

7 NOVEMBER 2003



Maintenance

**INDUSTRIAL RADIOGRAPHY****COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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OPR: 89 ASD/MDMN (Mr Patrick R. Cole)  
Supersedes 89AWI 21-101, 14 November 1997

Certified by: 89 MXG/CC (Col David B. Lee)  
Pages: 5  
Distribution: F

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This instruction establishes guidance toward the safe use of X-ray equipment for industrial radiographic purposes. It applies to those individuals assigned to the DynCorp ASD, Nondestructive Inspection (NDI) Laboratory, 89 AW Command Post and 89 AW Safety at Andrews AFB, MD. References: Technical Orders (TO) 33B-1-1, Chapter 6; 1H4-6-6-1; 1H4-7-15-1; 33B3-3-31-11; AFOSH Standard 91-110 and all applicable assigned NDI manuals.

**SUMMARY OF REVISIONS**

**This document is substantially revised and must be completely reviewed.**

This publication substantially revises 89 AWI 21-101, *Industrial Radiography*, 15 February 2001. In the purpose statement 89th Maintenance Group (MXG), has been changed to DynCorp ASD and several T.O. references have been deleted with others being added due to changes in equipment. Changes have also been made to paragraph **2.2.5. Attachment 1**, *Glossary of References and Supporting Information*, has been added and **Attachment 2**, *Radiation Overexposure Notification Checklist*, was previously **Attachment 1** and changes were made in paragraphs 1.1., **2.**, **2.1.**, **2.2.**, 2.3., **3.2.** and 3.3.

**1. General.** The following policies are established in cooperation with Andrews AFB Bioenvironmental Engineering (89 MDG/SGPB) and are applicable to all 89 AW personnel.

**2. Responsibilities and Procedures.** The 89 AW/CC has overall responsibility, however, the NDI laboratory section chief has primary responsibility of ensuring the following procedures are carried out:

2.1. Shielded Radiation Inspection Procedures:

2.1.1. All shielded radiographic operations will be conducted in building 1791, NDI laboratory exposure room, in accordance with annual bioenvironmental certification survey.

2.2. Unshielded Radiation Inspection Procedures:

2.2.1. Warm-up for the X-ray unit to be used will be accomplished within the NDI laboratory exposure room.

2.2.2. All unshielded radiographic inspections will be scheduled from 0001-0700 when feasible.

2.2.3. The NDI lab supervisor will ensure the fire suppression system is isolated during all X-ray operations.

2.2.3.1. Coordination will be with the building custodian, if after hours, coordinate with the production supervisor.

2.2.3.2. Building custodian will contact the fire department prior to X-ray.

2.2.4. The organization possessing aircraft to be inspected will position and make the aircraft safe for maintenance.

2.2.5. DynCorp/MDA (SAM 4) and the MOC will be notified prior to the start and at the end of X-ray operations.

2.2.6. Exposures will be held to the minimum time possible to adequately perform required inspection. One qualified radiographer and two qualified safety monitors will be present during all unshielded radiographic operations. The radiographer will operate the control box of the X-ray unit. The safety monitors will be strategically located to provide adequate surveillance over the entire area. In the event the perimeters of the hangar are clearly visible, the inspection can be accomplished with two individuals. The senior radiographer will operate the control box of the X-ray unit and the second individual will act as a safety monitor.

2.2.7. Each of the safety monitors will be provided two-way communication devices to be used to signal the Radiographer operating the control box. Prior to each exposure, the following signals will be used:

2.2.7.1. When operations are in the fuel cell, whistles will be used in lieu of radio(s) for safety considerations.

2.2.7.2. Verbally ask "area clear"--await replies.

2.2.7.3. Verbally announce, "beam on."

2.2.7.4. Verbally announce "beam off"--await echo, "beam off."

2.2.8. All non-radiographic personnel, to include security police, will vacate the radiation area, to be determined by the senior radiographer.

**3. Emergency Procedures.** Whenever an overexposure is suspected, an emergency situation will be considered to exist and the following actions will be taken:

3.1. NDI will immediately cease all X-ray operations and initiate implementation of radiation overexposure checklist (see [Attachment 2](#)).

3.2. Refer to T.O. 33B-I-1 and complete all measures listed under Suspected Overexposure Actions.

**4. Deviations.** Any deviations to this directive must be approved by Andrews AFB Bioenvironmental Engineering.

DAVID S. GRAY, Brigadier General, USAF  
Commander

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFOSH 91-110, *Nondestructive Inspection and Oil Analysis Program*

T.O. 33B-1-1, *Nondestructive Inspection Methods*

T.O. 1H4-6-6-1, *Operation and Maintenance Manual- Personal Alarming Dosimeters*

T.O. 1H4-7-15-1, *Operation and Maintenance Instruction- Low Energy Ion Chamber Survey Meter*

T.O. 33B3-3-31-11, *Operation and Maintenance Manual-LPX-160 Industrial X-ray System*

AFI 91-301, *Air Force Occupational and Environmental Safety, Force Protection, and Health (AFOSH) Program*

AFI 48-148, *Ionizing Radiation Protection*

***Abbreviations and Acronyms***

**AFOSH**—Air Force Occupational Safety and Hazard Standard

**ASD**—Andrews Support Division

**89 AW**—89th Airlift Wing

**MOC**—Maintenance Operations Center

**T.O.**—Technical Order

**Attachment 2**

**RADIATION OVEREXPOSURE NOTIFICATION CHECK SHEET**

When a radiation overexposure has taken place, immediately implement the following notification procedures:

**1. NDI personnel will notify:**

1.1. SAM 4 to cordon off the area.

**2. SAM 4 will notify:**

2.1. Division Manager, Director of Maintenance, Branch Manager and DynCorp Safety.

2.2. Malcolm Grow Medical Center, 7-5911

2.3. MOC, via radio or 2-2211/2212.

2.4. ASD/MDH, when working in Hangar 1.

**3. MOC will notify:**

3.1. Command Post.

3.2. 89 MXG/CC.

3.3. Wing Safety.

3.4. 89 OG/CC, when working Hangar 1.