

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR-313-D-801-S

DATE: September 30, 1996

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DEVICE TYPE: Laser Target Designator/Ranger

MODEL: 117 Laser Designator

DISTRIBUTOR: Lockheed Martin Corporation,
Lockheed Martin Aeronutronic
(formerly Loral Aerospace Corp.,
Loral Aeronutronic; formerly Ford Aerospace)
29947 Avenida De La Banderas
Rancho Santa Margarita, CA 92688-7004

MANUFACTURER: Ferranti Defense Systems Ltd.
Laser Systems Group
Electro-Optics Department
Robertson Avenue
Edinburgh EH11 1PX, UK

SEALED SOURCE MODEL DESIGNATION: Amersham Model AMM.1001H

ISOTOPE:
Americium-241

MAXIMUM ACTIVITY:
9 μ Ci (333 kBq) total
[4.5 μ Ci (166.5 kBq) in
two sources]

LEAK TEST FREQUENCY: Not Required

PRINCIPAL USE: (O) 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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DEVICE TYPE: Laser Target Designator/Ranger

DESCRIPTION:

The Model 117 is used for laser target range and designation. This device is attached to the 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 environmentally controlled cavity (AN/AAS-38A FLIR Pod). The device contains two americium-241 foil sources (Amersham Model AMM.1001H) for 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 foil sources are mounted into threaded source holders which are secured into the inside of the lid of the Optical Module on the laser transceiver. The Optical Module consists of the sources, the optical elements of the laser, and an aircraft standard aluminum alloy case that measures approximately 10" x 2.5" x 2.5" (25 x 6 x 6 cm). The minimum thickness of the case and its lid is 0.60" (0.16 cm), but the edges are thicker to accommodate an O-ring. The sources are spaced 1.5" (3.8 cm) apart on the Optical Module lid. The lid is secured to the case by 10 threaded fasteners, and the Module is sealed from external contaminants by an O-ring placed between the case and the lid. The Optical Module is also slightly pressurized with dry nitrogen, and the O-ring maintains the pressure. Once assembled, there is no access to the internal space of the Optical Module or the Am-241 sources.

The 0.2" (5 mm) diameter Am-241 foil disk is bonded into the end of a 304 stainless steel cylindrical-shaped holder. A 16 mesh, 0.28" (7 mm) diameter, 304 stainless steel wire cloth is placed over the surface of the foil source and held in place by crimping the outer edges of the holder.

The Model 117 Laser Designator is an earlier version of the essentially similar RT-1673/AAS-38A. The model 117 Laser Designator is the designation given to the device by the manufacturer, Ferranti Defense Systems, Ltd. The US Navy claims that no Model 117 Laser Designators were ever received.

LABELING:

Each source assembly is labeled on the sides of the source holder with the following: serial number, isotope, activity, and the

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DEVICE TYPE: Laser Target Designator/Ranger

LABELING: (cont'd)

trefoil radiation symbol. The external surface of the Optical Module is labeled in accordance with 10 CFR 20.1904 and 20.1904.

DIAGRAM:

See Attachments 1, 2, 3, and 4

CONDITIONS OF NORMAL USE:

The sealed sources have obtained an ANSI N542-1977 classification of 77C54545. The device is subjected to a military aircraft external environment, however, due to the sensitivity of the Optical Module components, the sources are contained in a sealed and controlled dry nitrogen environment. The device 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 -80°F to 203°F (-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.

PROTOTYPE TESTING:

The distributor reports that the device was tested to MIL specs except for salt, fog, and dust. The FLIR Pod in which the device is located has also been tested to meet military specification MIL-STD-810C. The device was field tested with no incident of source failure.

EXTERNAL RADIATION LEVELS:

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

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QUALITY ASSURANCE AND CONTROL:

The quality control program for the laser designator was implemented by Ferranti Defense Systems and was in conformance with MIL-Q-9858A.

A Certificate of Conformity ensuring that the device met the design specifications was supplied with each unit and further checked by the US distributor. The US distributor evaluated each component of the module for conformance to MIL specs.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- The devices may be used only by the custom user listed on the first page of this document (U.S. Department of Defense, principally the US Navy).
- Handling, storage, use, transfer and disposal shall be determined by the licensing authority.
- This registration sheet and the information contained within the references shall not be changed without the written consent of the NRC.

SAFETY ANALYSIS SUMMARY:

The Model 117 Laser Designator is not a current product distributed by Lockheed Martin Corporation. The custom user (US Navy) of these devices claims that no model 117 Laser Designators were ever received.

Based on our review of the information and test data cited below, we continue to conclude that the Model 117 Laser Designator is acceptable for custom licensing purposes.

Furthermore, we continue to conclude that this device would be expected to maintain its containment integrity for normal and accidental conditions which might occur during uses specified in this certificate.

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REFERENCES:

The following supporting documents for the Model 117 devices are hereby incorporated by reference and are made a part of this registry document.

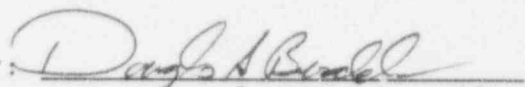
- Lockheed Martin Corporation letter dated May 21, 1996, with enclosures thereto.
- Department of the Navy letter dated September 17, 1992, with enclosures thereto.
- Loral Aerospace Corporation letter dated April 2, 1991, with enclosures thereto.
- Ford Aerospace letter dated October 7, 1988, with enclosures thereto.
- Ford Aerospace application dated September 13, 1988, with enclosures thereto.

ISSUING AGENCY:

U.S. Nuclear Regulatory Commission

Date: September 30, 1996

Reviewer:


Douglas A. Broadus

Date: September 30, 1996

Concurrence:

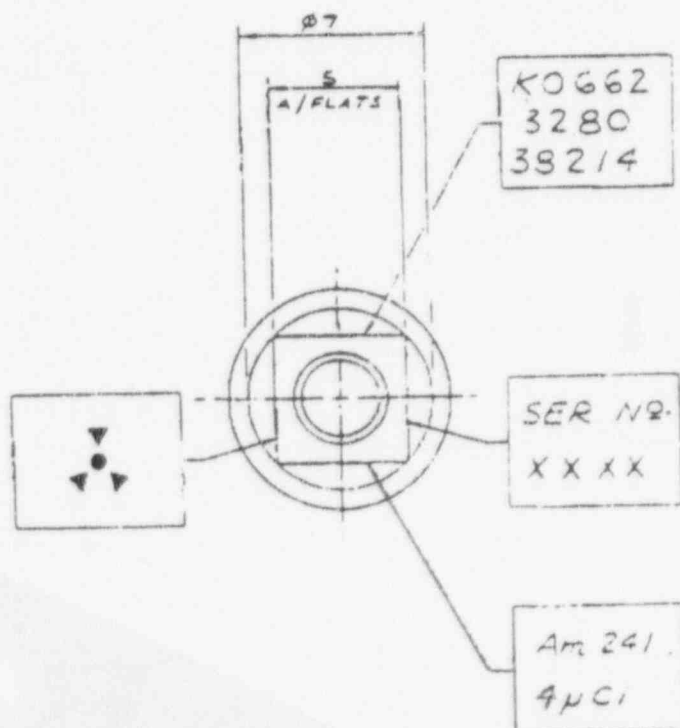
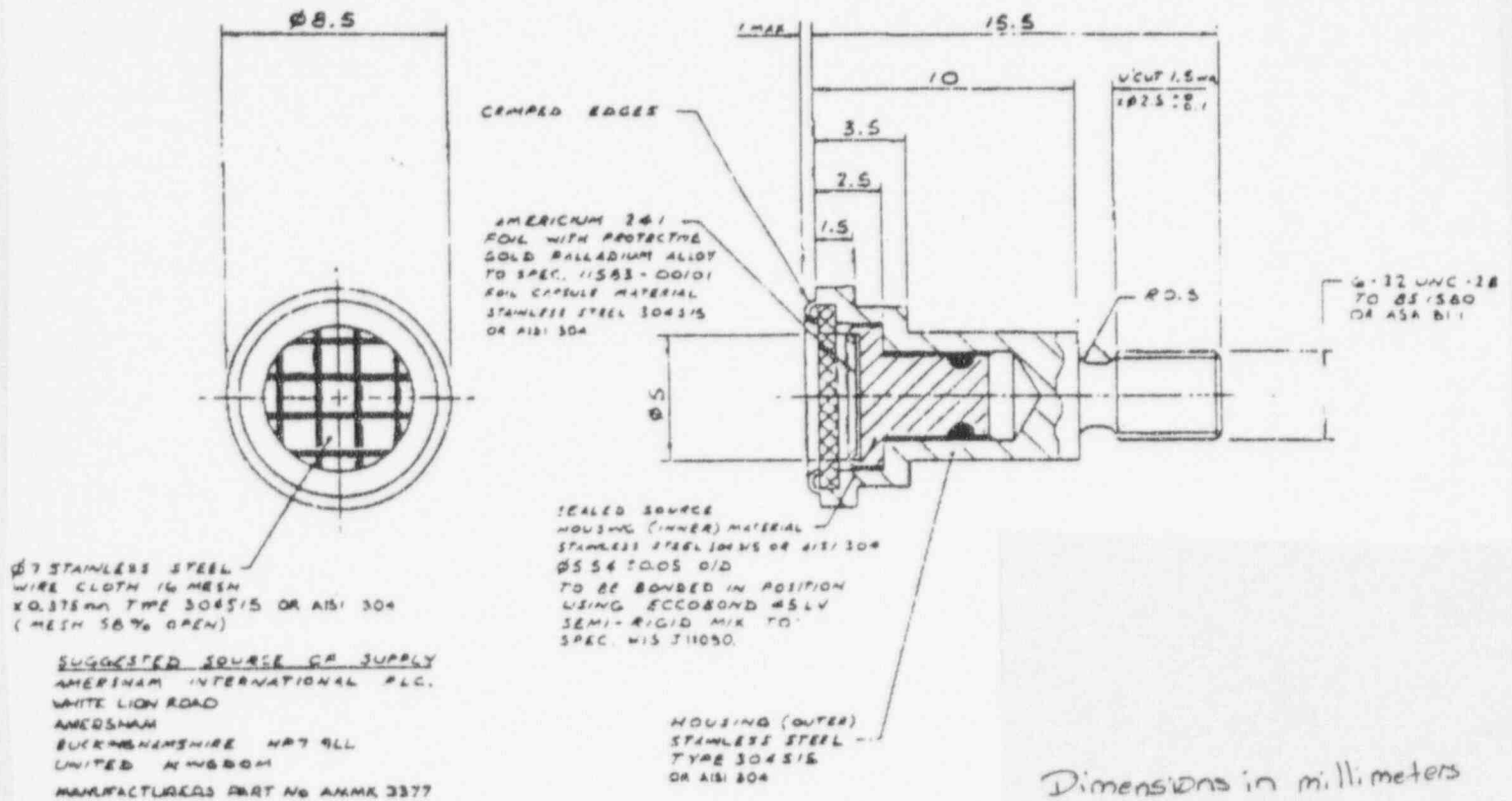

Steven L. Baggett

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ATTACHMENT 1

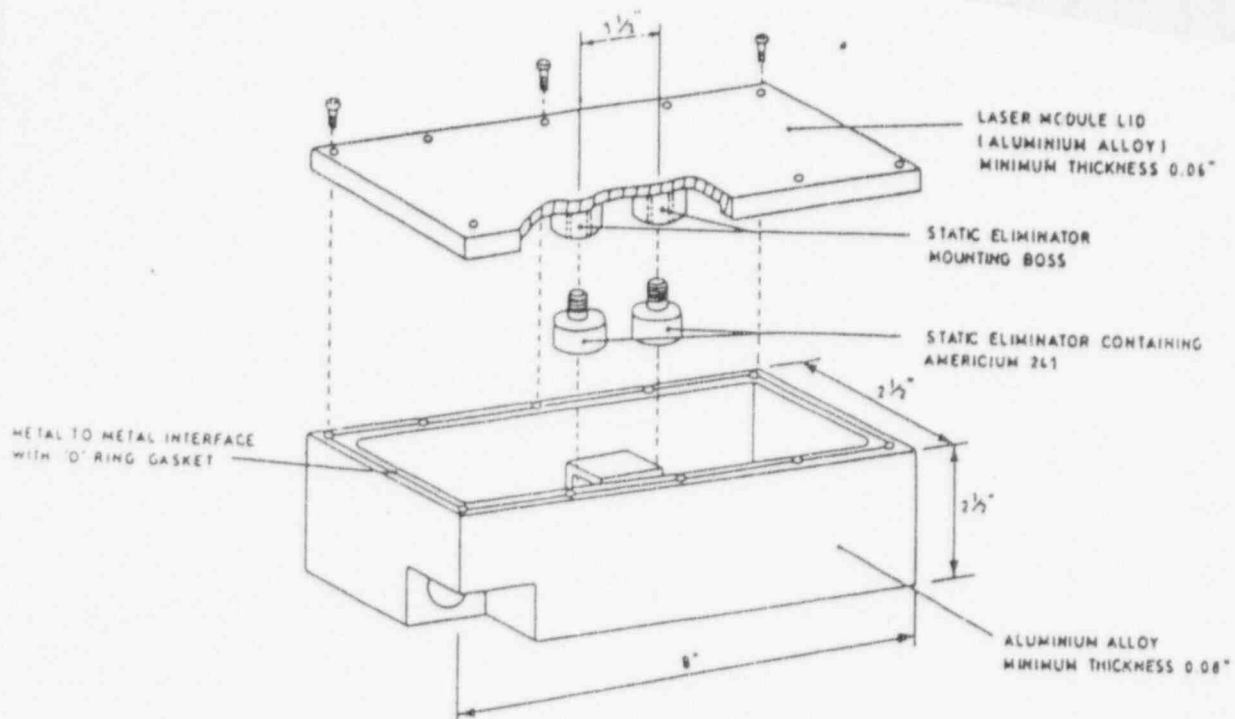


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ATTACHMENT 2



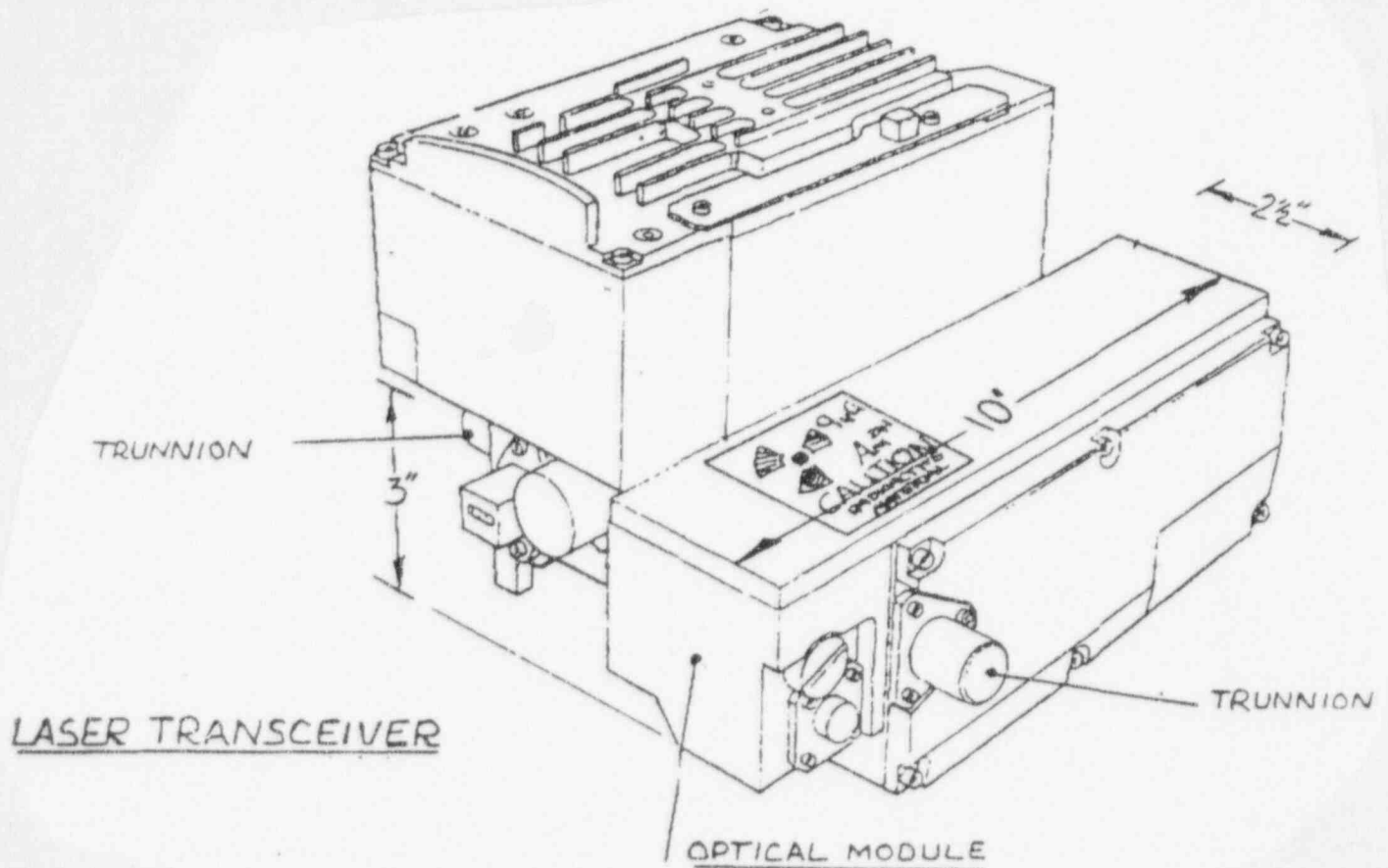
OPTICAL MODULE WITH STATIC ELIMINATORS

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ATTACHMENT 3

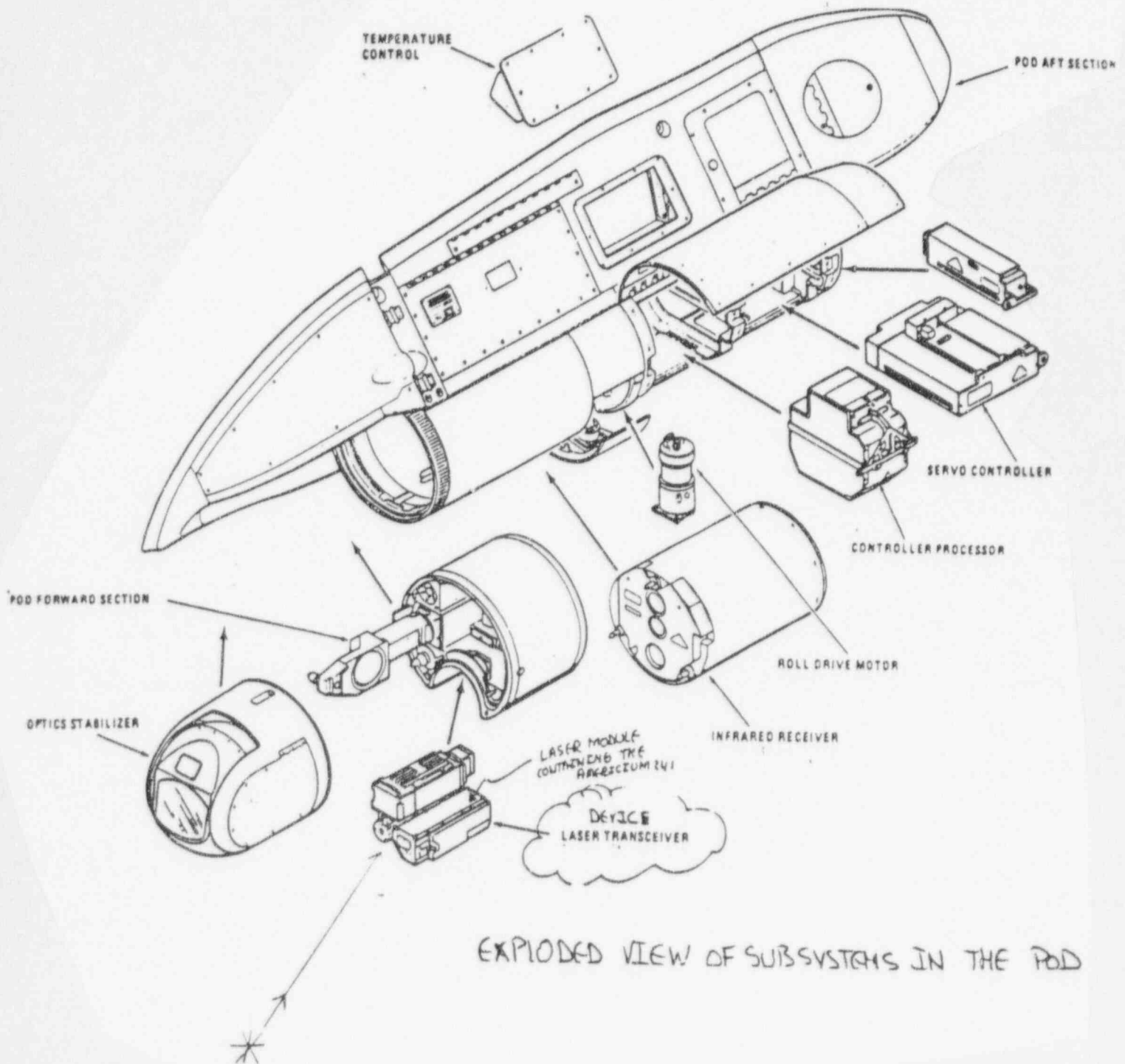


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ATTACHMENT 4



September 30, 1996

Robert H. Swenson
Lockheed Martin Aeronutronic
29947 Avenida De Las Banderas
P.O. Box 7004
Rancho Santa Margarita, CA 92688-7004

Dear Mr. Swenson:

Based on the information and test data submitted in your application dated June 14, 1995, and subsequent letters, with enclosures thereto, we conclude the Model RT-1673/AAS-38A Laser Transceiver (formerly AN/AAS-38A and 117 Laser Designators) is acceptable for licensing purposes in accordance with the conditions of registration certificate NR-0313-D-102-S (enclosed). Also, in accordance with your request, we have transferred registration certificate NR-0313-D-101-S to inactive status. The new certificate number is NR-0313-D-801-S.

Please be advised that you must manufacture and distribute the product in accordance with the statements and representations contained in your application, with enclosures thereto, and the information set out in your registration certificate. As a general rule, you must request and obtain an amendment to the certificate before you make changes or modifications to the information submitted to obtain the certificate.

Please read over the registration certificate in its entirety and notify us immediately of any errors or omissions. You are obligated to notify us promptly in writing should you decide to no longer manufacture or offer service support for the product. Please be aware that, as a holder of an NRC registration, you may be subject to the NRC's licensing and inspection fees in accordance with 10 CFR Part 170, and annual fees in accordance with 10 CFR Part 171. If you have any questions concerning the fee requirements, please contact the License Fee and Debt Collection Branch at (301) 415-7554.

If you have any questions, please contact me at (301) 415-5847 or Mr. Steven Baggett at (301) 415-7273.

Sincerely,

Douglas A. Broadus, Mechanical Engineer
Sealed Source Safety Section
Medical, Academic, and Commercial
Use Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Enclosure: As stated
cc w/encl: SKimberley, LFDCB

Distribution:

SSD-95-61 SSSS r/f

SSD-95-52 NE01

SSD File # NR-0313-D-102-S

SSD File # NR-0313-D-801-S

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