[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[Docket No. 030-29462; NRC-2019-0106]

Environmental Assessment and Finding of No Significant Impact; Department of the Navy

AGENCY: Nuclear Regulatory Commission.

ACTION: Environmental assessment and finding of no significant impact; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is considering an exemption to License 45-23645-01NA, to exempt the Department of the Navy (Navy) from certain reporting requirements involving the use and storage of radioactive sealed source devices used for a helicopter in-flight blade inspection system (IBIS) during military exercises and maneuvers. The NRC has prepared an environmental assessment (EA) and finding of no significant impact (FONSI) for this licensing action.

DATES: [INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

ADDRESSES: Please refer to Docket ID **NRC-2019-0106** when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

- **Federal Rulemaking Web Site:** Go to http://www.regulations.gov and search for Docket ID **NRC-2019-0106**. Address questions about Docket IDs in Regulations.gov to Jennifer Borges; telephone: 301-287-9127; e-mail: Jennifer.Borges@nrc.gov. For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

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- **NRC’s PDR:** You may examine and purchase copies of public documents at the NRC’s PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

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SUPPLEMENTARY INFORMATION:

I. Introduction

NRC staff has evaluated the environmental impacts of an exemption and associated license amendment (ADAMS Accession No. ML17305B127) that would remove the requirements in section 20.1802 of title 10 of the *Code of Federal Regulations* (10 CFR), “Control of material not in storage,” for the helicopter in-flight blade inspection system (IBIS) during military exercises and maneuvers; and 10 CFR 20.2201, “Reports of theft or loss of licensed byproduct material,” when these devices are lost when they are used during military exercises or maneuvers. This EA has been prepared pursuant to the NRC regulations in 10 CFR part 51, which implement the requirements of the National Environmental Policy Act (NEPA) of 1969.

The NRC has established a license category known as a Master Materials License (MML). An MML can be issued only to a Federal organization that successfully meets the criteria stated in 10 CFR 30.33 (and 10 CFR 40.32 or 10 CFR 70.31, as

appropriate), and can demonstrate to NRC, through its diverse licensing activities, experience in complex radiation-program centralized management, inspection, education, qualification, training, and experience as outlined in NUREG-1556, Volume 10, Rev. 1, "Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Master Materials Licenses" (ADAMS Accession No. ML16181A111) that it is able to administer effectively a licensing program.

The Navy holds MML No. 45-23645-01NA from NRC, which allows the Navy to possess and use sealed sources. The Navy and Marine Corps use the Navy's MML for IBIS devices in their possession.

The IBIS devices provide in-flight warning of blade failure on various models of helicopters. One device is located on the root of each blade attached to the rotor. The IBIS detects a decrease in pressure in the blades of a CH-53 model helicopter. Any cracks in the blades will result in a decrease in air pressure in the blade. Such cracks could result in structural failure in the blade, thereby resulting in a potentially dangerous operational situation for the helicopter, such as a hard landing and/or injury to the craft and/or personnel up to, and including, death.

Each device contains approximately 500 microcuries (18.5 MBq) of strontium-90 (Sr-90) in the form of a rolled metal foil, encased in a small stainless steel protective cylinder about the size of the press button on a ballpoint pen. The external radiation level of the IBIS is 0.8 mR/hr at 3 inches in the normal (shielded) mode, and 75 mR/hr at 12 inches in the failure (extended) mode.

The source capsule is designed to minimize any hazards to personnel in shipping, storing, installing, or testing the IBIS. The Sr-90 source material is sealed either in a metallic foil ring or a ceramic "doughnut" inside the steel capsule. The source

is locked inside the IBIS unless the helicopter blade loses pressure, or when the "self--test" button is depressed, causing the source to pop out of its shielded recess.

Currently, the Navy possess approximately 2,700 of these IBIS devices. The Navy has reported a loss of 9 devices since 2008. Because the Navy uses IBIS in both wartime and simulated military battlefield exercises and ordered maneuvers, in the air, on land, and at sea, it is anticipated that the loss rate of these devices will remain constant for the next 5 years or beyond. As the deployment of IBIS-free helicopter models continues, the numbers of losses will decrease as the older models are replaced. The U.S. Marine Corps plans to have all helicopters that use IBIS replaced with IBIS-free models by Fiscal Year 2027. The two Navy squadrons have similar replacement goals.

II. Environmental Assessment

Description of the Proposed Action

In accordance with 10 CFR part 51, this EA (1) presents information and analysis for determining whether to issue a FONSI or to prepare an environmental impact statement (EIS); (2) fulfills NRC's compliance with NEPA when no EIS is necessary; and (3) facilitates preparation of an EIS if one is necessary. Should NRC issue a FONSI, no EIS would be prepared and NRC would issue a license condition to the Navy exempting them from meeting the requirements in 10 CFR 20.1802 and 20.2201 when the Navy uses authorized radioactive sealed source devices for IBIS during planned military exercises or maneuvers, as described herein. This EA applies to consideration of amendments to licenses held by the Navy as discussed in this document.

The proposed action would grant an exemption and associated license amendment to the Navy from 10 CFR 20.1802, "Control of material not in storage," when the Navy employs these devices during exercises or maneuvers; and 10 CFR 20.2201,

"Reports of theft or loss of licensed byproduct material," when these devices are lost when they are used during military exercises or maneuvers. The Navy license will be amended to incorporate this exemption.

The exemption would not apply to devices used at times other than during exercises or maneuvers, or lost under other conditions, nor would it apply to stolen devices. Additionally, the Navy licensees would continue to implement their established existing programs for tracking military assets and storage records for these devices, and would still be required to maintain its annual inventory of these devices.

Need for the Proposed Action

Although the Navy has established an effective tracking and control program for these devices, losses have occurred, and losses could still reasonably occur because of the unique circumstances associated with the use of such devices by the Navy and Marine Corps during military exercises and maneuvers.

Given the scope and nature of the Navy exercises, constant control and surveillance over such devices during military exercises and maneuvers may not always be possible or practical. To ensure constant control could be hazardous to some military personnel. According to Navy reports, the majority of the losses have occurred during military exercises and, with just one possible exception, on U.S. Government-controlled property, or at sea, over rivers, heavily wooded areas, or desert locations that are not heavily populated, if at all.

Although a member of the public who finds an IBIS device could be at risk to localized parts of the body from exposure to the Sr-90 source, this risk is mitigated by several factors: the extremely low probability of finding the device in remotely populated areas; the label on the device stating that it contains radioactive material; and the amount of time spent in close proximity to the device. The extreme case would consist

of a person finding the device, ignoring the labeling, and carrying it for an extended period of time. The proposed exemption requested by the Navy would have no impact on this possible risk because it only modifies the reporting requirements for such a lost source where the Navy is generally unaware of the precise timing, location, or circumstances of the loss event. The finder's risk would be affected only by whether the IBIS device came into close contact to the finder, and not by the timing of a lost device report.

Environmental Impacts of the Proposed Action

Because of the potential radiological risk if a member of the public finds an IBIS device, isolated lapses in control and accountability of these devices are of concern the Commission. However, the U.S. Navy has established a safe operational record with these devices. The principal users of IBIS are the Navy and Marines, which utilize IBIS devices on aircraft (helicopters) for crew safety. These aircraft are deployed on training and actual maneuvers from various bases and commands. These devices are occasionally lost during flights or crashes and are often not recoverable.

The Navy uses IBIS devices containing a nominal 500 microcuries of Sr-90. Sr-90 decays with a half-life of 28.8 years to Y-90. Y-90 has a half-life of 64.1 hours; therefore about 450 hours (about 19 days) after production of a pure Sr-90 source, the Y-90 daughter is in secular equilibrium with its parent Sr-90. (Secular equilibrium exists when the half-life of the parent is much greater than the half-life of the daughter, and is reached after about 7 half-lives of the daughter). Sr-90 and its daughter product, Y-90, are beta emitting radionuclides. Y-90 also produces a very low yield (0.01%, or 1 photon per 10,000 decays) of 1.7 MeV photons.

The NRC performed an analysis with respect to the use of Strontium-90 in beta transmission devices in accordance with the general license regulations in 10 CFR 31.5.

The model, computer codes used, and assumptions made in the exemption analysis for such devices are presented in section 4.2 of NUREG-1717, "Systematic Radiological Assessment of Exemptions for Source and Byproduct Materials" (ADAMS Accession No. ML011980433). Although the IBIS devices are not generally-licensed products, and perform a different function, the accident analyses in NUREG-1717 are a useful analog due to their similarity to beta transmission devices. These analyses indicate that the most severe consequences (i.e., greatest potential for dose) would result from an accident involving a fire that releases the entire Sr-90/Y-90 content of an IBIS device into the surrounding atmospheric environment.

NUREG-1717, Table A.1.4, provides radiation dose-to-source ratios (DSRs) for inhalation, submersion, and resuspension resulting from a transportation accident involving fire. Radiation doses are estimated using the effective dose equivalent (EDE) based on the International Commission on Radiological Protection (ICRP) 26 approach. The DSRs are 1.1×10^{-9} rem/µCi, 8.8×10^{-12} rem/µCi, and 1.3×10^{-8} rem/µCi, respectively. These DSRs take into account the release fraction (the fraction of the radioactivity in the device that is released as a result of the accident). They also assume that a bystander would be exposed for 30 minutes and would not stand in the plume of smoke from a fire. For a release of 500 µCi, the resulting doses to a member of the public would be 0.55 µrem, 4.4×10^{-3} µrem, and 6.5 µrem, respectively.

The affected environment for the proposed action, as well as for the alternative to the proposed action, is considered to be the immediate vicinity of the loss of a device, primarily in remote areas. Loss or loss of control of a device may, but would not necessarily lead to a release of radioactive material to the environment because the radioactive material is contained in a robust metal housing. However, release of

radioactive material could occur in the relatively rare event of a helicopter crash followed by fire.

These devices are normally tracked from central locations under the supervision of the licensee's staff and are used on Navy and Marine helicopters that may be stationed throughout the world. However, this exemption is only applicable to devices used during military exercises or maneuvers. The Navy currently informs NRC of lost devices that occur both in the U.S. and overseas, including some losses that occur in areas outside NRC's jurisdiction.

Based upon the above, the NRC staff finds that the proposed licensing exemption will not impact the quality of water resources, since the radioactive source quantities are very small and are not soluble in water, and at issue is only an exemption to reporting requirements. The staff finds that the proposed exemption will not significantly impact geology, soils, air quality, demography, biota, and cultural and historic resources, under either normal or accident use scenarios because of the circumstances of use of the material, and the narrow reporting scope of the requested exemption. The NRC staff has reviewed the historical performance of this type of device and the potential for future deployment and concluded that no significant cumulative impacts are anticipated.

In addition, the NRC staff finds that the proposed action will not affect listed or proposed threatened or endangered species or critical habitat. The NRC staff has determined that the proposed action is not the type that has the potential to cause effects on historic properties. Therefore, no further consultation with the regulatory authority responsible for overseeing section 106 of the National Historic Preservation Act was found necessary.

We conclude that no significant impacts on the public health, under normal or accident conditions, are expected as a result of granting this exemption with respect to reporting requirements to the Navy.

Environmental Impacts of the Alternatives to the Proposed Action

As an alternative to the proposed action, the staff considered not issuing the requested exemptions (no-action alternative).

The impact of the no-action alternative would be similar to the proposed action. Based on the review of the circumstances surrounding losses of the IBIS devices, the NRC believes that both the burden to the licensee of reporting and the expenditure of NRC and MML resources performing reactive inspections after reports of loss of control of these devices do not enhance their safe use.

The impact of implementing the no-action alternative will be the same as the proposed action with respect to public health because the proposed action and alternative address device loss reporting requirements only. Impacts on water, geology, soils, air quality, demography, biota, and historic resources would therefore be similar or same.

Agencies and Persons Consulted

In accordance with its stated policy, on November 29, 2018, the staff consulted with the U.S. Navy MML National Radiation Program Oversight Committees regarding the environmental impact of the proposed action. State consultation is not necessary, given that the requested exemption would apply to the Navy's national (and some international) operations, are not focused on any particular state, and further, are generally limited to federally-controlled facilities and properties.

III. Finding of No Significant Impact

The NRC is considering the issuance of an exemption and associated license amendment to the Navy in the form of a license condition that would exempt the Navy from the requirements contained in 10 CFR 20.1802, "Control of material not in storage," when the Navy employs these devices during exercises or maneuvers and 10 CFR 20.2201, "Reports of theft or loss of licensed byproduct material," when these devices are lost when they are used during military exercises or maneuvers.

On the basis of this environmental assessment, the NRC staff concludes that the proposed action, issuing the requested exemptions concerning certain reporting requirements, will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

Dated at Rockville, Maryland, this 23rd day of April, 2019.

For the Nuclear Regulatory Commission.

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[FR Doc. 2019-08531 Filed: 4/26/2019 8:45 am; Publication Date: 4/29/2019]