

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIAL PACKAGES**

1. a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
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2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
  - b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.
3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION
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| a. ISSUED TO ( <i>Name and Address</i> )<br>Neutron Products, Inc.<br>22301 Mt. Ephraim Road<br>P.O. Box 68<br>Dickerson, MD 20842 | b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION<br>Neutron Products, Inc., application dated<br>May 1, 2018, as supplemented. |
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4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

- (1) Model No.: NPI-20WC-6 MkII
- (2) Description

A steel encased, lead shielded cask contained within a wooden overpack with a steel outer shell. The cask is 24 inches in diameter with a 3/8-inch thick steel spherical shell and a cavity formed by an 8-1/4-inch ID by 3/16-inch thick steel tube. Positive closure of the shielded cask is accomplished by bolted end covers at each end of the cavity. The overpack outer diameter, including the flanges which secures the lid to the body and the tie downs brackets, is approximately 55 inches in diameter. The overpack height, including the lid lifting eye and the base support structure, is approximately 59 inches. The maximum package gross weight is 6,000 pounds.

(3) Drawings

The Model No. NPI-20WC-6 MkII packaging is constructed in accordance with Neutron Products, Inc., Drawing Nos. 240116, Rev. J; and 240122, Sheet 1 of 2, Rev. I, Sheet 2 of 2, Rev. H.

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(b) Contents

(1) Type and form of material

- (i) Cobalt-60 as sealed sources which meet the requirements of special form radioactive material.
- (ii) Cesium-137 as sealed sources which meet the requirements of special form radioactive material.

(2) Maximum quantity of material per package

- (i) For contents described in 5(b)(1)(i) and 5(b)(1)(ii):

For sources contained within drum assembly shown as Item 5 on Neutron Products, Inc., Drawing No. 240122, Sheet 1 of 2, Rev. H:

For contents described in 5(b)(1)(i):

Maximum activity not to exceed 15,000 curies, maximum decay heat not to exceed 240 watts.

For contents described in 5(b)(1)(ii):

Maximum activity not to exceed 20,600 curies, maximum decay heat not to exceed 97 watts.

- (ii) For contents described in 5(b)(1)(i) and 5(b)(1)(ii):

For sources contained within drum assembly shown as Item 4 on Neutron Products, Inc., Drawing No. 240122, Sheet 2 of 2, Rev. H:

For contents described in 5(b)(1)(i):

Maximum activity not to exceed 9,500 curies, maximum decay heat not to exceed 150 watts.

For contents described in 5(b)(1)(ii):

Maximum activity not to exceed 20,600 curies, maximum decay heat not to exceed 97 watts.

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5.(b) Contents (Continued)

(iii) For contents described in 5(b)(1)(i) and 5(b)(1)(ii):

For sources contained within drum assembly shown as Item 2 on Neutron Products, Inc., Drawing No. 240122, Sheet 2 of 2, Rev. H:

For contents described in 5(b)(1)(i):

Maximum activity not to exceed 6,300 curies, maximum decay heat not to exceed 100 watts.

For contents described in 5(b)(1)(ii):

Maximum activity not to exceed 20,600 curies, maximum decay heat not to exceed 97 watts.

6. In addition to the requirements of Subpart G of 10 CFR Part 71:

- (a) The package must be maintained in accordance with Maintenance and Storage Procedure for USA/9215/B(U) Package, R-2019-G, Revision 2, provided in the supplement dated March 29, 2013.
- (b) The package shall be prepared for shipment and operated in accordance with Unloading and Loading Procedure for USA/9215/B(U) Package, R-2014-G, Revision 2, provided in the supplement dated March 29, 2013.

7. The contents must be secured in the drum assembly so as to restrict movement in any direction to less than 0.25 inch, by lead, steel, or tungsten full diameter plugs and spacers.
8. The gross weight of the package must not exceed 6,000 pounds, and the inner shield cask shall be snug-fitting within the wooden overpack.
9. In addition to the shielding provided by the shipping/transfer cask (S/TC) and S/TC cover, a minimum of 2 inches of lead, 2 inches of tungsten, or 3 inches of steel shall be inserted between the source and the ST/C cover as axial shielding material in the drum assembly. This additional shielding material may be part of the plugs and spacers or part of the source drawer.
10. Contents described in 5(b)(1)(i) and 5(b)(1)(ii) may not be shipped together in the same package.
11. Fabrication of new packagings is not authorized.
12. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.
13. Revision No. 14 of this certificate may be used until May 31, 2019.

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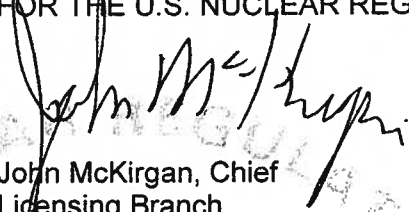
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14. Expiration date: May 31, 2023.

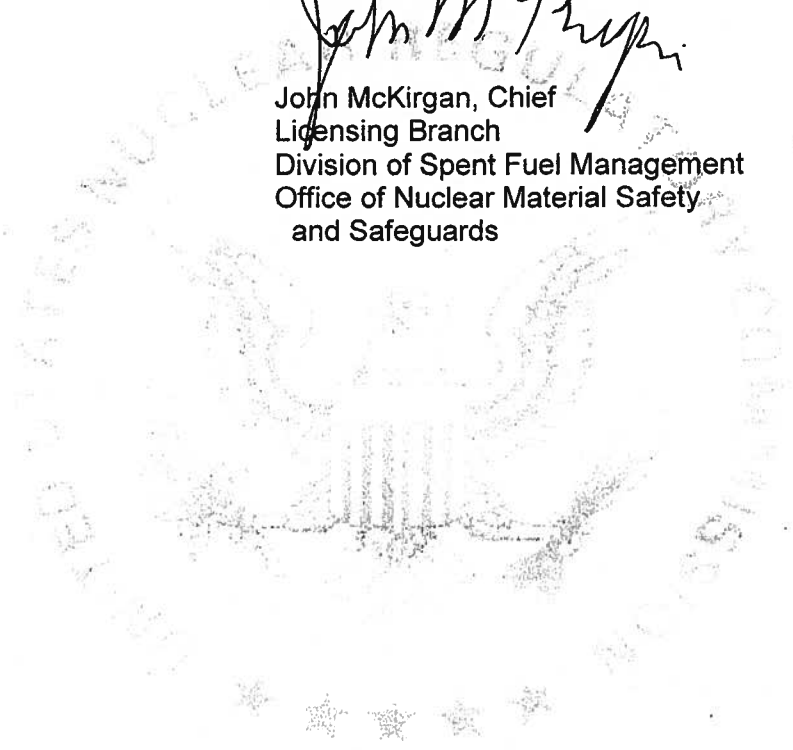
REFERENCES

Neutron Products, Incorporated, application dated May 7, 2018.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

  
John McKirgan, Chief  
Licensing Branch  
Division of Spent Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Date: 5/30/2018



## **SAFETY EVALUATION REPORT**

**Docket No. 71-9215**  
**Model No. NPI-20WC-6 MkII Package**  
**Certificate of Compliance No. 9215**  
**Revision No. 15**

### **SUMMARY**

By application dated May 7, 2018, Neutron Products, Inc. requested renewal of Certificate of Compliance (CoC) No. 9215, for the Model No. NPI-20WC-6 MkII package. Neutron Products, Inc. did not request any changes to the package design or authorized contents. The certificate has been renewed for a five year term.

### **EVALUATION**

By application dated May 7, 2018, Neutron Products, Inc. requested renewal of CoC No. 9215, for the Model No. NPI-20WC-6 MkII package. Neutron Products, Inc. submitted a consolidated safety analysis report with their application. Neutron Products, Inc. primarily made editorial and formatting changes to the safety analysis report as well as updated drawing references in the safety analysis report. In addition, Neutron Products, Inc. added references to pencil sources. The Nuclear Regulatory Commission staff (staff) had previously evaluated pencil sources in conjunction with an amendment request to transport Cesium-137. The staff authorized this radioactive source in revision 10 to CoC No. 9215 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18145A070). Neutron Products, Inc. also increased the shield plug weight to reflect the increased use of tungsten alloy shield plugs. In reviewing the consolidated safety analysis report, the staff confirmed that structural safety evaluations were performed using 6000 lbs., the maximum package weight authorized by the CoC, and that the nominal package weight using the tungsten alloy shield plugs is approximately 5200 lbs. In addition, Neutron Products, Inc. added shielding calculations and examples. The staff reviewed the new information and determined that it did not alter the safety basis for the package.

Neutron Products, Inc. did not request any changes to either the package design or the authorized contents. However, Neutron Products, Inc. did request changes to conditions in the certificate. Neutron Products, Inc. requested that the overpack steel shell diameter in Condition 5(a)(2) be increased from 49 inches to 55 inches. After reviewing Drawing No. 240116, Rev. J, the staff revised Condition 5(a)(2) to more accurately describe the overpack steel shell description. In addition, Neutron Products, Inc. requested that Condition 7 be revised to specify tungsten alloy versus tungsten in describing plugs and spacers. After comparing the consolidated safety analysis report submitted with the application against the previous version, the staff determined that tungsten alloy is the material used to determine the safety basis; consequently staff revised the condition. Neutron Products, Inc. also requested that a requirement associated with revision 10 to CoC No. 9215 either be reconsidered or be formally incorporated into the certificate. After discussing this issue with Neutron Products, Inc., the staff conditioned the certificate to utilize a minimum of 2 inches of lead, 2 inches of tungsten, or 3 inches of steel as axial shielding material in the drum assembly (ADAMS Accession No. ML18145A070).

This condition replaced the previous Condition 9 which contained information specified in Drawing 240116, Rev. J.

In addition, the staff reviewed the documents referenced in the certificate and determined that the documentation was available and complete. The staff also reviewed the operating and maintenance procedures for the package and found them to be adequate.

## **CONDITIONS**

The following changes have been made to the certificate:

Condition No. 3(b) was revised to modify the date of the submitted consolidated application.

Condition 5(a)(2) was revised to more accurately describe the overpack steel shell

Condition 7 was revised to reference “tungsten alloy” versus “tungsten.”

Condition 9 was revised to impose axial shielding requirements.

Condition No. 13 was revised to authorize the use of Revision 14 of the certificate of compliance until May 31, 2019.

Condition No. 14 was revised to reflect the new expiration date of May 31, 2023.

## **CONCLUSION**

The certificate has been renewed for a five year term that expires on May 31, 2023. This change does not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9215, Revision No. 15,  
on May 7, 2018.