

National Aeronautics and
Space Administration

John H. Glenn Research Center
Lewis Field
Cleveland, OH 44135-3191



July 8, 2014

Reply to Attn of: QS

U. S. Nuclear Regulatory Commission
Region III
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352

Subject: License #34-005-7-16, Docket #030-05626

The NASA Glenn Research Center (GRC) would like to update its allowable inventory of radioactive materials to include components from some legacy high-voltage equipment taken from an outdoor substation. The large pieces of high-voltage equipment were identified as "current-limiting reactors" (CLR) and were manufactured by Westinghouse and installed in the early 1950's. Based upon recent conversations with contemporary manufacturers of similar equipment, we believe the individual components, shown in Figure 1 (Enclosed), that were removed from the large CLRs are some type of current arrestor.

The NASA GRC was made aware of these items in 2006 when one of the CLRs, which had been removed from service, was returned to the Center from a scrap metal handler. The current arrestors, located within the CLR, were identified as the items of concern and were removed from the subject CLR and two others. At the time, our Radiation Safety Officer had assumed that the source of the radioactivity for these arrestors was uranium or thorium in the porcelain's brown glazing, which would be covered by the part 40.13 "Unimportant quantities of source material" exemption. The items were placed in a secure location, within the Cyclotron Facility, and were to be stored until they could be included with a radioactive waste shipment associated with the future decommissioning of the Center's Cyclotron Facility. In 2010, while relocating the current arrestors to perform a Cyclotron Facility characterization survey, one was inadvertently dropped causing part of the top section to break off. The damaged arrestor and associated broken porcelain piece were moved, along with the 11 other current arrestors, to a new location, again, within the secure Cyclotron Facility. As part of the characterization survey, the drop location on the floor was surveyed and no contamination was noted.

During recent interference removal and characterization activities, one of the GRC health physics staff members decided to investigate the radioactivity associated with these units by analyzing a broken chunk of porcelain and the internal component immediately accessible at the broken end of the arrestor. The "internal component" analyzed was a thin metal disk, similar to those shown at the bottom left of Figure 2 (Enclosed). The results of the removable contamination, dose rate and gamma spectroscopy surveys, indicated that the source of radioactivity of the

RECEIVED JUL 1 2014

current arrestors was not the glazing; it was radium-226 (Ra-226) on its internal components. Based on the weight of the thin metal disk, its activity per gram was estimated to be 0.27 micro-curies per gram. The on-contact dose rate for the metal disk was 1.8 millirems per hour.

In an attempt to get a gross measure of the Ra-226 activity within the current arrestor, the components were then removed and each briefly surveyed using a microrem range meter for comparison with the previously removed metal disk. The other internal components found to have an on-contact dose rate were the remaining four metal disks and the ends of the three right cylinders (white sides, grayish ends). All of these on-contact dose rates were less than the dose rate measured from the first ("top") disk removed from the current arrestor. All of the internal components shown in Figure 2, including those with no measurable on-contact dose, were then placed in a single bag and weighed. Applying the activity per gram factor for the "top" disk to all internal components within one current arrestor yields a conservative total activity of 0.29 millicuries of radium-226 per arrestor. Assuming similar activities within the remaining 11 arrestors, the total Ra-226 is estimated to be 3.51 millicuries.

All 12 of the current arrestors are currently stored within a lined metal drum located within our secure Cyclotron Facility. The GRC's possession of these items will involve storage incident to future disposal.

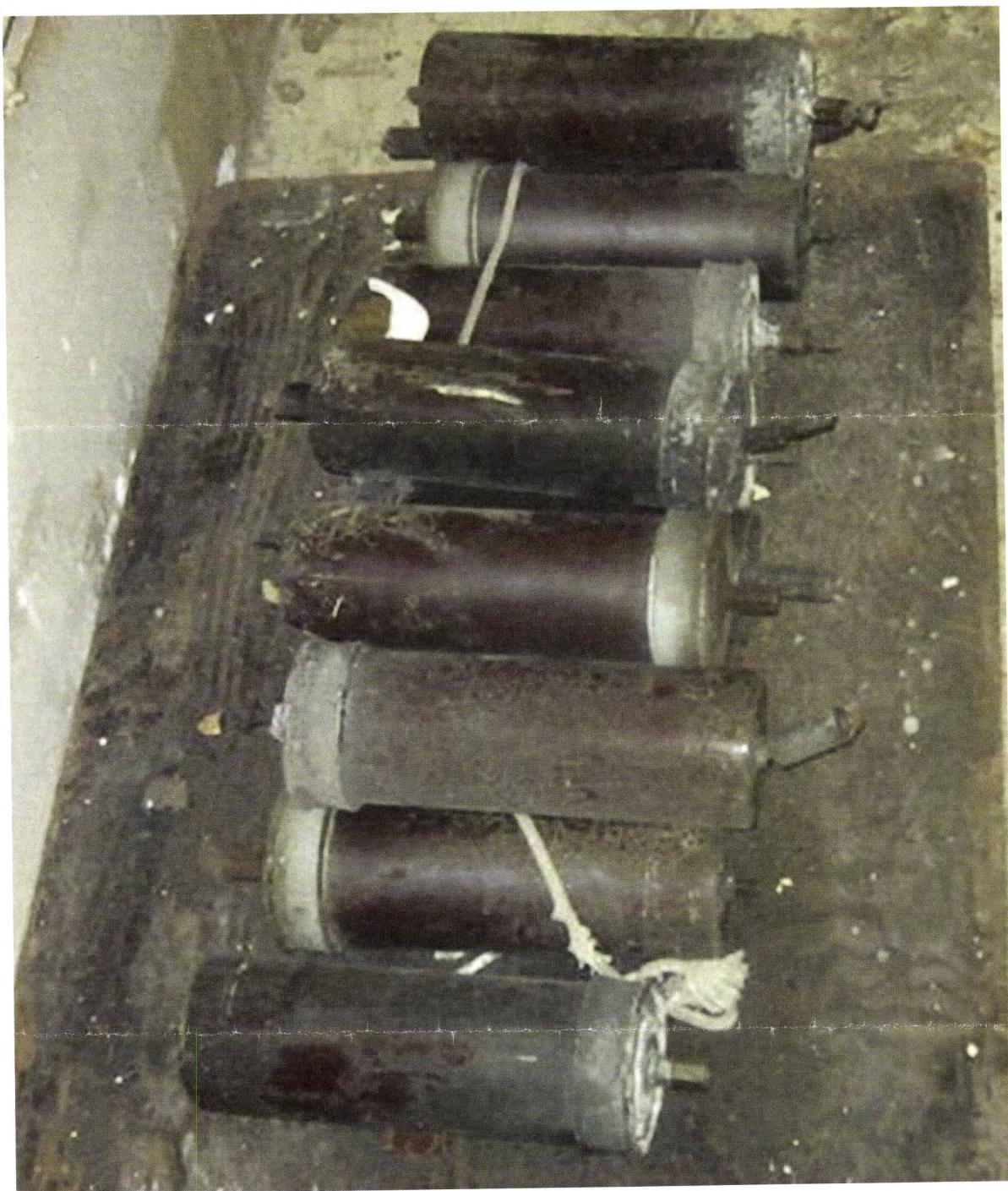
Should you have questions or require additional information regarding this license amendment, you may contact Mr. Christopher J. Blasio, Radiation Safety Officer at (216) 433-6520.



Amy L. Bower, Acting Chief
Safety and Health Division

2 Enclosures

Figure 1 – Current Arrestors



Enclosure 1

Figure 2 – Current Arrestor Internal Components



Enclosure 2

National Aeronautics and
Space Administration

John H. Glenn Research Center
Mail Code 6-4
21000 Brookpark Road
Cleveland, OH 44135-3191



Official Business
Penalty for Private Use, \$300



U S NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENSVILLE ROAD SUITE 210
LISLE IL 60532-4352

60532\$4352 C021

