

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIAL PACKAGES**

1. a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
9360	0	71-9360	USA/9360/B(U)-96	1	OF 3

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>Industrial Nuclear Company, Inc.<br>14320 Wicks Blvd.<br>San Leandro, CA 94577 | b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION<br>Industrial Nuclear Company application<br>dated October 2, 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.: Ten Hole Source Changer
  - (2) Description

The Model No. Ten Hole Source Changer package consists of ten titanium source tubes welded to a titanium hub which is encased in an enamel-coated depleted uranium (DU) gamma shield assembly. The DU gamma shield assembly is enclosed within a welded, 12-inch Schedule 10S stainless steel pipe, with overall dimensions of 12.75-inch diameter x 14.5-inch in height. A 0.25-inch thick stainless steel plate is welded to the bottom of the pipe and a 0.25-inch thick stainless steel mounting plate is welded to the inner surface of the pipe. The DU gamma shield assembly is laterally supported by eight short stainless steel channel sections that are welded to the inner wall of the pipe. The DU gamma shield assembly is also supported vertically by a 4-inch diameter Schedule 40S stainless steel pipe and a 1-inch diameter stainless steel bar that are welded to the inner surface of the bottom plate. Copper shim stock is installed between the DU-stainless steel interfaces to preclude a galvanic reaction between the two metals. The void space between the DU gamma shield assembly and the pipe shell is filled with rigid polyurethane foam which provides moisture protection for the DU gamma shield assembly. Ten lock box assemblies, which are located on top of the mounting plate, secure the special form capsules within the DU gamma shield assembly. A 0.375-inch closure lid is bolted to the package by eight 0.375-inch diameter bolts. Three stainless steel channels, which are positioned at 120 degree intervals, are welded to the bottom plate exterior surface for supporting the package during transport. The maximum gross weight of the Model No. Ten Hole Source Changer package is 340 pounds.

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(3) Drawings

The packaging is constructed in accordance with the following Industrial Nuclear Company Drawings: THSC-SAR-TA, Sheet 1 (Rev. 1); THSC-SAR-TA, Sheet 2 (Rev. 1); THSC-SAR-TA, Sheet 3 (Rev. 1); THSC-SAR-TA, Sheet 4 (Rev. 1); THSC-SAR-TA, Sheet 5 (Rev. 1); THSC-SAR-TA, Sheet 6 (Rev. 1); and THSC-SAR-TA, Sheet 7 (Rev. 1).

5. (b) Contents

(1) Type and form of material

Iridium-192 or selenium-75 as sealed sources that meet the requirements of special form radioactive material.

(2) Maximum quantity of material per package

Ten special form capsules. The maximum amount of material per capsule shall be 150 Ci (5.55 TBq).

Output curies are determined in accordance with American National Standard N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography."

(3) Maximum decay heat: 10.55 Watts

6. The sources shall be secured in the shielded position of the packaging by the source assembly lock box. The source assembly lock box must be fabricated of materials capable of resisting a 1475°F fire environment for one half-hour while maintaining its positioning function. The ball stop of the source assembly must engage the source assembly lock. The flexible cable of the source assembly and shipping plug must be of sufficient length and diameter to provide positive positioning of the source in the shielded position.

7. The name plate on the overpack must be fabricated of materials capable of resisting a 1475°F fire environment for one-half hour and maintain its legibility.

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

(a) The package shall be prepared for shipment in accordance with the Operating Procedures of Chapter 7 of the application and

(b) Each package must meet the Acceptance Tests and Maintenance Program of Chapter 8 of the application.

9. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.

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10. Expiration date: August 31, 2024.

REFERENCES

Industrial Nuclear Company application dated October 2, 2018.

Supplements dated: March 18, 2019.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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

Date: August 20, 2019

