UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, DC 20555

October 15, 1996

NRC INFORMATION NOTICE 96-53: RETROFIT TO AMERSHAM 660 POSILOCK RADIOGRAPHY CAMERA TO CORRECT INCONSISTENCY IN 10 CFR PART 34 COMPATIBILITY

Addressees

All industrial radiography licensees.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to make licensees aware of a scenario where the Amersham model 660 Posilock radiography camera would not pass the horizontal shock test as required by 10 CFR Part 34, and of a retrofit to the Amersham Model 660 Posilock radiography camera to correct that problem. It is expected that recipients will review the information for applicability to their licensed activity. However, suggestions contained in this information notice are not new NRC requirements; therefore, no specific action nor written response is required.

Description of Circumstances

Recently, NRC became aware of a scenario where the Amersham Model 660 Posilock radiography camera would not pass the horizontal shock test as required by 10 CFR Part 34.20, "Performance Requirements for Radiography Equipment." Amersham was made aware of the test results, and took action to correct the situation.

Discussion

When Amersham tested the camera in accordance with ANSI N432-1980 in 1989, the target for the horizontal shock test was a point between the two bumpers, directly at the slide lock. This point was chosen by Amersham as the most vulnerable impact site. In 1995, tests performed as part of an independent testing contract revealed that there was a more vulnerable impact site. The contractor's test focused aiming at one of the bumpers. The result was damage to the bumper, causing the bumper to become detached, thereby exposing the lock slide to direct impact. Subsequent impacts then broke the lock slide. There appear to be no significant safety issues, since breaking the lock slide would result in an inability to open the shutter. If the source were in the exposed position at the time of impact, the source could still be returned to the shielded and secured position.

As a result of the test information, Amersham redesigned the bumpers. The modified bumpers contain a metal core that distributes the stress of an impact to the end plate. Amersham states that the camera with the modified bumpers passed the horizontal shock test, where the test was aimed at the bumper. The bumpers remained intact, and although they showed signs of impact, they still protected the lock slide. Amersham states that it sent retrofit kits to all owners, of potentially affected cameras, on record with them. Attachment 1 contains a copy of the retrofit kit letter and bumper replacement instructions. The retrofit will be differentiated by the use of a non-Phillips head screw instead of the Phillips head screw currently in use. Cameras with the retrofit would continue to meet the requirements of 10 CFR Part 34.

All affected cameras should be retrofitted as soon as possible. Licensees should contact Amersham to obtain retrofit kits or assistance with retrofit procedures, or to notify Amersham if they have not received their kit. Affected cameras may be checked for completed retrofit during any inspection.

Licensees possessing these cameras should be aware of this issue and take action appropriately.

This information notice requires no specific action nor written response. If you have any questions about the information in this notice, please contact the technical contact listed below or the appropriate regional office.

Donald A. Cool

Donald A. Cool, Director
Division of Industrial and
Medical Nuclear Safety
Office of Nuclear Material Safety
and Safeguards

Technical contact: Michele Burgess, IMAB
(301) 415-5868
Email: mlb5@nrc.gov

Attachments:
1. Amersham Retrofit Kit Letter and Bumper Replacement Instructions
2. List of Recently Issued NMSS Information Notices
3. List of Recently Issued NRC Information Notices

Attachment filed in Jacket

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Original Signed by

Donald A. Cool, Director
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(301) 415-5868
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DOCUMENT NAME: 96-53.IN *SEE PREVIOUS CONCURRENCES

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SENTINEL

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Mr. Steven Baggett
Sealed Source Safety Section
Source Containment and Devices Branch
Division of Industrial of Medical Nuclear Safety, NMSS
U. S. Nuclear Regulatory Commission
Washington, DC 20555

~~26 July 1996~~ 2 Aug 96 ltr

Dear Mr. Baggett:

This letter serves to document the findings and actions we discussed in our conference call on 24 July 1996 concerning the model 660 posilock camera.

Upon receipt of the results of the Southwest Research Institute tests that we we received from you on 24 Jun 96, we learned that SwRI report concluded that the 660 Posilok series did not pass the ANSI N432 Section 8.2 Horizontal Shock Test. We then performed an in depth investigation.

These test results greatly concerned us. Not only had we performed the horizontal shock test in 1989 with the product passing without difficulty, but there have not been any indications that there were any problems noted in actual use conditions. ANSI is a performance based standard, and we had not seen any performance based or actual use problems relating to the horizontal shock test.

The results of our internal investigation have shown that there is a more vulnerable impact site on the device than we had selected in our testing in 1989. During our testing in 1989, we focused on aiming between the two bumpers directly at the lock slide. In this scenario, the horizontal shock impacts both bumpers. Under these conditions the device clearly passed the horizontal shock test. Until we received the test results from SwRI in Jun 96, we were unaware of a more vulnerable area.

The testing performed by SwRI selected one bumper as the target impact point. Under this condition the single bumper is damaged to a point where it becomes detached, thereby exposing the locking slide to a direct impact. Subsequent impacts then break the slide.

In addition to testing the fragile area identified by SwRI, we tested a range of other areas to assure that the single bumper impact was indeed the most fragile area. No other area was found to be more fragile than the single bumper impact.

Through our evaluation, we have determined that there are no significant safety issues, since breaking the lock slide in this position simply prevents the exposure of the source. The device fails safe. Additionally, this situation has never occurred in the field, and it would be very unlikely for an impact

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in field use conditions to actually result in the lock slide breaking.

While we feel that this is an issue we need to and can resolve quickly, there is no safety significance, or practical risk of this failure mode in field use conditions.

The corrective action for this is very simple, has been thoroughly tested, and can be easily retrofitted in the field by the customer without any disassembly of the camera. We have fabricated bumpers that will replace the original bumpers. These new bumpers have a metal core that distributes the stress of an impact to the end plate. When subjected to the horizontal shock test, the bumpers remain intact, adequately preventing an impact to the lock slide. The retrofit will be differentiated by the use of a non philips head screw instead of the "Philips" head currently in use. We are advising users that upon completion of this upgrade, the original certificate we provided stating that the device meets the requirements of 10 CFR Part 34 will still be valid.

We have enclosed a copy of the instructions that will be provided to users for implementing the retrofit. We will be sending out the retrofit kits early next week.

Please let me know if you require any additional information, we greatly appreciate your assistance in quickly resolving this issue.

Sincerely,

Cathleen Roughan
Regulatory Affairs Manager

cc: W. McDaniel

SENTINEL

Dear Valued Customer:

In accordance with our ISO9001 Certified QA Program, which links with our objective to provide the highest quality product and service in the industry, SENTINEL strives towards continuous improvement by periodically updating our products and services as a result of feedback from a range of resources.

SENTINEL has recently received information that when our 660 Posilok series is subjected to a specific, repeated, horizontal shock aimed at one of the bumpers on the rear end plate, the lock slide will eventually break. We were concerned since we had performed this type of testing in accordance with ANSI N432 - 1980, Section 8.2 (Horizontal Shock Test) in 1989 and the product passed without difficulty. In addition, we have not seen any problems in actual use. We promptly initiated a detailed investigation.

The results of our investigation have shown that there is a more vulnerable impact site on the device than we were aware of in our 1989 testing. It is important to note that this is not a safety significant issue as the potential damage to the projector prevents source exposure. The device fails safe. Additionally, this situation has never been reported from the field, and it is unlikely for an impact in field use conditions to result in the type of damage seen in testing.

To preclude any possibility of this situation, we are sending retrofit kits to all owners on record of potentially affected projectors. We've enclosed a sufficient number of kits to retrofit the 660 projectors your company owns. The retrofit process is very simple and is described in the instructions on the opposite side of this card.

We have informed NRC of this situation, and they fully support and agree with our actions.

If you should have any questions, please feel free to call me at 1(800)815-1383 at extension 200 , or Greg Field at extension 207.

Thank you in advance for your support,

Bill McDaniel
Operations Manager

660 RETROFIT

Each kit consists of 2 rubber protector assemblies and 2 slotted binder head screws. Please install these components as follows:

a.) From the rear plate on your 660 Projector, remove and discard the two rubber protectors and Phillips head screws located above and below the locking slide.
b.) Attach the new rubber protector assemblies with the slotted binder head screws provided.

Please call us at (800) 815-1383, extension 2??, if you have any questions.

LIST OF RECENTLY ISSUED
NMSS INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
96-52	Cracked Insertion Rods on Troxler Model 3400 Series Portable Moisture Density Gauges	09/26/96	All U.S. Nuclear Regulatory Commission portable gauge licensees and vendors
96-51	Residual Contamination Remaining in Krypton-85 Handling System After Venting	09/11/96	All material licensees
96-47	Recordkeeping, Decommissioning Notifications for Disposals of Radioactive Waste by Land Burial Authorized Under Former 10 CFR 20.304, 20.302, and Current 20.2002	08/19/96	All U.S. Nuclear Regulatory Commission licensees
96-35	Failure of Safety Systems on Self-Shielded Irradiators Because of Inadequate Maintenance and Training	06/11/96	All U.S. Nuclear Regulatory Commission irradiator licensees and vendors
96-33	Erroneous Data from Defective Thermocouple Results in a Fire	05/224/96	All material and fuel cycle licensees that monitor temperature with thermocouples
96-28	Suggested Guidance Relating to Development and Implementation of Corrective Action	05/01/96	All material and fuel cycle licensees

LIST OF RECENTLY ISSUED NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
95-04, Supp. 1	Excessive Cooldown and Depressurization of the Reactor Coolant System Following Loss of Offsite Power	10/11/96	All holders of OLs or CPs and vendors for nuclear power reactors
96-40, Supp. 1	Deficiencies in Material Dedication and Procurement Practices and in Audits of Vendors	10/07/96	All holders of OLs or CPs for nuclear power reactors
96-52	Cracked Insertion Rods on Troxler Model 3400 Series Portable Moisture Density Gauges	09/26/96	All U.S. Nuclear Regulatory Commission portable gauge licensees and vendors
92-68, Supp. 1	Potentially Sub-standard Slip-On, Welding Neck, and Blind Flanges	09/16/96	All holders of OLs or CPs for nuclear power reactors
96-51	Residual Contamination Remaining in Krypton-85 Handling System After Venting	09/11/96	All material licensees
96-50	Problems with Levering-In Devices in Westinghouse Circuit Breakers	09/04/96	All holders of OLs and CPs for nuclear power plants

OL = Operating License
CP = Construction Permit