

Industrial **NDT** Company 252097
INCORPORATED

030-29727

QUALITY ASSURANCE THROUGH NONDESTRUCTIVE TESTING

CORPORATE HEADQUARTERS

3377 RIDGEWAY ST
NORTH CHARLESTON, SC 29405
(803) 744-7412

March 7, 1988

US Nuclear Regulatory Commission, Region II
Material Radiation Protection Section
ATTEN: Earl Wright, Senior License Reviewer
101 Marietta Street, Suite 2900
Atlanta, GA 30323

Dear Mr. Wright:

Industrial NDT Company is requesting an admendment to it's Nuclear Regulatory Commission Radioactive Material License No. 45-19494-01, to authorize the use of Amersham-Tech/Ops Model 660 gamma exposure device and Amersham-Tech/Ops Model 650.

Add to condition 6-9

Radioactive Material: Iridium-192

Physical Form (sealed source): Amersham-Tech/Ops
source model A 42A-9 for use in Tech/Ops 660 gamma
exposure device

Maximum Activity: 100 curies

Upon receipt of the exposure device(s), INDT's Operating and Emergency Procedures will be revised to include the operation procedure for the 660 exposure device and the source changer procedure. At the completion of this revision a copy of this revision will be forward to you for your review and approval.

If you have question regarding the requested license admendments referred to in this letter, please do not hesitate to contact me.

Sincerely,

J. W. Patterson
Jerral W. Patterson
Corporate Radiation Safety Officer

Enclosure

Log #	611
Revised	
Check No.	7370
Amount	\$230
Fee & Charge	30
Type of Fee	And
Time Check Paid	3/23/88
Date Collected	3/23/88
By	Murray

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REGD LIC30
39-24888-01
PNU

Model 660 Gamma Ray Projector

Tech Ops

The Tech Ops Model 660 is a field proven system for radiography using Iridium¹⁹². Each element of the system has been developed to provide reliable service and long life under the harsh conditions of industrial use.

Widely used throughout the world this system has been field proven.

Description

The 660 Portable Gamma Ray Projector is a truly lightweight system for the radiography of steel, brass and copper in the thickness range .5-2.5 inches (1.25-6.25 cm) and light alloys over 2 inches (5 cm).

The portability feature of the system provides both a convenient means of transporting the radioactive source and operating flexibility, particularly needed in limited access areas.

System components consist of the projector, which serves as the storage and transport device for the radioactive source, the remote control unit, allowing source manipulation while keeping operator exposure to a minimum, and the guide tube and stand assembly to facilitate source positioning at the required focal point.

The system may be used with Iridium¹⁹² isotope sources up to a maximum of 100 curies.

The use of depleted uranium for shielding results in a significant reduction in both size and weight. One man may carry out the entire set up procedure, allowing faster and more economical operation.

The 360° panoramic radiation pattern of the source may be used to full advantage, either for multiple specimen work or for circumferential exposure techniques. Optional collimators are available which limit the panoramic pattern to a directional beam.

Features

Lightweight

Only 45 lb. (20.4 Kg) for the projector.

Small Size

The projector can easily pass through a 5.5" x 10" (14.0 cm x 25.4 cm) opening, the exposure snout will pass through a 3/4" (2 cm) diameter hole.

Self Contained

No external power supply is required.

Safety

The source remains locked in the projector until control is connected properly. Cannot be locked or control disconnected until source is safely stored.

Low Surface Radiation

Well below the maximum allowed under I.A.E.A. & USNRC regulations.

Remote Control

Long cables allow the operator to control the source at a distance of 25 feet. When the source is at the focal point the control can be at a distance of 46 feet. Longer control cables & source travel available on special order.

Safety Lock

A lock is incorporated in the projector case to prevent use by unauthorized personnel.

Type B Packaging

The projector is a certified Type B Package and can be shipped loaded under I.A.E.A. and USNRC transport regulations.

Ease of Positioning

The source can easily be positioned at the required focal point by means of guide tubes and a tripod stand.

Reliable

The system is designed to operate with a minimum of maintenance.

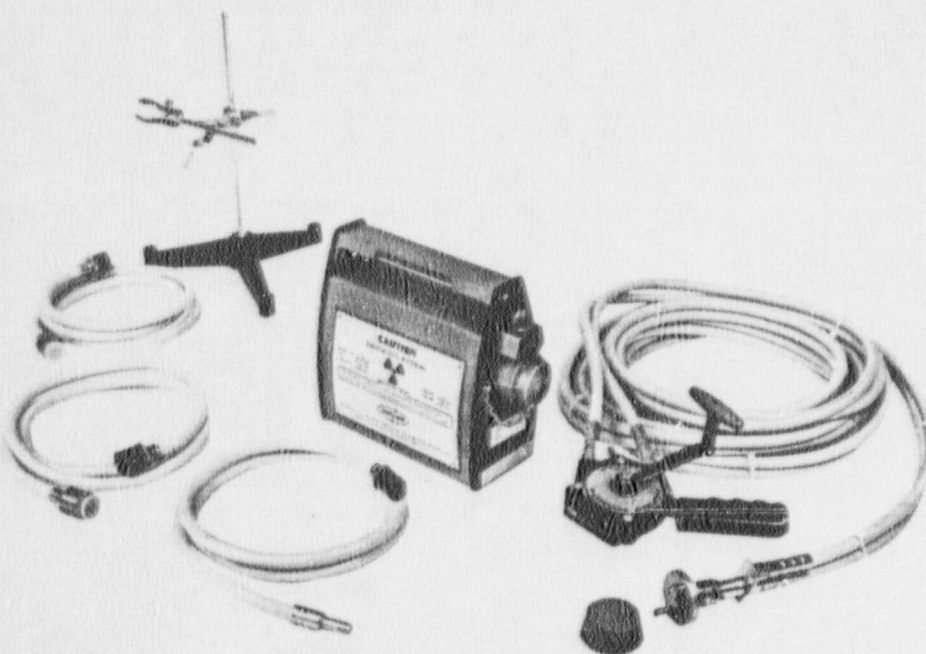
Panoramic or Directional Beam

Optional collimators quickly convert the 360° beam into a directional beam.



Projector

The projector, or storage container, consists of a steel housing which contains approximately 29 lbs. (13.5 kg) of depleted uranium shielding material. The control connector is located on one end plate of the projector with OPERATE/-LOCK and CONNECT positions for connection to the control device. The other end plate houses the guide tube connector. When the projector is in shipment or storage a metal shipping plug is fitted to the guide tube connector. The projector is a certified Type B Package, and has the following certificates — I.A.E.A.: USA/9033/B(U)T, USNRC: USA/9033/B.

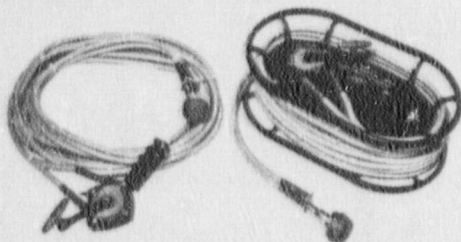


Control Units

TO-664 Reel consists of a control panel built into a lightweight welded tubular cable reel and contains a handcrank to propel the source to the exposure position and back, and a source position indicating odometer calibrated in feet & inches.

TO-693 Pistol grip consists of a lightweight housing containing the handcrank and source position indicating odometer as incorporated in the TO-664 Reel.

The control cable consists of an outer sheath of flexible metal composite cable 25 feet long with a bright yellow polyvinyl cover, a Teflon inner lining and an inner spiral-wound flexible steel drive wire. Source guide tube consists of three sections of 7 foot flexible stainless steel tube with protective polyvinyl covering which can be used in 7, 14 or 21 foot lengths. The end section is fitted with a stop for positive source location. Both the control cable and the source guide tubes can be stored on the control reel.

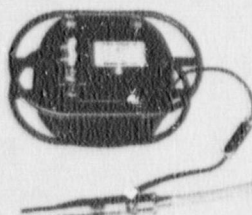


TO-693 PISTOL GRIP AND TO-664 REEL CONTROLS

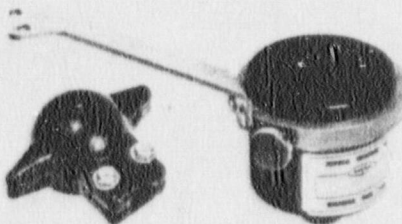
Source Assembly

The Model 660 Gamma Ray Projector uses source assembly A424-9. Sources may be ordered in any strength up to 100 Curies. Initial source may be shipped in the projector. Replacement sources are shipped in the Tech Ops Model 650 source changer which serves as a shipping container for the return of the depleted source. The Model 650 source changer is a lightweight (70 lb.) uranium shielded Type B shipping container with I.A.E.A. Certificate #USA/9032/B(U)T and USNRC Certificate #USA/9032/B.

Optional Accessories



SOURCE POSITION INDICATOR TO-681



COLLIMATORS TO-714/TO-783

- TO-527 Collimator with stand for directional 60° (other angle optional) beam or 20° panoramic "band" beam.
- TO-613 Snout Switch used with the TO-681 Source Position Indicator. This switch will pass through a 3 cm hole.
- TO-534 Combination CO⁶⁰/Ir¹⁹² slide rule type exposure calculator with leather case.
- TO-782 Side Throw Collimator, with mounting bracket for right angle collimation of beam. Beam angle is 40° by 60° (other angles optional).
- TO-783 Forward Throw Collimator, with mounting bracket. Beam angle is 25° by 60° (other angles optional).
- TO-681 Source Position Indicator used in conjunction with TO-527 Collimator or the TO-613 Snout Switch. This unit provides a visual signal to indicate the source fully extended position.
- TO-714 Mini-Collimator giving 60° conical beam angle.

Specifications

		Metric Equivalents
Isotope:	Iridium ¹⁹² maximum capacity 100 curies Source assembly Model No. A424-9	
Application:	Radiography of steel from 0.5 to 2.5 inches thick. Light allows from 1.5 to 7.5 inches thick.	1.25 to 6.25 cm 4 to 19 cm
Shielding Material:	Depleted Uranium Metal 34 lbs.	15.4 Kg
Package Specification:	Meets I.A.E.A. and USNRC requirements for Type B packaging — I.A.E.A. Certificate #USA/9033/B(U)T; USNRC Certificate #USA/9033/B. Acceptable for all modes of transport.	
Operating Specification:	Standard control cable length 25 feet Standard source travel up to 21 feet (Longer length cables & source travel available on special order.)	7.6 m 6.4 m

Dimensions:	Projector length 12.75 in. height 9.5 in. width 4.75 in. weight 45 lbs.	32.5 cm 24 cm 12 cm 20.4 Kg
	Control, 664 Reel length 21 in. width 12 in. height 6.625 in. weight 22 lbs.	53.3 cm 30.5 cm 16.8 cm 10 Kg

Ordering Information

TO660-664

Portable radiographic unit for iridium¹⁹² sources up to 100 curies complete with reel type control, source guide tubes, tripod, and operating instructions.

TO660-693

Same as above except with pistol grip control.

A424-9

Source assembly for Model 660 System.

Control, 693 Pistol Grip	weight 19 lbs.	8.6 Kg
Guide Tubes 3 seven foot lengths	weight 5 lbs.	2.1 m 2.3 Kg
Tripod Stand	weight 10 lbs. height 24 inches	4.6 Kg 60 cm