



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PA 19406-2713

May 8, 2017

EA-17- 037

Bruce Baffer  
Rear Admiral  
United States Coast Guard  
Department of Homeland Security  
2703 Martin Luther King Jr. Avenue, SE  
Washington, DC 20593-7000

SUBJECT: NRC SPECIAL INSPECTION REPORT NO. 99990001/2015001, UNITED STATES COAST GUARD, AND NOTICE OF VIOLATION

Dear Admiral Baffer,

This letter refers to the special inspection conducted from May 26, 2015, through April 26, 2017, of US Coast Guard (USCG) activities authorized by the General License described in 10 CFR 31.5, as they relate to radiation safety and to compliance with the Commission's rules and regulations.

#### Background

On June 2, 2014, a representative from the Connecticut Department of Energy and Environmental Protection (CT DEEP) notified NRC Region I that a former USCG helicopter, an "H-52A Seaguard" on display at the New England Air Museum (NEAM), Windsor Locks, CT, was found to have three 100 microcurie Sr-90 radioactive sources installed in devices mounted on the helicopter rotor blades. Following the discovery of the devices on the helicopter, the NRC responded to the NEAM on June 9, 2014, to review the information provided by CT DEEP. That inspection confirmed the presence of In-Flight Blade Inspection System (IBIS) devices installed on the helicopter, which are subject to the General License requirements contained in 10 CFR Part 31.5. NEAM determined that it owned the H-52A helicopter on display, having obtained it in a transfer from the USCG on or about May 30, 1989. NEAM staff were not aware that the helicopter had Sr-90 General License devices installed until informed by CT DEEP personnel on June 2, 2014.

USCG initiated an investigation to determine how the devices had been transferred to the NEAM, and also to determine the extent of the condition. USCG subsequently confirmed the presence of IBIS devices on five additional helicopters in New Jersey, Pennsylvania, California, and Oregon. USCG safely removed the IBIS devices from the NEAM on March 17, 2015, and has since removed the IBIS devices from four additional helicopters. USCG is taking action to properly transfer or remove the IBIS from the one remaining helicopter.

#### Results

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at (<http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>). The violation involved

the failure to transfer or dispose of devices containing byproduct material only by the authorized means specified in 10 CFR 31.5(c)(8)(i). The violation is cited in the enclosed Notice of Violation because it was identified by the NRC.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC review of your response to the Notice will also determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

If you have any questions regarding this matter, please contact Todd Jackson of my staff at 610-337-5308 or via electronic mail [Todd.Jackson@nrc.gov](mailto:Todd.Jackson@nrc.gov).

Thank you for your cooperation.

Sincerely,



Blake D. Welling, Chief  
Commercial, Industrial, R&D  
and Academic Branch  
Division of Nuclear Materials Safety

Docket No. 99990001

Enclosures:

1. Notice of Violation
2. Inspection Report 99990001/2015001

cc w/encls:   CAPT Randall Hartnett, USCG  
                  LCDR Andrew Schanno, USCG  
                  State of California  
                  State of Connecticut  
                  State of New Jersey  
                  State of Oregon  
                  Commonwealth of Pennsylvania

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cc w/encls: CAPT Randall Hartnett, USCG  
 LCDR Andrew Schanno, USCG  
 State of California  
 State of Connecticut  
 State of New Jersey  
 State of Oregon  
 Commonwealth of Pennsylvania

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DATE	5/3/17		5/4/17	5/8/17		

## NOTICE OF VIOLATION

United States Coast Guard  
Washington, DC

Docket No. 99990001  
EA-17-037

During an inspection conducted from May 26, 2015 to April 26, 2017, one violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

10 CFR 31.5(c)(8)(i) requires, in part, that any person who acquires, receives, possesses, uses or transfers byproduct material in a device pursuant to the general license, shall transfer or dispose of the device containing byproduct material only by export as provided by paragraph (c)(7) of this section, by transfer to another general licensee as authorized in paragraph (c)(9) of this section, or to a person authorized to receive the device by a specific license issued under parts 30 and 32 of this chapter, or part 30 of this chapter that authorizes waste collection, or equivalent regulations of an Agreement State, or as otherwise approved under paragraph (c)(8)(iii) of this section.

Contrary to the above, the US Coast Guard (USCG) failed to transfer or dispose of devices containing byproduct material only by the authorized means specified in 10 CFR 31.5(c)(8)(i). Specifically, at various times after August 5, 1977, and prior to June 2, 2014, the USCG improperly transferred one HH-3F and five HH-52A helicopters with an installed total of 20 General License In-Flight Blade Inspection System (IBIS) devices to others who were not authorized to receive those devices. These transfers by the US Coast Guard resulted in possession of the devices by six recipients not authorized to possess byproduct material under the NRC General License in Connecticut (1), New Jersey (1), Pennsylvania (2), California (1), and Oregon (1).

This is a Severity Level IV violation (Enforcement Policy Section 6.7)

Pursuant to the provisions of 10 CFR 2.201, the United States Coast Guard is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region I, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include: (1) the reason for the violation, or if contested, the basis for disputing the violation or severity level; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken; and (4) the date when full compliance was or will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time. Your response to this Notice will be made available electronically for public inspection in the NRC's Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC's website at <http://www.nrc.gov/reading-rm/adams.html>. To the extent

Notice of Violation  
United States Coast Guard

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possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made publicly available without redaction.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days of receipt.

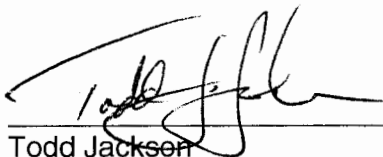
Dated this 8<sup>th</sup> day of May 2017

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Inspection No. 99990001/2015001  
Docket No. 99990001  
License No. General License  
EA No. EA-17-037  
Licensee: United States Coast Guard  
Location: Headquarters, United States Coast Guard  
Department of Homeland Security  
2703 Martin Luther King Jr. Avenue, SE  
Washington, DC 20593-7000  
Inspection Dates: May 26, 2015, through April 26, 2017

Inspectors:



Todd Jackson  
Senior Health Physicist  
Commercial, Industrial, R&D and Academic  
Branch  
Division of Nuclear Materials Safety

May 3, 2017  
Date

Approved By:



Blake Welling, Chief  
Commercial, Industrial, R&D and Academic  
Branch  
Division of Nuclear Materials Safety

5/8/2017  
Date

## EXECUTIVE SUMMARY

United States Coast Guard  
NRC Inspection Report No. 99990001/2015001

The US Coast Guard (USCG) operated two helicopter models, HH-52A and HH-3F, which had strontium-90 (Sr-90) sources installed in devices on the helicopter rotor blades. This NRC inspection was a focused evaluation of efforts by the USCG to determine how many former USCG helicopters had been transferred out of USCG control with the In-Flight Blade Inspection System (IBIS) containing Sr-90 installed on the aircraft, and to safely remove or properly transfer those sources identified.

An HH-52A helicopter with IBIS Sr-90 devices installed was discovered by the Connecticut Department of Energy and Environmental Protection on display at a public museum in Connecticut in June 2014. From approximately August 5, 1977, through October 3, 1983, the USCG obtained 99 HH-52A and 50 HH-3F helicopters incorporating up to 556 General License IBIS devices and few records existed to demonstrate these devices were properly transferred from USCG control or disposed.

The USCG removed the IBIS devices discovered on the HH-52A at the museum in Connecticut and initiated an investigation to determine the extent of the condition and whether additional helicopters had been transferred to others with IBIS devices still installed. USCG identified five additional helicopters with IBIS devices in New Jersey, Pennsylvania, California, and Oregon. The USCG investigation also determined that 64 helicopters did not have IBIS installed, 40 appeared to have been subjected to proper demilitarization procedures and would have had IBIS removed during that process, 30 were lost through crashes or other known mechanisms of destruction, and 9 were identified for which no information could be found.

The NRC identified a Severity Level IV violation of 10 CFR 31.5(c)(8)(i) involving the failure to properly transfer general license devices to other owners. The USCG has safely removed IBIS devices and Sr-90 sources from five of the six identified privately-owned former USCG helicopters, and actions are progressing to properly transfer or remove the IBIS from the one remaining helicopter with IBIS installed.

## REPORT DETAILS

### **I. Program Overview and Background**

On June 2, 2014, a representative from the Connecticut Department of Energy and Environmental Protection (CT DEEP) notified NRC Region I that an "H-52A Seaguard" helicopter on display at the New England Air Museum (NEAM), Windsor Locks, CT, had three strontium-90 (Sr-90) radioactive sources installed in devices mounted on the aircraft rotor blades. The NRC responded to the NEAM to review the information provided by CT DEEP and confirmed the presence of installed In-Flight Blade Inspection System (IBIS) devices on the helicopter which are subject to the General License requirements contained in 10 CFR Part 31.5. NEAM determined that it owned the H-52A helicopter on display, having obtained it in a transfer from the US Coast Guard (USCG) on or about May 30, 1989. Although identified as a Model "H-52A", the displayed helicopter is apparently a Model HH-52A, based on information provided by the aircraft manufacturer and the USCG. NEAM was not aware that the helicopter had Sr-90 General License devices installed until informed by CT DEEP personnel on June 2, 2014.

IBIS devices used by the USCG each incorporated 100 microcuries of Sr-90, and were manufactured and supplied by General Nucleonics Corporation of Pomona, CA, from approximately August 5, 1977 through October 3, 1983. The IBIS devices were installed on HH-52A and HH-3F model helicopters for the USCG by the helicopter manufacturer, Sikorsky Aircraft Corporation. Sikorsky built 99 versions of the HH-52A for USCG, and each helicopter had one IBIS device installed on each of three rotor blades, resulting in a total of up to 297 IBIS devices installed on HH-52A helicopters. Sikorsky also built 50 Model HH-3F helicopters procured by the USCG, with one IBIS device installed on each of five rotor blades, resulting in a total of up to 250 IBIS devices. Spare blades were also obtained by USCG with IBIS devices installed on them. USCG returned nine of these spares to General Nucleonics in 2015 for disposal, although the total number of spare blades procured is not known. Sikorsky confirmed that IBIS devices were installed only on Models HH-3F and HH-52A for the USCG, and USCG no longer operates any of these helicopters. The USCG was informed by General Nucleonics that records were confirmed for 330 IBIS devices transferred to USCG, and USCG noted that some HH-52A and HH-3F helicopters had been identified with a system installed similar to IBIS but that did not use or contain any radioactive material. It is therefore concluded that the total number of IBIS containing Sr-90 devices installed in USCG helicopters was at least 330 and could have been as many as 547.

General Nucleonics manufactured the IBIS under California Department of Public Health License No. 3138-70 GL and transferred the devices to the USCG as General License devices to be possessed and used by the USCG in accordance with regulatory requirements in 10 CFR 31.5. The manufacturer's detailed description of the device is contained in Sealed Source and Device Registration No. CA-321-D-103G, dated January 27, 1977.



## II. Investigation of Status of US Coast Guard Devices

a. Inspection Scope

The USCG operated two helicopter models, HH-52A and HH-3F, which had Sr-90 sources installed in devices on the helicopter rotor blades. This NRC inspection was a focused evaluation of efforts by the USCG to determine how many former USCG helicopters had been transferred out of USCG control with the IBIS containing Sr-90 installed on the aircraft, and to safely remove or properly transfer those sources identified. The NRC first informed the USCG in July 2014 that IBIS devices had been identified as being installed on one HH-52A helicopter on display at the NEAM, and it was not known at that time if other helicopters with IBIS devices were accessible to the public.

b. Observations and Findings

Once the USCG became aware of the three IBIS devices at the NEAM, they initiated an investigation to determine the status of as many as possible of the remaining HH-52A and HH-3F helicopters and whether they had IBIS devices installed, as well as to determine whether any additional IBIS devices remained in USCG spare parts inventory. The USCG based the investigation on available USCG records in combination with a publicly-available database at [www.helis.com](http://www.helis.com) to define the baseline for the scope of the investigation into current status of helicopters formerly operated by the USCG. The number of helicopters included in the USCG investigation is shown in the following table:

Maximum number of IBIS devices installed in US Coast Guard Helicopters

	Number of helicopters	IBIS Devices (blades) per helicopter	Total potential IBIS Devices
HH-52	99	3	297
HH-3F	50	5	250
Known spares (properly transferred from inventory)	9 spare blades	1	9
<b>TOTAL IBIS</b>			<b>556</b>

As a result of the investigation, USCG discovered five additional privately-owned former USCG helicopters with IBIS devices installed. USCG took action to safely remove and transfer the identified IBIS devices. As of April 26, 2017, one remaining HH-52A in California had IBIS devices installed which were not yet transferred or disposed. The USCG agreed to report to NRC when that transfer or removal is completed, and USCG

anticipated this will occur within a few months. The remaining three IBIS devices are being adequately controlled until they can be transferred or removed.

USCG determined the status of as many helicopters as could be found, with the results summarized in the table below. The category identified as "AMARC" references the military procedure intended to assure that hazardous materials, including radioactive materials, were removed prior to transferring the helicopter from US Government control. AMARC refers to what was the 309<sup>th</sup> Aircraft Maintenance and Regeneration Center which processed the retired aircraft. USCG determined that helicopters for which AMARC records existed were found to no longer have IBIS devices, and therefore USCG concluded that AMARC records reliably indicated correct removal of IBIS. However, AMARC records were not identified for all helicopters and it USCG has concluded that not all helicopters were processed through the AMARC system.

The category identified as "struck" indicates that the helicopter was lost or destroyed, either in a crash or through some other mechanism, and no other information could be identified.

**SUMMARY OF US COAST GUARD INVESTIGATION FINDINGS: NUMBERS OF HELICOPTERS:**

	HH-52	HH-3F	Number of helicopters
IBIS devices confirmed to be present/ have been removed	4	1	5
IBIS devices confirmed to be present/ not yet removed	1	0	0
"Cleared"(Verified No IBIS devices)	45	19	64
AMARC (records identified showing processed per demilitarization procedures)	14	26	40
Partial information/ no record of AMARC	7	0	7
Unknown / No Information	1	1	2
Struck (Crashed or otherwise destroyed)	27	3	30
<b>TOTAL HELICOPTERS</b>	<b>99</b>	<b>50</b>	<b>149</b>

c. Conclusions

One Severity Level IV violation of 10 CFR 31.5(c)(8) was identified.

The USCG obtained the IBIS devices, each containing 100 microcuries Sr-90, from General Nucleonics during the period of August 5, 1977 through October 3, 1983. The IBIS devices were manufactured and initially transferred by General Nucleonics in accordance with License No. 3138-70 GL issued by the State of California, Department of Public Health, under regulations equivalent to the NRC regulations in 10 CFR 32.51

and 10 CFR 31.5(b). The IBIS devices possessed by USCG are therefore subject to the General License described in 10 CFR 31.5. The USCG currently does not possess or operate any helicopters which have the IBIS devices installed.

10 CFR 31.5(c)(8)(i) requires, in part, that any person who acquires, receives, possesses, uses or transfers byproduct material in a device pursuant to the general license, shall transfer or dispose of the device containing byproduct material only by export as provided by paragraph (c)(7) of this section, by transfer to another general licensee as authorized in paragraph (c)(9) of this section, or to a person authorized to receive the device by a specific license issued under parts 30 and 32 of this chapter, or part 30 of this chapter that authorizes waste collection, or equivalent regulations of an Agreement State, or as otherwise approved under paragraph (c)(8)(iii) of this section.

Contrary to the above, the USCG failed to transfer or dispose of devices containing byproduct material only by the authorized means specified in 10 CFR 31.5(c)(8)(i). Specifically, at various times after August 5, 1977, and prior to June 2, 2014, the USCG improperly transferred one HH-3F and five HH-52A helicopters with an installed total of 20 General License IBIS devices to others who were not authorized to receive those devices. These transfers by USCG resulted in possession of the devices by six recipients not authorized to possess byproduct material under the NRC General License in Connecticut (1), New Jersey (1), Pennsylvania (2), California (1), and Oregon (1).

The USCG made extensive efforts to determine the location and status of the remaining former USCG helicopters and to assure that no General License IBIS devices remained uncontrolled. The investigation identified five additional helicopters with IBIS devices installed, and was effective in determining current status of as many helicopters and IBIS as possible considering the significant elapsed time since USCG physically transferred these helicopters out of USCG control. In March 2015, the USCG took action to safely remove the IBIS devices identified as still-installed on the HH-52A at the NEAM. The USCG subsequently also removed IBIS devices from helicopters in Teterboro, NJ; West Chester, PA; Reading, PA; and White City, OR, and transferred them to the manufacturer for disposal. As of April 26, 2017, USCG was working to properly transfer possession of the IBIS devices to the current helicopter owner located in Riverside, CA. USCG has committed to inform NRC when the transfer of the general license for the three IBIS devices on the HH-52 helicopter is completed, and to report the transfers in accordance with the requirements of 10 CFR 31.5(c)(8)(ii).

Following the determination of the final disposition of as many IBIS devices as possible during its investigation, USCG made a telephone report (Event Report No. 52684) to the NRC Headquarters Operations Officer on April 17, 2017, as required by 10 CFR 20.2201(a)(i). USCG indicated the written follow-up report required by 10 CFR 20.2201(b) would be submitted as required, and is due on May 17, 2017.

### **III. Exit Meeting**

The inspector discussed the conclusions described in this report with LDCR Andrew Schanno, USCG, during an exit meeting conducted by telephone on April 26, 2017.

## SUPPLEMENTAL INFORMATION

### PARTIAL LIST OF PERSONS CONTACTED

#### US Coast Guard

CAPT R. Hartnett  
LCDR A. Schanno  
CWO R. Fielder  
T. J. Granito  
F. Esposito  
R. Lipinski

### INSPECTION PROCEDURES USED

87103            Inspection of Material Licensees Involved in an Incident or Bankruptcy

### LIST OF DOCUMENTS REVIEWED

Sealed Source and Device Registration No. CA-321-D-103G, dated January 27, 1977  
California Department of Public Health License No. 3138-70 GL  
NMED Item 170198