

REGISTRY OF RADIOACTIVE SEALED SOURCE AND DEVICES
SAFETY EVALUATION OF DEVICE
(AMENDED)

NO: NR-313-D-102-S

DATE: JUN 0 6 1991

PAGE 1 of 4

DEVICE TYPE: Laser Target Designator/Ranger

MODEL: AN/AAS-38A LASER DESIGNATOR

MANUFACTURER/DISTRIBUTOR:

Loral Aerospace Corporation, Aeronutronic
Formerly Ford Aerospace Corporation
Aeronutronic Division
Ford Road
Newport Beach, CA 92658

SEALED SOURCE MODEL DESIGNATION: Amersham Model AMM

ISOTOPE:

Americium-241

MAXIMUM ACTIVITY:

9 microcuries

LEAK TEST FREQUENCY: Not Required

PRINCIPAL USE: (0) Ion Generators, Static Eliminators

CUSTOM DEVICE: X YES NO

CUSTOM USER: U.S. Department of Defense
Principally the U.S. Navy

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NO: NR-313-D-102-S

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PAGE 2 of 4

DEVICE TYPE: Laser Target Designator/Ranger

DESCRIPTION:

The Loral Aeronutronic Model AA/AAS-38A Laser is used for laser target range and designation. This device is attached to the Loral Aerospace F/A-18 forward looking infrared (FLIR) Pod located on the outer surface of the left engine inlet on the U.S. Navy F/A-18 aircraft.

The device is contained in an environmental controlled cavity (AN/AAS-38A FLIR Pod). The device shown in Figure Nos. 1 and 2, contains two NRC-approved americium-241 (Am-241) sources Model AMM, for the removal of static charge, one at each end of the laser's Q-Switch crystal permitting it to maintain its large characteristic discrimination ratio. The two sources are screwed and secured into the Optical Access Cover which is located on the laser transreceiver directly over the optics. The cover is an aircraft standard aluminum alloy machining, 7.5 inches long by 3.4 inches wide by 0.4 inches high, which mounts the sources. The optical elements of the laser are mounted within a sealed cavity directly below the cover. The cavity is approximately 1.7 inches deep and is also machined from aluminum. The sources are shown attached to the cover in Figure No. 5. The minimum thickness of the cover is .040 inches. The sources are placed approximately 1.5 inches apart and are threaded into the cover. An O-ring is placed between the chassis and cover. The cover is secured with seventeen screws and is opened only for depot maintenance. This prevents the ingress of moisture and the cavity is filled with dry nitrogen. Once assembled there is no access to the Am-241 sealed sources.

The Am-241 foil disk is crimped within a cylindrical stainless steel (304) housing. This sealed source is then placed in an aluminum holder and then secured within an aluminum threaded cylinder which is appropriately marked.

LABELING:

Each source assembly will be labeled on the sides of the threaded holder with the following: serial number, isotope, activity, and the trefoil radiation symbol. The Optical Access Cover will be labeled in accordance with 10 CFR 20.203 and is granted a color exemption.

DIAGRAM:

See Attachments 1 thru 4

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NO: NR-313-D-102-S

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PAGE 3 of 4

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CONDITIONS OF NORMAL USE:

The sealed sources have obtained an ANSI classification of C54545. The device is subjected to a military aircraft environment and is expected to have a service life of 15 years. The extremes of environment for which the device is designed to withstand are as follows: temperature -62°C to 95°C; vibrations 50-2000 Hertz; high humidity; salt fog; explosion; sand, dust, and fungus. Due to the sealed construction of both the Optical Module and the FLIR Pod, the device should not be affected by atmospheric conditions. *Low pressure?*

PROTOTYPE TESTING:

The manufacturer reports that the device was tested to MIL-specs except for salt, fog, and dust. The FLIR pod that has also been tested to meet military specifications (MIL-STD-810C). The device has been field tested in the configuration and with no incident of source failure.

EXTERNAL RADIATION LEVELS:

The manufacturer reports that there are no detectable radiation levels above background from the device.

QUALITY ASSURANCE AND CONTROL:

The quality control program for the laser contained in the module is implemented by Litton Laser Systems. Litton Laser Systems has supplied an adequate quality assurance and control program that conforms to MIL-Q-9858A. A copy of the quality requirements governing the supply of the sources is on file with the Material Licensing Branch.

A Certificate of Conformity ensuring that the device meets the design specifications is supplied with each source and further checked by the USA manufacturer. The USA manufacturer evaluates each component of the module to conform with MIL-specs.

REGISTRY OF RADIOACTIVE SEALED SOURCE AND DEVICES
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PAGE 4 OF 4

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LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- ° The devices shall be distributed only to the specific licensee referred to on this document (U.S. Department of Defense).
- ° Handling, Storage, Use, Transfer, and Disposal: Shall be determined by the licensing authority.
- ° Reviewer Note: Service to the inside of the Optical Module must also include a swipe test to determine if there is any removable contamination.
- ° This registration sheet and the information contained with the references shall not be changed without the written consent of the NRC.

SAFETY ANALYSIS SUMMARY:

Based on our review of the information and design of the device, the past history of the sealed source design, we conclude that Model AN/AAS-38A device is acceptable for custom licensing purposes. Furthermore, we conclude that this device would be expected to maintain its containment for normal condition of use which might occur during the uses specified in this registration sheet.

REFERENCES:

The following supporting documents for the Model AN/AAS-38A Laser Target Designator are hereby incorporated by reference and are made a part of this registry document:

- Application dated September 13, 1988 with enclosures thereto.
- Letter dated October 7, 1988, April 2, 1991 with enclosures thereto.

ISSUING AGENCY:

U.S. Nuclear Regulatory Commission

Date: JUN 06 1991

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Reviewer: Sharon M. Kich

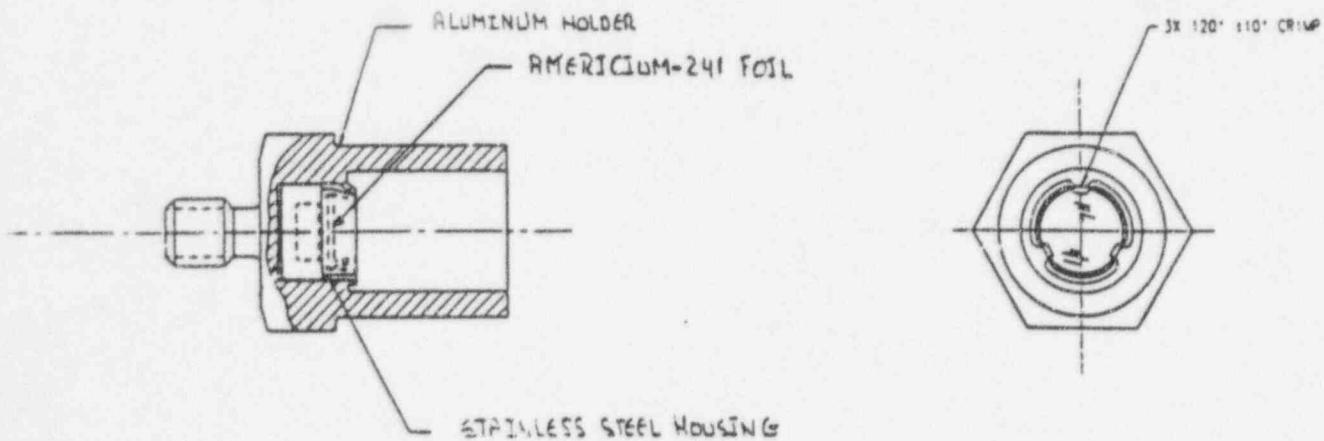
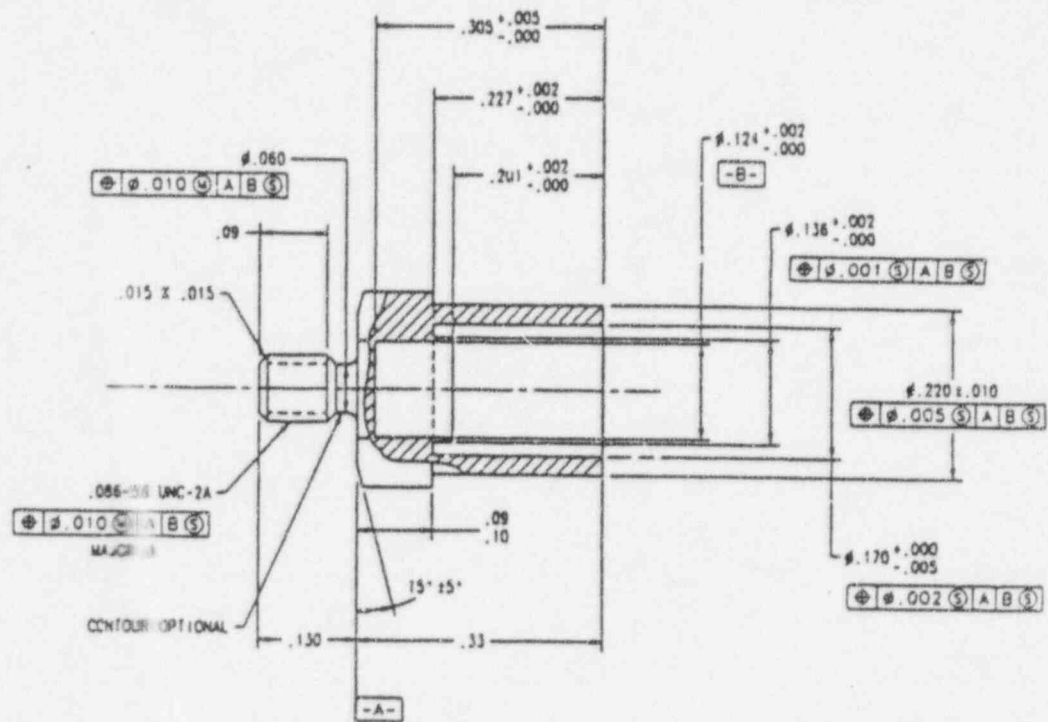
Concurrence: John A. [Signature]

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ATTACHMENT 1



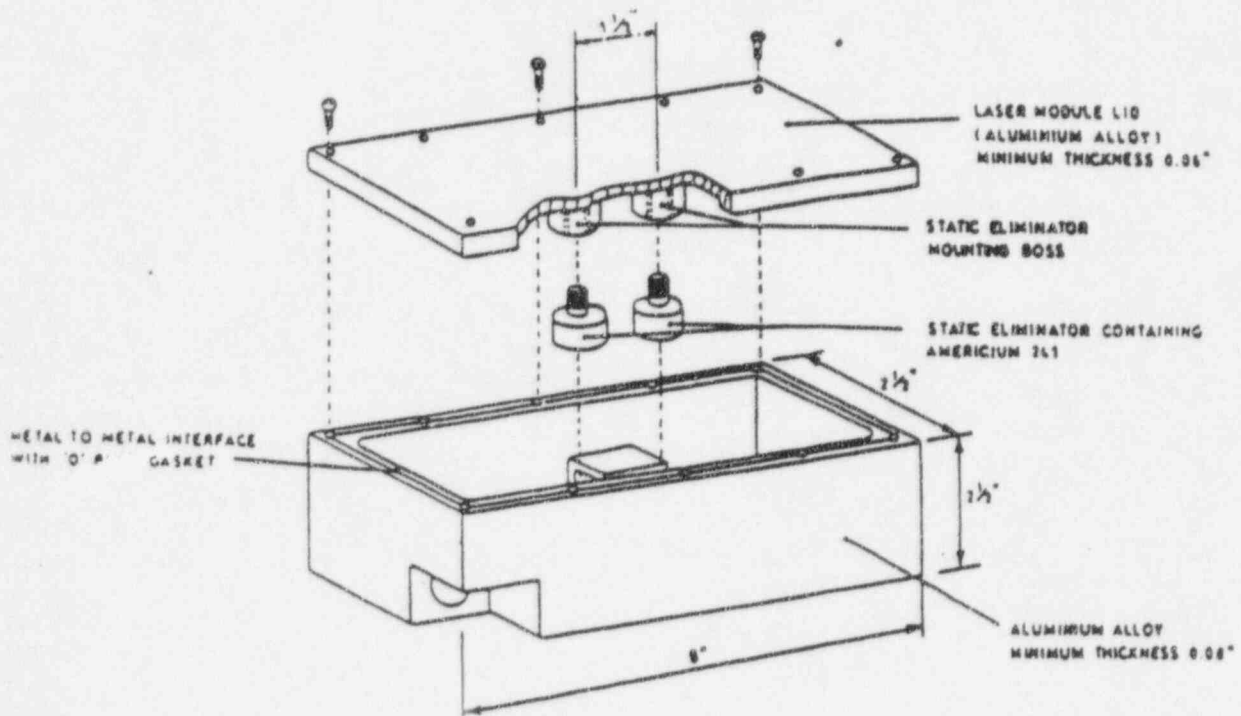
Sealed Source Assembly

REGISTRY OF RADIOACTIVE SEALED SOURCE AND DEVICES
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ATTACHMENT 2



OPTICAL MODULE WITH STATIC ELIMINATORS

REGISTRY OF RADIOACTIVE SEALED SOURCE AND DEVICES
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Date: JUN 06 1991

ATTACHMENT 3

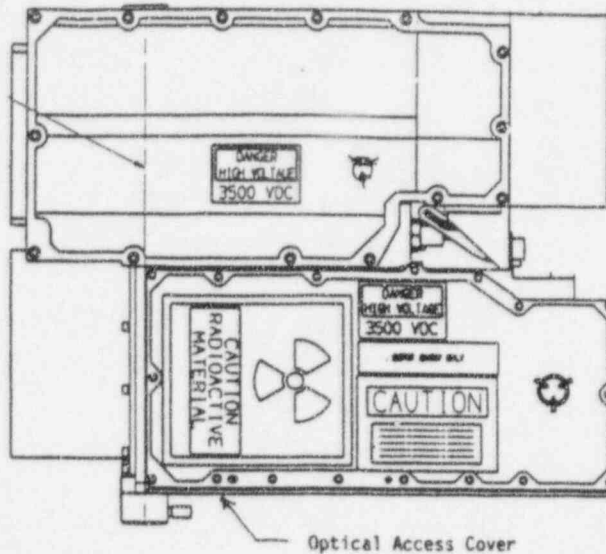


Figure No. 1 Laser Transceiver (Top View)

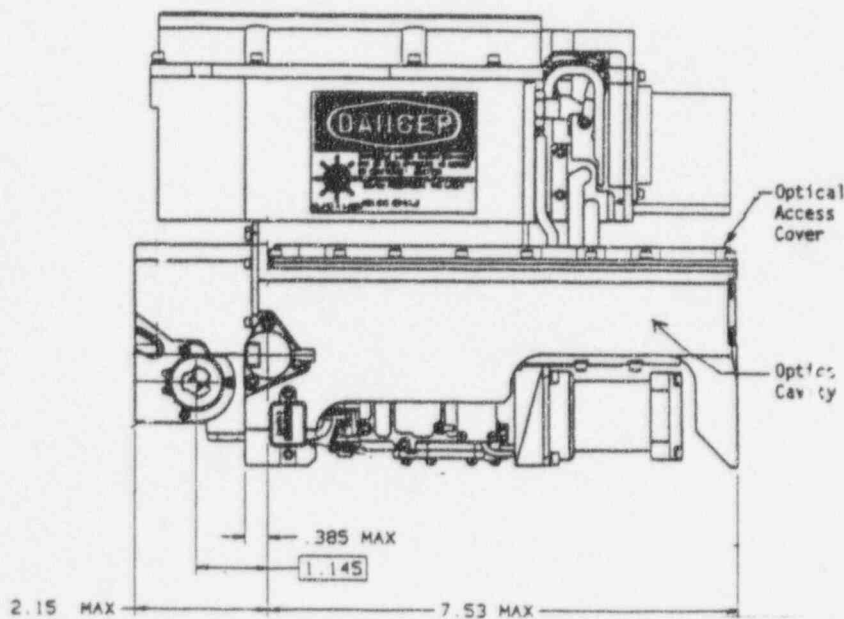


Figure No. 2 Laser Transceiver (Side View)

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