Storage and handling of radioactive and non-radioactive targets;
- Management of irradiation and decay periods; and
- Packaging and transportation of radioactive materials.

The procedure establishes that targets are handled using specialized systems designed to safely transfer materials within and outside the reactor, including storage locations, transport systems, decay zones, and packaging interfaces.

Production and Handling Controls

BP-PROC-01120 identifies controls that govern the handling of materials throughout the production process. These controls include requirements for inspection of incoming targets and transport containers, identification and segregation of non-conforming items, and documentation of material movements and activities.

The procedure also describes controls associated with irradiation, including limits on target quantities, monitoring of production parameters, and the need to coordinate activities with reactor operations. Irradiation is carried out in a manner that minimizes impacts on reactor systems and maintains alignment with reactor operating conditions.

Following irradiation, targets are managed through controlled decay periods and subsequently packaged into shielded containers. The procedure establishes expectations for tracking target activity, verifying product characteristics, and maintaining traceability.

Packaging and Transportation

The procedure describes the preparation and transfer of lutetium-177 for shipment. Radioactive material is packaged in accordance with regulatory requirements governing the transport of dangerous goods and nuclear substances.

Responsibilities for transportation are shared between Bruce Power personnel and external organizations, including the handling, packaging, and transfer of materials to a designated consignor. The procedure identifies requirements for:

- Packaging of irradiated targets in approved transport containers;
- Completion of required shipping documentation;
- Coordination of transport logistics and schedules; and
- Compliance with regulatory requirements for the transport of radioactive materials.

The procedure also establishes that storage and handling provisions are in place for situations where shipment is delayed, ensuring that materials are maintained safely until transport can proceed.

Performance Monitoring and Improvement

BP-PROC-01120 includes provisions for verifying the performance of lutetium-177 irradiation and ensuring that commercial and operational objectives are met.

The procedure establishes that production performance is monitored using key performance indicators and that adverse conditions or deviations are evaluated and addressed through corrective actions. Continuous improvement is supported through the identification of issues and tracking of performance metrics.

Roles and Responsibilities

The procedure defines responsibilities among a range of organizational roles involved in isotope production, including senior leadership, program management, operations personnel, and technical specialists. These roles collectively ensure that:

- The process is governed and maintained in accordance with Bruce Power’s management system;

- Production activities are executed in compliance with established procedures;
- Safety considerations are maintained throughout all stages of the process; and
- External stakeholders, such as regulatory and transportation organizations, are engaged.

Specific responsibilities are assigned for oversight, process execution, safety evaluation, inventory control, and coordination of shipping and regulatory communications.

Associated Records and Documentation

The procedure identifies a suite of forms and records used to support traceability, compliance, and documentation of activities, including those related to target receipt, insertion, packaging, and shipment. These records are managed in accordance with established records retention practices.

Attachment J

Summary of BP-PROC-15043, Management of Central Maintenance Facility Hot Cell

Attachment J:
Summary of BP-PROC-15043, Management of Central Maintenance Facility Hot Cell

BP-PROC-15043, Management of Central Maintenance Facility Hot Cell, establishes the framework for the design, radiological controls, operation, and maintenance considerations associated with the hot cell located in the Central Maintenance Facility (CMF) at Bruce Power.

The procedure defines the controls and requirements necessary to safely manage activities involving highly radioactive materials within the hot cell, in accordance with the Radiation Protection Program.

The hot cell is used to enable the handling of highly radioactive materials, including irradiated targets and associated components produced through isotope production activities, using remote manipulation systems within a shielded and controlled environment.

Purpose and Scope
The procedure establishes the radiological controls required for the design, operation, and maintenance of the hot cell. Its purpose is to ensure that activities conducted within the facility are consistent with radiation protection and regulatory requirements.

The document does not provide detailed operating instructions for the hot cell; these are defined in separate operating procedures referenced within the document.

Hot Cell Design and Configuration
The hot cell is a heavily shielded enclosure designed for the remote handling of radioactive materials. It is constructed using modular steel and concrete components to form a sealed and integrated structure with defined internal and external dimensions.

Key design features include:

- Manipulators that allow operators to perform work remotely,
- Shielded viewing windows to enable observation while maintaining protection,
- Dedicated ventilation and exhaust systems,
- Controlled access points for personnel and material transfer, and,
- Monitoring instrumentation to provide real-time radiological conditions.

The design is based on applicable regulatory guidance and industry standards for facilities handling unsealed radioactive substances.

Radiological Controls
The procedure establishes engineered and administrative controls to manage radiological hazards associated with hot cell operation. These include:

- Shielding: Thick walls and shielded components are designed to limit radiation exposure to personnel outside the hot cell;
- Ventilation and Filtration: Dedicated contaminated exhaust systems with high-efficiency particulate air (HEPA) filtration are used to control airborne contamination and prevent environmental releases;

- Negative Pressure: The hot cell is maintained under negative pressure to ensure containment of airborne radioactive material;
- Monitoring Systems: Gamma monitors and continuous air monitoring systems provide real-time indication of radiation levels and airborne activity, with alarm capabilities to indicate abnormal conditions; and,
- Interlock Systems: Controlled access systems prevent simultaneous opening of transfer pathways to maintain containment and prevent radiation exposure.

These controls are designed to support safe handling of radioactive materials and early detection of potential radiological hazards.

Operational Context

The hot cell supports isotope irradiation activities by enabling on-site target carrier removal and preparation for shipment. Materials are transferred to the facility in shielded containers and handled remotely within the hot cell environment.

Following target carrier removal, ampoules are packaged in approved transport containers for shipment offsite. The procedure describes the interfaces between the hot cell and supporting activities, including transport and packaging activities.

Operational use of the hot cell is subject to defined conditions, including requirements for ventilation performance, monitoring system functionality, and contamination control.

Monitoring, Surveys, and Environmental Protection

The procedure includes provisions for routine radiological surveys and environmental monitoring of the hot cell and surrounding areas. Survey programs are updated to incorporate the hot cell, and results are recorded within established systems.

Environmental monitoring programs govern emissions and effluents associated with the facility, with defined limits and response requirements for elevated conditions.

Maintenance and Personnel Access

Maintenance of the hot cell is conducted using task-specific procedures and is subject to defined training and qualification requirements. Personnel involved in operation, maintenance, and radiological monitoring must meet established qualifications.

Entry into the hot cell is controlled and subject to specific prerequisites, including verification of radiological conditions and removal of radioactive materials.

Response to Abnormal Conditions

The procedure establishes requirements for responding to abnormal radiological conditions, including contamination events, instrumentation alarms, and equipment failures. Actions include restricting access, implementing contamination control measures, and obtaining appropriate approvals before resuming activities.

Monitoring systems and alarms provide early indication of abnormal conditions, supporting timely response and mitigation.

Roles and Responsibilities
The procedure defines responsibilities for personnel involved in hot cell activities, including operators, radiation protection staff, and maintenance personnel. These roles collectively ensure that:

- Radiological conditions are monitored and controlled,
- Activities are conducted in accordance with safety requirements, and,
- Maintenance and operational support functions are performed effectively.

Attachment K

Cover Letter of BP-CORR-00531-07336, Central Maintenance Facility: Radiological Consequences of Bounding Events of the Hot Cell

March 31, 2026

BP-CORR-00531-07336

Ms. Anupama Bulkan
Regulatory Program Director
Bruce Regulatory Program Division
Canadian Nuclear Safety Commission
P.O. Box 1046
280 Slater Street
Ottawa, Ontario
K1P 5S9

Dear Ms. Bulkan:

Central Maintenance Facility:
Radiological Consequences of Bounding Events of the Hot Cell

The purpose of this letter is to provide, for CNSC staff review, the assessment of radiological consequences to members of the public (Submission HC#05) following accidental airborne releases from a hot cell in the Central Maintenance Facility (CMF) for bounding events, as outlined in the Regulatory Communication Plan, provided in Reference 1.

Enclosure 1 provides the calculation of radiological consequences to members of the public following bounding Anticipated Operational Occurrence (AOO), Design-Basis Accident (DBA) and Beyond-Design-Basis Accident (BDBA) events associated with a hot cell in the CMF building. The radiological consequences of these events are evaluated for the 3 g Yb-176 titanium target assembly. The results presented in Enclosure 1 show that, for all three bounding events, the calculated public dose remains well below the applicable dose acceptance criteria.

An overview meeting of this submission will be scheduled with CNSC staff in April 2026.

Should CNSC staff have feedback on this submission, Bruce Power requests that the feedback is provided no later than June 2, 2026.

If you require further information or have any questions regarding this submission, please contact Mr. Andrew Glover, Department Manager, Nuclear Safety Analysis Support, at (416) 301-2275, or andrew.glover@brucepower.com.

Yours truly,

Lisa Clarke

Digitally signed by Lisa Clarke
Date: 2026.03.31 14:41:20 -04'00'

Maury Burton
Senior Director, Regulatory Affairs
Bruce Power

Maury Burton, Senior Director, Regulatory Affairs
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Ms. A. Bulkan March 31, 2026

cc: CNSC Forms / Formulaires

Enclosure:

1. NK37-REP-31790-00004, R000, Radiological Consequences of Bounding Events at Hot Cell in Central Maintenance Facility.

Reference:

1. Letter, M. Burton to A. Bulkan, "Bruce B: Revised Regulatory Communication Plan for the Lutetium-177 Program Projects", February 23, 2026, BP-CORR-00531-07003.

Attachment L

Summary of the CMF Hot Cell Radiological Consequence Analysis Report

Attachment L:
Summary of the CMF Hot Cell Radiological Consequence Analysis Report

Introduction:
The following provides a summary of a report prepared including the methodology and results of the radiological consequence assessment of bounding accidental airborne releases from the hot cell located at the Bruce Power Central Maintenance Facility (CMF). Events selected for this assessment were identified as part of the site-specific Event Identification and Classification (EIC) documented in a separate report. The deterministic safety analysis was conducted in a manner consistent with Bruce Power site licensing basis and complies with requirements stated in REGDOC-2.4.1, Deterministic Safety Analysis. The associated table of contents is provided at the end of this summary.

The report evaluates the potential radiological consequences to members of the public from bounding events at the CMF hot cell involving accidental airborne releases. The report supports the site-specific Final Safety Analysis Report (FSAR) for the hot cell installation.

Scope of Analysis:
- Selection of bounding events from the representative Initiating Events (IEs) identified in the EIC report;
- Calculation of airborne radiological releases to the environment for these events; and,
- Calculation of the radiological consequences to members of the public.

Dose Acceptance Criteria:
Anticipated Operational Occurrences (AOO) and Design-Basis Accident (DBA) dose limits for members of the public are defined in REGDOC-2.4.1, specifically:

- AOOs: 0.5 mSv, and,
- DBAs: 20 mSv.

For the AOO and DBA events, the radiological consequences were calculated for a period of 30 days following the initiating event.

For Beyond Design Basis Accidents (BDBA), temporary evacuation of the public (100 mSv effective dose over seven days) is used as the dose acceptance criterion, consistent with section 4.2.2 of REGDOC-2.4.1 for small release frequency events (<10^{-5} occurrence per year).

This is aligned with Appendix Q of the Provincial Nuclear Emergency Response Plan (PNERP).

Table 1: Effective Dose Limits for each Event Category

Event	Limit (mSv)
AOO	0.5
DBA	20
BDBA	100

Events Investigated:
Six representative IEs were identified in the EIC report. Three bounding events were selected for radiological consequence analysis, one AOO, one DBA and one BDBA (see Table 2). The remaining IEs identified do not result in radiological releases to the environment.

Table 2: Bounding Initiating Events for Each Accident Category

IE#	Event Description	Classification
2	Failure of six (6) ampoules in hot cell during Target Carrier Removal (TCR) with temporary active ventilation failure	AOO
3	Failure of six (6) ampoules in hot cell during TCR concurrent with failure of active ventilation filters causing unfiltered release	DBA
6	Severe seismic event causing collapse of the CMF building and hot cell resulting in failure of 58 irradiated targets (maximum credible inventory)	BDBA

A conservative target radiological inventory was established for all events using the ORIGEN-S software for the target comprising 3.5 g ytterbium oxide (Yb_2O_3) (approximately 3 g of ytterbium-176) in ceramic oxide powder form. Radiological releases to the environment were estimated using the United States Department of Energy for calculating airborne releases of radioactive material from non-reactor nuclear facilities. The conservative values of the Material-at-Risk (MAR), Damage Ratio (DR), Airborne Release Fraction (ARF), Leak Path Factor (LPF), and Respirable Fractions (RF) were selected for each event. The doses were calculated using the ORCA software which simulates atmospheric dispersion and calculates doses to members of the public including contributions from inhalation, cloudshine, and groundshine pathways as recommended by REGDOC-2.4.1.

Key assumptions:

- The radionuclide inventory was conservatively estimated based on the limiting target design (i.e. resulting in the largest dispersible activity) and using conservative irradiation conditions and decay times to maximize radionuclide inventory;
- No credit is taken for the filtration of the release by the active ventilation high-efficiency particulate air (HEPA) filters;
- No operator actions are credited to mitigate the consequences of the events;
- Cold ground-level releases are assumed for all events with plume broadening by the CMF building;
- No credit is taken for decay of the radionuclide inventory in the hot cell during the release period;
- Protection factors for the public due to sheltering were selected consistent with recommendations of CSA Standard N288.2, *Guidelines for Calculating the Radiological Consequences to the Public of a Release of Airborne Radioactive Material for Nuclear Reactor Accidents*;
- The worst weather scenarios, accounting for all weather scenarios with probabilities of occurrences higher than 5 percent, were selected consistent with REGDOC-2.4.1 recommendations;
- Doses were evaluated at 715 m from the CMF corresponding to the shortest distance with the property boundary; and,
- The critical age group was found to be an infant.

Summary of Radiological Dose Assessment:
The calculated radiological consequences for the three bounding events (AOO, DBA, and BDBA) at the CMF hot cell shows that public doses are very low for all scenarios. The DBA results in the highest dose among the analyzed events. However, the dose values for all three cases are well below 1% of their respective dose acceptance criteria. The results confirm that the radiological doses to members of the public remain well below the dose acceptance criteria with significant margin.

Furthermore, the report addressed modeling and parameter uncertainties and presents sensitivity analysis for the bounding DBA event (IE#3). Results of the sensitivity analysis confirm that there are no cliff-edge effects with input parameters related to target inventory, roughness length, terrain cover, and protection factors.

CMF Hot Cell Consequence Analysis Report

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