



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, DC 20350-2000

6-2

IN REPLY REFER TO

5104
Ser N45/12U158158
20 Jun 2012

U.S. Nuclear Regulatory Commission
Region I, DNMS
US Nuclear Regulatory Commission
2100 Renaissance Boulevard
King of Prussia, PA 19406
(ATTN: Mr. Shawn Seeley)

RECEIVED
REGION 1

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Subj: REQUEST EXEMPTION TO ALLOW LICENSE No. 45-23645-01NA TO
USE THE ALARM RATE FEATURE OF THE ELECTRONIC
PERSONNEL DOSIMETER VICE A SEPARATE ALARM RATE-METER FOR
GAMMA RADIOGRAPHY OPERATIONS

Ref: (a) CNO ltr 5104 Ser N455C/N5U9011460 of 13 Oct 05
(b) NRC ltr Control No. 137893 of 23 Jan 06

Dear Mr. Seeley:

In reference (a) the Naval Radiation Safety Committee (NRSC) requested an amendment to the Master Materials License (MML) No. 45-23645-01NA, to authorize the use of the alarm rate feature in the electronic personnel dosimeter (EPD) in lieu of a separate alarm rate-meter. In reference (b) the NRC stated that this amendment request was not required because the alarm rate feature of the EPDs used by the Navy met the requirements of 10 CFR 34.47. In light of recent questions in NRC Region IV and within the NRC concerning 10 CFR 34.47 and reference (b), the NRSC is now providing additional information to request a waiver from the requirement to wear separate alarm rate-meters for radiographers and radiographer's assistants.

Gamma radiography operations conducted by the Navy are safer than that of the commercial industry. According to the IAEA, the majority of accidents happen because radiographers become complacent. The IAEA further states: "These accidents are mostly caused by overconfidence and by shortcuts that are driven by a desire to reduce costs. Industrial radiography is a competitive business and reducing cost is a matter of survival for some companies. Often radiographers are paid for the number of radiographs taken. Other circumstances add to the problem: radiographs are often taken in difficult locations (some times

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NMSS/RGN1 MATERIALS-002

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during the night or with low light) and radiographers often work alone without direct supervision." The Navy's special additional safety precautions that are not usually seen in the commercial industry are mentioned below.

a. The Navy has a level of oversight and management involvement (Senior Radiographer's and RSOs on the job) that is rarely seen in the civilian industry. Specific items include: required frequent supervisory surveillances and management involvement, annual drills that involve security and safety departments, and a self-reporting culture that facilitates process improvements. If a condition is found during radiography operations that doesn't meet standards (it may even include an askew sign), the operation is stopped and critiqued. Gamma radiography work will not re-start until corrective actions have been taken. Subsequently, these corrective actions are benchmarked and disseminated to other gamma radiography commands within the Navy.

b. There is a high emphasis on radiography equipment and exposure device inspection and maintenance, which includes check lists and written procedures. Multiple signatures are required to verify these inspections, to include the signatures of radiographers and other supervisory personnel.

c. Training provided to radiography personnel exceeds the minimum requirements of 10 CFR 34.43. The Navy also holds annual conferences with radiographers and RSOs where lessons learned are shared and refresher training is conducted. The RSOs are required to attend 3 conferences every five years, otherwise their qualifications will expire and they will have to attend school to re-qualify.

d. The work environment on Navy vessels and facilities is very clean compared to the environments usually encountered at pipelines, oil platforms and other true field-work locations. This cleaner environment results in a lower likelihood of equipment damage and malfunction. The illumination on-board Navy vessels is excellent and thus diminishes the possibility of an accident.

e. Radiography commands only use survey instruments and dosimetric devices with a lengthy track record of stability. These instruments and devices are also maintained by rigorous programs for maintenance, processing, and calibration. Those

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items that do not meet these expectations are replaced by either new instruments or new technology. The XETEX, Inc Minirate 317D alarm rate-meter, formerly used by the Navy, had a failure rate of greater than 33 percent compared to a 0.02 percent alarm rate failure rate for the EPD that is currently used. There have been no reportable incidents or EPD failures during operations since the implementation of the EPD in 2008. Moreover, the decrease in failure rate has increased the safety of the operation because radiographers do not have to start emergency procedures that would cause unnecessary wear and tear on the camera and increase the time that it takes to radiograph.

f. Radiography personnel are required to wear a TLD and an EPD at all times regardless of whether they are working in a permanent radiography installation (PRI) equipped with other alarming and warning devices, or working within close proximity to a loaded exposure device.

g. Radiographers work to a control level set at one tenth of the Federal limit. That control level can only be exceeded with prior written approval from the Commanding Officer. Additionally, Navy EPDs are set to alarm at 200 mrem/hr vice the 500 mrem/hr required in 10 CFR 34.47.

h. Two radiographers are always required for conducting operations other than in a PRI. A secondary radiographer must always be close to the primary radiographer who is manipulating the camera, in case help is needed. During these operations a Radiographer-In-Charge (RIC) is responsible for ensuring all safety aspects of a temporary job site (TJS) are met prior to and after each shot, including a dosimetry check. These TJS evolutions are well planned. The planning phase encompasses various meetings to evaluate all radiography safety issues. Whenever possible, lead shielding is used in the area of radiography to reduce the exposures and minimize the restricted area. Emergency radiography does not occur in the Navy and there are no unknown sites and unknown conditions.

i. The EPD is much less sensitive to RF interference compared to the old alarm rate-meters. With the new cell phone technology, it was common to set off a XETEX, Inc Minirate 317D from across the room. To date, spurious EPD alarms have only occurred during close proximity to tungsten inert gas (TIG) welding operations. EPDs have also shown a high degree of

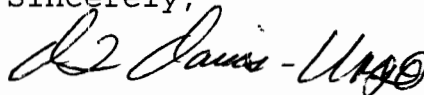
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durability as incidental impact from being dropped has not taken them out of service.

j. Barrier monitors are utilized as an additional protective measure to secure access to the restricted area. The barrier monitors wear the same dosimetry and EPDs as the radiographers and are trained to read RADIACs. The barrier monitors ensure that only personnel authorized by the radiographer are able to enter the restricted area. If conditions change or unexpected levels of radiation are measured at the barrier, the monitors contact the radiographer in charge immediately.

The above attributes and close attention to detail make radiographic operations within the Navy one of the safest in the country. Relying on an alarm rate-meter that has a high rate of failure and false alarms degrades safety and ultimately leads the radiographers to disregard these alarms. While the NRSC understands the NRC's concern, it is pointed out that the Navy has four years of experience with the alarm rate function of the EPD, and has not encountered any problems. In closing, the exemption request is based upon the Navy's unique management/oversight, training, equipment, procedures and safety culture.

Sincerely,



D. L. DAVIS-URGO
CAPT, MSC, U.S. Navy
Executive Secretary
Naval Radiation Safety Committee

Copy to: COMNAVSEASYS COM (04N)
NAVSEADET RASO

This is to acknowledge the receipt of your letter application dated

6/20/12, and to inform you that the initial processing which includes an administrative review has been performed.



Amendment (45-23645-01NA)
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.



Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 577789.
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You may call us on (610) 337-5398, or 337-5260.