

VOID SHEET

TO: License Fee Management Branch

FROM: RIII - Loren Hueter

SUBJECT: VOIDED APPLICATION

Control Number: 303444

Applicant: Dept. of the army

License Number: 12-00722-13

Docket Number: 030-21073

Date Voided: 8-30-98

Reason for Void: Renewal of this license would serve no useful purpose as it will be terminated concurrent with the renewal of Lic. No. 12-00722-06, which will cover all the licensed activities covered by this license.

Signature Loren J. Hueter

Date 8-30-98

Attachment:  
Official Record Copy of  
Voided Action

FOR LFMB USE ONLY

☐ Refund Authorized and processed

☒ No Refund Due

☒ Fee Exempt or Fee Not Required

Comments: 03021073

Log completed ☒

Processed by: SAC 8/26/98

9809020048 980826  
PDR ADOCK 03021073  
B PDR

ML  
3P DH

(FOR LFMS USE)  
INFORMATION FROM LTS

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: Program Code: 03124
: Status Code: 2
: Fee Category: EX 3P
: Exp. Date: 19950331
: Fee Comments: 170.11(A)(5)
: Decom Fin Assur Req'd: N

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## A. REGION

Applicant/Licensee: ARMY, DEPARTMENT OF THE  
Received Date: 971031  
Docket No: 3021073  
Control No.: 303444  
License No.: 12-00722-13  
Action Type: Renewal

Amount: 0  
Check No.: 0

Signed \_\_\_\_\_  
Date 11-13-92

1. Fee Category and Amount: \_\_\_\_\_

|           |       |
|-----------|-------|
| Amendment | ----- |
| Renewal   | ----- |
| License   | ----- |

Signed \_\_\_\_\_  
Date \_\_\_\_\_

**FEE EXEMPT**





DEPARTMENT OF THE ARMY  
UNITED STATES ARMY TANK - AUTOMOTIVE AND ARMAMENT COMMAND  
ARMAMENT AND CHEMICAL ACQUISITION AND LOGISTICS ACTIVITY  
ROCK ISLAND, ILLINOIS 61299-7630

REPLY TO  
ATTENTION OF

October 29, 1997

Office of the Director, Armament and  
Chemical Acquisition and Logistics Activity

Ms. Kasandra Fraiser  
U.S. Nuclear Regulatory Commission  
Division of Materials Licensing  
801 Warrenville Road  
Lisle, Illinois 60532-4351

Dear Ms. Fraiser:

Enclosed with this memorandum is a single application for the renewal of the licenses 12-00722-06, -13 and 14. This meets the commitment of the TACOM-ACALA to provide an updated renewal application for the 12-00722-06, and -13 licenses by 31 October 1997 and addresses the renewal of the 12-00722-14 license for Nickel-63 which expires on 31 March 1998.

This application incorporates the essential provisions of the three previous licenses into a single program. We request the license be renewed in its entirety under the license number 12-00722-06.

We further request that the licenses 12-00722-13 and 12-00722-14 be terminated.

Previous authorization was granted to exempt the radiation symbol on fielded items of equipment from the normal colored marking (10 CFR Section 20.1901(a)). This exemption was granted to prevent compromise of the equipment and crew under battlefield conditions. This exemption is requested to be continued as silver or red on black; or as black on green as illustrated in the renewal package.

In addition in future correspondence Mr. Vernon E. Vondera, Chief of the TACOM-ACALA Safety Office, will have my authority to sign for routine license matters.

RECEIVED

OCT 31 1997

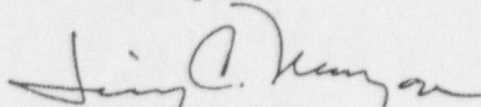
REGION III

FEE EXEMPT

OCT 31 1997

The point of contact for this action is Mr. Jeff Havenner  
(309) 782-2965.

Sincerely,

A handwritten signature in dark ink, appearing to read "Jimmy C. Morgan". The signature is fluid and cursive, with the first name "Jimmy" and last name "Morgan" clearly distinguishable.

Jimmy C. Morgan  
Director, Armament and Chemical  
Acquisition and Logistics Activity

Enclosure

## APPLICATION FOR MATERIAL LICENSE

ESTIMATED BURDEN FOR RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 8 HOURS. SUBMITTAL OF THE APPLICATION IS NECESSARY TO DETERMINE THAT THE APPLICANT IS QUALIFIED AND THAT ADEQUATE PROCEDURES EXIST TO PROTECT THE PUBLIC HEALTH AND SAFETY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MRSB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0123), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

## APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY  
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS  
U.S. NUCLEAR REGULATORY COMMISSION  
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

## IF YOU ARE LOCATED IN:

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND,  
MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA,  
RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

LICENSING ASSISTANT SECTION  
NUCLEAR MATERIALS SAFETY BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406 1415

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO  
RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,  
SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION II  
101 MARIETTA STREET, NW, SUITE 2900  
ATLANTA, GA 30333-0199

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

## IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN,  
SEND APPLICATIONS TO:

MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, IL 60137-5327

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW  
MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING,  
SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
811 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TX 76011-8064

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S.  
TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

RADIOACTIVE MATERIALS SAFETY BRANCH  
U.S. NUCLEAR REGULATORY COMMISSION, REGION V  
1450 MARIA LANE  
WALNUT CREEK, CA 94596-5363

## 1. THIS IS AN APPLICATION FOR (Check appropriate item)

- ☐ A. NEW LICENSE  
☐ B. AMENDMENT TO LICENSE NUMBER \_\_\_\_\_  
☒ C. RENEWAL OF LICENSE NUMBER 12-00722-06

## 2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip code)

DIRECTOR, Armament and Chemical Acquisition  
and Logistics Activity  
ATTN: AMSTA-AC-SF  
Rock Island, IL 61299-7630

## 3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

DoD Facilities and Temporary Job Sites world wide

## 4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Jeffrey A. Havenner

TELEPHONE NUMBER  
(309) 782-2965

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

|  |   |
|--|---|
| 5. RADIOACTIVE MATERIAL<br>a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time<br><u>See Item 5, application</u>   | 6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED<br><u>See Item 6, application</u>                      |
| 7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE<br><u>See Item 7, application</u>  | 8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS<br><u>See Item 8, application</u>      |
| 9. FACILITIES AND EQUIPMENT<br><u>See Item 9, application</u>  | 10. RADIATION SAFETY PROGRAM<br><u>See Item 10, application</u>   |
| 11. WASTE MANAGEMENT<br><u>See Item 11, application</u>  | 12. LICENSEE FEES (See 10 CFR 170 and Section 170.31)<br>FEE CATEGORY <u>EXEMPT</u> AMOUNT <u>ENCLOSED \$</u> |
| 13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.<br><br>THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39 AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.<br><br>WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1943 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION. |   |

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

Jimmy C. Morgan

SIGNATURE

*Jimmy C. Morgan*

DATE

10/29/97

## FOR NRC USE ONLY

|             |         |              |                 |              |          |
|-------------|---------|--------------|-----------------|--------------|----------|
| TYPE OF FEE | FEE LOG | FEE CATEGORY | AMOUNT RECEIVED | CHECK NUMBER | COMMENTS |
|             |         |              | \$              |              |          |
| APPROVED BY |         |              |                 | DATE         |          |



ITEM 5. Radioactive Material.

1. Elements and mass numbers: Hydrogen-3, Promethium-147, Nickel-63, and Americium-241.

2. Chemical and physical form:

a. Tritium gas sealed with phosphor in glass ampoules containing less than 1 percent tritium oxide. Drawings of current configurations of the sources are at enclosure 1.

b. Promethium-147 bound ceramic microspheres sealed with phosphor in glass ampoules. Drawings of current configurations of the sources are at enclosure 1.

c. Nickel 63 metal plated on a brass cylinder. Drawings of current configurations of the sources are at enclosure 1.

d. Americium oxide as a foil. Drawings of current configurations of the sources are at enclosure 1.

3. Maximum amount that will be possessed at any one time:

a. Hydrogen-3.

(1) Fire Control Devices:  $1.5 \times 10^6$  curies tritium total. Maximum activity per source is 10 curies  $\pm$  10%.

(2) Tritium Rifle Sights: 9 curies total.

b. Promethium-147: 1 curie total.

c. Nickel-63: Maximum amount that will be possessed at any one time is not to exceed 1,500 curies ( $1.5 \times 10^6$  millicuries) total and a maximum of 13 millicuries per source.

d. Americium-241: Maximum amount that will be possessed at any one time: 30 curies or a maximum of 100,000 sources. Each individual source will contain a maximum of 300 microcuries.

Item 6. Purpose for Which Licensed Material will be Used.

1. Hydrogen-3 will be used to excite a phosphor contained in sealed sources. The sealed sources are used to illuminate scales, counters, level vials, reticules, and aiming posts for optical fire control devices.

a. The fire control devices are used for sighting and firing weapon systems including artillery, tanks, mortars and howitzers. Drawings for the devices are provided at enclosure 2.

b. The byproduct material will be used as phosphor exciters contained in sealed sources on rifle sights. These sealed sources are used in the front post sight of the M16A1 rifles. . These devices will be used by the U.S. Army, the National Guard and U.S. Marine Corps on Department of Defense (DOD) installations and temporary job (field) sites throughout the United States and the world. Drawings for the devices are provided at enclosure 2

2. Promethium-147. The byproduct material will be used as phosphor exciters contained in sealed sources on rifle sights. These sealed sources are used in the front post sight of the M16A1 rifles. Specification Drawings are provided at enclosure 2.

3. The nickel 63 sources described in this application are integral parts of the Chemical Agent Monitor (CAM), Improved Chemical Agent Monitor (ICAM) and the GID-3 Automatic Chemical Agent Detector (ACADA) which are gas detection devices. These devices are used to detect and notify soldiers of the presence of various types of toxic gasses on the battlefield or in potential terrorist situations. These devices are either hand held (CAM and ICAM) or ground emplaced/vehicle mounted (ACADA). . This device will be used by the U.S. Army, the National Guard on Department of Defense (DOD) installations and temporary job (field) sites throughout the United States and the world. Device drawings are provided at enclosure 2.

4. The americium-241 sources described in this application is an integral part of the M43A1 Chemical Agent Detector. This instrument is used to detect and warn soldiers of the presence of toxic nerve gases on the battlefield. The Am-241 source is located in the cell module of the detector and is a foil disk made of americium oxide in a gold matrix. The foil disk is fixed using epoxy bond, between a gold-palladium alloy face and a silver backing. This assembly is

affixed, again using epoxy to a metal screen that is secured by a retainer ring within the sensing cell module. The source is special form. The cell module itself is a zinc metal alloy box that is designed to preclude direct contact with the source either by operators or by personnel servicing the instrument.

The M43A1 CAD functions in a manner similar to a household smoke detector but is intended specifically to detect the presence of battlefield chemical agents and warn troops of their presence. It is intended to be used outdoors either placed on the ground or on the exterior of a vehicle by special mounting. Indoor operation for training or maintenance purposes must use a filter designed to affix to the air outlet port of the instrument. . This device will be used by the U.S. Army, the National Guard and U.S. Marine Corps on Department of Defense (DOD) installations and temporary job (field) sites throughout the United States and the world. Device drawings are provided at enclosure 2.

5. Information about the devices in this license is summarized in a table identifying the devices by model number, NRC registration number, number of sources, source drawing number, and total curies per device is at enclosure 3.



Item 7. Individuals Responsible for Radiation Safety Protection Program and their training and experience.

1. The radiation safety program is administered under the technical supervision of the ACALA health physicists. Mr. Jeffrey Havenner is designated as the Radiation Safety Officer (RSO). Mr. Tim Mohs is designated as the Alternate Radiation Safety Officer (ARSO) and Mr. Gavin Ziegler is designated as the Assistant Radiation Safety Officer.

2. Resumes for the health physicists are at enclosure 4.

Item 8. Training For Individuals Working In Or Frequenting Restricted Areas.

Training requirements for individuals working in or frequenting restricted areas where radioactive material authorized under this license will be listed by device.

1. User/Maintainer Level.

a. Individual User. Users of ACALA radioactive commodities are those individuals who place in operation or operate devices containing radioactive sources. The individual user is authorized possession, use and performance of operational checks and services only. Individual users of ACALA radioactive commodities will receive initial radiation safety training that includes safe handling procedures, biological effects and emergency procedures. Annual refresher training will be required thereafter. Unit commanders will be responsible for ensuring that training is conducted for devices possessed and will ensure that training records are kept for inspection by the installation RPO and the licensee.

b. Maintenance Support. Maintenance Personnel are responsible for repair of ACALA radioactive commodities beyond the level of performing checks and services in connection with operating the device. Maintenance personnel will receive initial radiation safety training that includes safe handling procedures, survey procedures, specific hazards of isotopes in devices maintained, leak test and emergency procedures. Training will be provided either by Army Specialty School, on the job training or by courses authorized by the licensee. Job proficiency evaluation prior to starting work is acceptable as proof of training. Job evaluation will be required annually after assuming duties. Records of maintenance personnel training and/or job evaluations will be maintained by maintenance shop supervisor/commander and available for inspection by the installation RPO and the licensee.

c. Installation RPO. The installation RPO is required to have 40 hours of formal training prior to assuming the duties and have a job proficiency evaluation every 2 years. The training includes hazards and biological effects of isotopes in the commodities located at the installation; emergency procedures; detection and measurement of radioactivity; calculations based on measurements; and good radiation program practices for storage, monitoring, decontamination, disposal.

### 3. Depot.

a. Maintenance Personnel. The depot RPO provides at least 8 hours training to these individuals prior to assuming duties. They will receive 4 hours of refresher training every two years thereafter. They will be informed that they will be working with specific radioactive material in controlled areas and are subject to public dose limits of 10 CFR part 20.1301 not to exceed 100 mREM per year. Records of personnel training include a brief outline of the instructions, a list of persons who receive these instructions, and date presented. The instructions include:

(1) Hazards of the radio nuclides they will be working with.

(2) Emergency and notification procedures.

(3) Safe working techniques and proper use of protective equipment.

(4) Proper transportation procedures.

#### b. Depot RPO.

(1) The Depot RPO is required to have a minimum of 80 hours training in the following material:

(a) Principles and practices of radiation protection.

(b) Radioactivity measurement standardization, monitoring techniques, and instrumentation.

(c) Mathematics and calculations basic to the use and measurement of radioactivity.

(d) Biological effects of radiation.

(2) Courses used to meet the above requirements will be approved by the licensee.



## Item 9. Facilities and Equipment.

### 1. Operator and Unit Use.

a. Security and Control. Users are required to secure from unauthorized removal of, or access to military equipment containing radioactive materials when in storage. Users must control and safeguard weapons or devices containing licensed radioactive material when not in storage from loss, theft or damage.

b. Storage Areas. Storage areas will be so located as to be free from danger of flooding and outside the danger radius of flammable materials and explosives. In addition, tritium Fire Control Device storage areas will have adequate ventilation to prevent undue exposure to personnel entering or working in the facility. All storage areas will be posted as follows:

(1) Warning Signs. Areas where radioactive commodities are stored will be posted with conspicuous signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)." Signs stating "No eating, drinking, or smoking" will be posted in storage and maintenance areas. Exceptions to this requirement are controlled areas such as motor pools, storage yards, etc., which need not be posted when the fire control device is attached to or inside a carrying case attached to (or closely associated with) the end item (i.e. artillery, howitzers, and tracked vehicles).

(2) In addition, maintenance areas will also post copies of the following:

- (a) NRC Form 3.
- (b) Copies of 10 CFR Parts 19, 20.\*
- (c) Copy of the ACALA NRC License.\*
- (d) Energy Reorganization Act.\*

\*In lieu of posting documents, a notice may be posted with the NRC Form 3 that describes the above documents and where the documents may be examined.

### 2. Maintenance Support.

a. Security and Control. Maintenance personnel are required to secure from unauthorized removal or access military equipment containing radioactive materials that are in storage. When removed from storage, licensed material will be safe guarded against loss, theft or damage.

b. Storage Areas. Storage areas will be so located as to be free from danger of flooding and outside the danger radius of flammable materials and explosives. In addition, tritium Fire Control Device storage areas will have adequate ventilation to prevent undue exposure to personnel entering or working in the facility.

c. Posting Warning Signs.

(1) Areas where radioactive commodities are stored will be posted with conspicuous signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)." "No eating, drinking, or smoking" signs will be posted in storage and maintenance areas. Controlled areas such as motor pools, storage yards, etc., need not be posted when the fire control device is attached to or inside a carrying case attached to (or closely associated with) the end item (i.e., artillery, howitzers, and tracked vehicles).

(2) In addition, maintenance and storage areas will also post copies of the following:

- (a) NRC Form 3.
- (b) Copies of 10 CFR Parts 19, 20.\*
- (c) Copy of the ACALA NRC License.\*
- (d) Energy Reorganization Act.\*

\*In lieu of posting documents, a notice may be posted with the NRC Form 3 that describes the above documents and where the documents may be examined.

### 3. Depot-Level Maintenance.

Army Depot installations that have been approved by the licensee are authorized to perform depot-level maintenance and store ACALA radioactive commodities in accordance with the following criteria:

a. Fire Control Devices. Depot-level maintenance facilities will have a Tritium Instrument Repair Room (TIRR) with the following specifications:

(1) Air Monitoring. A tritium air monitor is required for each bulk storage location set to alarm at no higher than  $5 \times 10^{-6}$  micro curie/ml.

(2) Fume Hoods. All actions on devices with broken sources will be performed inside an exhaust hood. The hood will have an average face velocity of at least 100 linear feet per minute with the shield in the operating position.

(3) Storage. Storage of items awaiting repair will be in areas separate from the TIRR. Storage area posting requirements apply for these areas.

(4) Ventilation. Areas with personnel working with tritium must have adequate ventilation to prevent undue exposure to personnel.

b. Additionally, for all non tritium commodities Army Depot maintenance facilities will:

(1) Store radioactive commodities in rooms, buildings, or caged areas designated for storage of radioactive items. There is no limit to the number of like commodities per storage area. The storage areas will be so located as to be free from danger of flooding and outside the radius of flammable materials and explosives.

(2) Perform area wipe test surveys quarterly. Wipe tests will be analyzed with the appropriate counting system. Surveys will also be performed at the end of each work day when maintenance or repair is performed on a radioactive commodity.

(3) Post Warning Signs in conspicuous areas bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)." "No eating, drinking, or smoking" signs will be posted in storage and maintenance areas. Controlled areas such as motor pools, storage yards, etc., need not be posted when the fire control device is attached to or inside a carrying case attached to (or closely associated with) the end item (i.e., rifles, mortars, artillery, howitzers, and tracked vehicles). In addition, Maintenance facilities will also post copies of the following:

(a) NRC Form 3.

(b) Copies of 10 CFR Parts 19, 20.\*



(c) Copy of the ACALA NRC License.\*

(d) Energy Reorganization Act\*

\*In lieu of posting documents, a notice may be posted with the NRC Form 3 that describes the above documents and where the documents may be examined.

4. Bulk Storage. Army Depot installations that have been specifically approved by the licensee are authorized to store bulk quantities of radioactive commodities in accordance with the following specifications:

a. Fire Control Devices.

(1) Surveys. Area wipe test surveys will be taken quarterly. Wipe tests will be analyzed with the appropriate counting system.

(2) Air Monitoring. A tritium air monitor is required for each fire control device bulk storage location set to alarm at no higher than  $5 \times 10^{-6}$  micro curie/ml.

(3) Storage. Each bulk storage quantity of 10,000 curies will be separated by a fire proof wall or a separation distance of 10 feet.

(4) Ventilation. Areas with personnel working must have adequate ventilation.

b. Other ACALA Radioactive commodities.

(1) Storage. Radioactive commodities will be stored in rooms; buildings, or caged areas designated for storage of radioactive items. There is no limit to the number of non-tritium commodities per storage area. The storage areas will be so located as to be free from danger of flooding and outside the radius of flammable materials and explosives.

(2) Surveys. Storage areas will be wipe tested quarterly. Wipe tests will be analyzed with the appropriate counting system.

(3) Posting Warning Signs. Areas where radioactive commodities are stored will be posted with conspicuous signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)". "No eating, drinking, or smoking" signs will be posted in storage and maintenance areas. Controlled areas such as motor pools, storage yards, etc.,

need not be posted when the fire control device is attached to or inside a carrying case attached to (or closely associated with) the end item (i.e., rifles, mortars, artillery, howitzers, and tracked vehicles). In addition, bulk storage areas will also post copies of the following:

- (a) NRC Form 3.
- (b) Copies of 10 CFR Parts 19, 20.\*
- (c) Copy of the ACALA NRC License.\*
- (d) Energy Reorganization Act\*

\*In lieu of posting documents, a notice may be posted with the NRC Form 3 that describes the above documents and where the documents may be examined.

#### 5. Radiation Detection Instruments.

a. Users and DS Maintenance facilities will have appropriate survey instruments as listed in Table 1 Below. Area wipe test analyses will be performed at the installation, if available, or at one of the approved laboratories listed in Item 10.

b. Installations authorized bulk storage or depot-level maintenance will have as a minimum the instrumentation listed in table 1.

TABLE 1

| TYPE OF INSTRUMENT                  | NUMBER<br>AVAILABLE                     |
|-------------------------------------|---|
| =====                               |   |
| Liquid Scintillation<br>System      | Minimum 1 per<br>bulk storage depot     |
| Air Monitor<br>(tritium)            | Minimum 1 per<br>depot maintenance area |
| AN/VDR-2 or similar<br>(beta/gamma) | Minimum 2 per<br>maintenance unit       |
| AN/PDR-77 or similar<br>(alpha)     | Minimum 2 per unit<br>maintenance unit  |

c. Calibration.

(1) Survey meters will be calibrated at least annually and calibration standards used will be traceable to National Institute of Standards Technology (NIST).

(2) Air monitors used under this license are calibrated at intervals not to exceed one year.

(3) Liquid scintillation counters used to evaluate wipe tests are calibrated in-house at three month intervals.



Item 10. Radiation Safety Program.

1. The U.S. Army Armament and Chemical Acquisition and Logistics Activity (ACALA) is responsible for management and support of all radioactive commodities covered by this license. Responsibilities include license management functions performed by the ACALA safety staff (Item 7), and operation of the radiation protection program. The commodities covered by this application are issued to United States Army, active, reserve and National Guard units at locations world wide.

a. Management:

The ACALA safety staff is assisted in executing the radiation safety program for its NRC licenses by product center supply management specialists, equipment specialists, engineers and procurement personnel assigned to the management of the various commodities.

b. Radiation Safety Inspection Program.

(1) The ACALA safety staff conducts a regular program of license compliance inspections at depots, posts, camps and stations where commodities are used, stored and/or maintained under this license. The inspection program cycle is once every five years for each installation. The ACALA is assisted by other Army Materiel Command radioactive commodity license holders in the performance of the inspections. In addition the Army Center for Health Promotion and Preventive Medicine (CHPPM) at Aberdeen Maryland, is authorized conduct radiation safety inspections under the provisions of this license and provides reports to the ACALA Safety Office.

(2) The ACALA is assisted in the conduct of a program of inspections of the Army National Guard by the U.S. Army Communications Electronics Command (CECOM), which is designated as Radiation Protection Officer (RPO) for Army National Guard units. The CECOM inspectors provide copies of their reports to this office.

(3) The ACALA Radiation Safety Program will be reviewed at least annually in accordance with 10 CFR 20.1101.

2. Radiation Safety Supervision.

a. Commanders of installations that receive, store, ship, use, transport, maintain and/or dispose of material covered under this license are responsible for accounting for appointing a properly trained radiation protection officer and for assuring compliance with the provisions of this program at the installation.

b. The installation Radiation Protection Officer (RPO) at user locations and depots acts as the licensee's representative ensuring that license conditions are fulfilled at the site where the material is located. The task of the RPO at every depot, installation, Reserve Region or State National Guard Organization is to ensure the safe handling, storage and maintenance of commodities containing radioactive sources. In addition the installation RPO is responsible for the following:

(1) Inventory. Ensure that an up to date inventory of radioactive commodities is available at the installation

(2) Training. Ensure that training for individuals working with licensed material is accomplished and records are available at the installation.

(3) Incident Response and Reporting:

(a) The installation RPO responds to incidents and or accidents involving potential release or loss of licensed material at that location. This includes ensuring that any release is identified and contained, that potentially exposed individuals are identified and steps to determine any doses are initiated. When loss of licensed materials is suspected, the installation RPO coordinates immediate efforts to recover the material using resources from the installation.

(b) The installation RPO reports loss or theft to the ACALA RSO and to the Installation's higher Army Headquarters. (see incident notification tree at enclosure 5) 10 CFR 20.2201; 30.50

(c) The ACALA RSO reports incidents to the NRC in accordance with the requirements of 10 CFR 20.1501.

(4) Surveys. The installation RPO insures that regular inspections and routine radiation monitoring are conducted at the installation and properly documented. Frequency of surveys and area wipe tests is described in Item 9 of this application.

(5) Records. Radiation safety records for surveys, inventories, calibration and training are maintained for 3 years.

(6) Leak Testing.

(a) Annual leak testing is required for devices containing Am-241 and Ni-63. Leak test procedures for each device are provided at enclosure 6. Leak testing will be performed by qualified maintenance personnel as specified in item 8.

(b) Leak testing analysis will be performed by the following laboratories.

Rock Island Arsenal Independent Test  
Laboratory, Rock Island, IL. (License # 12-00722-10)

Radiation Standards and Dosimetry  
Laboratory (TMDE), Redstone Arsenal, AL (License # 01-00126-16)

Army Calibration Laboratory (TMDE), Camp  
Carroll, Korea

Army Calibration Laboratory (TMDE),  
Pirmasens, Germany

Anniston Army Depot Radiation Safety  
Laboratory, Anniston Army Depot, Anniston AL. (Depot  
Maintenance leak tests only)

Department of Army, U.S. Army  
Communications and Electronics Command, AMSEL-SF-RER, Fort  
Monmouth New Jersey (License # 29-01022-06)

(c) Leak Test Action Levels

1. Am-241: Any leak test showing 20 dpm or greater requires the device to be withdrawn from service. The licensee is notified of wipe tests in excess of limits. The user will be given instructions by the licensee for shipping the device to depot maintenance or to hold the device for disposal as radioactive waste. The device will be held at depot maintenance pending overhaul by a contractor licensed to work with loose Am-241 or it will be disposed of as radioactive waste at a licensed disposal facility. No maintenance will be performed on Am-241 contaminated devices.



2. Ni-63: Any device showing removable contamination in excess of 1,000 dpm/100 cm<sup>2</sup> will be retested. If the repeat wipe test is less than or equal to 100 dpm/100 cm<sup>2</sup> no further action is required. If the second wipe test is still greater than 1,000 dpm/100 cm<sup>2</sup>, the device will be evaluated further at a depot equivalent level. The licensee is notified of wipe tests in excess of limits.

3. No leak testing is required for either tritium or promethium sources in commodities.

4. Leak test results are retained on file by the laboratories.

(7) SOPs. RPOs where maintenance is performed (DS/GS & Depot) ensure Standard Operating Procedures (SOPs) are developed as required which implement installation regulations, ensure compliance with license requirements, and provide a safe operating environment.

(8) Radioactive Waste. The Installation RPO will accept, store and maintain a current inventory of unwanted radioactive materials. The RPO will request disposition of the unwanted radioactive materials from the Department of Defense Executive Agency for Low Level Radioactive Waste (located at Rock Island, Illinois) who will manage the removal and disposal.

### 3. Maintenance Concepts.

a. User/Support Level. Maintenance personnel are strictly prohibited from working on radioactive sources (Item 8).

b. Depot Maintenance Level. Depot maintenance personnel shall work in a designated controlled area.

c. Posting, Equipment and instrumentation. Posting, Equipment and instrumentation necessary will be available at these facilities as described in Item 9.

4. Surveys. The installation RPO shall perform surveys to ensure contamination levels are maintained as low as reasonably achievable (ALARA).

a. Routine surveys of controlled areas and areas adjacent to them shall be performed monthly. Controlled

areas are maintained less than 10,000 dpm/100 cm<sup>2</sup> and uncontrolled areas less than 1,000 dpm/100 cm<sup>2</sup>. In the event that these limits are exceeded the installation RPO will notify the ACALA RSO and decontaminate the area. If removable levels are elevated above background but do not exceed the limits above, the RPO will decontaminate and document the event.

b. Tritium devices shall be wipe tested by the RPO at any location if damage to tritium sources is believed to have occurred. Removable contamination on equipment containing tritium sources should not exceed 10,000 dpm/100 cm<sup>2</sup> per wipe. If this level is exceeded, the device should be double wrapped in plastic bags and tagged for disposal as radioactive waste by the installation RPO. The RPO will notify the licensee of the incident by telephone followed by a written report. The report should include date and time and facts surrounding the incident, number of persons exposed, contamination levels, etc.

c. Work surfaces on which radioactive devices are repaired, shall be covered to protect from contamination. The covering shall be replaced at least once per month or when it is torn or a release of radioactive material has occurred. The material should be bagged and labeled as low level radioactive waste. The installation RPO will store the material in a designated radioactive waste holding area until it can be properly disposed.

d. Records, to include wipe results, instrument used, name of surveyor, and dates are maintained for a minimum of 3 years per 10 CFR 20.2103.

e. Equipment/facilities released to unrestricted use are decontaminated to 1,000 dpm/100 cm<sup>2</sup>.

5. Shipping. The shipper has responsibility for ensuring that every package complies with the requirements in 49 CFR.

6. Receiving and Opening Packages. Incoming packages containing radioactive material are surveyed in accordance with 10 CFR 20.1906. The RPO inspects damaged packages.

7. Dosimetry: The commodities covered by this license do not constitute external radiation hazards therefore no external dosimetry program is established.

8. Tritium Bioassay Program.

a. Routine Bioassay. Personnel who work with tritium at maintenance depots will have monthly bioassay to substantiate ALARA, and verify exposures are less than public dose. Baseline and termination bioassay will also be taken for depot level maintenance workers.

b. Special Bioassay. A bioassay will be taken of personnel in the immediate vicinity of an accidental release of Tritium, or if a release is thought to have occurred. Potentially exposed individuals, i.e., users, DS/GS level maintenance, depot workers, shall be referred to medical facilities for a bioassay. The results of the bioassay will indicate the exposure as CEDE, be documented and reported to the Licensee RSO.

9. Radioactive Waste. The Department of Defense Executive Agency for Low Level Radioactive Waste (located at Rock Island, Illinois) is the central manager for disposal of all DCD low level radioactive waste generated by the Joint Services and other Federal Agencies. The Executive Agency ensures the radioactive waste generated under the license issued for this application is packaged shipped and disposed in accordance with current Army, NRC and DOT regulations and disposal facility criteria through:

a. Compliance with Industrial Operations Command shipping procedures for unwanted radioactive materials.

b. On site management of removal actions

c. Detailed instructions to installations making shipments.

10. Product Assurance Testing for Tritium Items. A surveillance program is implemented for verification of the integrity of the radioactive materiel, both in use and storage. Quality Assurance (QA) personnel shall make periodic visits to user installations or depots and perform wipe tests on randomly selected items. Wipe tests are shipped to RIA Radiation Test Lab for analysis. The sample size is chosen in accordance with 10 CFR 32.110 for a lot tolerance of 10 percent defective. QA personnel are provided training on how to perform the wipe test on each piece of equipment. Quality Assurance personnel review results of tests and take action in coordination with license RSO as necessary. Records shall be maintained for all test and inspection results.



## 11. Decommissioning

The Army will ensure all radioactive commodities have been removed prior to base closure or license termination. The latest NRC unrestricted area release criteria will be applied.

This portion of the request is being submitted based upon a meeting with NRC representatives that occurred on March 13, 1996. It proposes the same approach found both reasonable and conservative by your representatives during the meeting. The meeting was held at Region I headquarters with Mr. Monte Phillips from Region III attending by teleconference.

The materials covered by this license are contained in sealed sources and devices designed for rugged use. Therefore extensive contamination is not expected. The Army, however, wishes to conduct close-out surveys in certain areas where radioactive commodity items were stored, maintained, repaired, cannibalized from vehicles and equipment, or buried. This will provide further assurance that these areas are not contaminated, may be used for unrestricted use, and may be transferred to non-Army parties for unrestricted use.

The close-out surveys will be conducted to satisfy the NRC guidance entitled "Guidelines For Decontamination of Facilities and Equipment Prior to Release For Unrestricted Use or Termination of License For Byproduct, Source, or Special Nuclear Material." In the unlikely event that extensive contamination is known or found that requires a decommissioning effort, a decommissioning plan and decommissioning survey plan will be formulated and executed as required by 10CFR30.36. Since such a situation would require extensive NRC involvement and approval upon and following discovery on a case by case basis, it will not be addressed any further in this application. Only the conduct of normal close-out surveys will be described.

Although the Army understands that the application of NRC decommissioning standards (such as NUREG 5849 or MARSSIM) is not required for close-cut surveys at a sealed source site, the Army will generally apply the following steps found in these documents, with the modifications described:

- (1) A historical review will be performed to identify where commodities were present, and the operations they were involved in.

- (2) Areas will be classified based upon the historical

review. Because of the sealed, contained, or non-dispersible design of the commodities, only a few areas will be classified as "affected" (or Class 1 or 2 under MARSSIM). These will consist of: commodity repair, maintenance, and waste areas where historical review indicates a release may have occurred; past accidental release areas not cleaned to present day standards; cannibalization or demilitarization areas where it is known that radioactive commodities were broken; or disposal by burial. Other areas where commodities were routinely stored, repaired, maintained, or cannibalized from vehicles or equipment, and areas where past accidental releases occurred and have been cleaned to current day standards, will be classified as unaffected areas (or Class 3 under MARSSIM). Storage areas where; individual activities did not require posting per 10CFR20.1902, the posting requirement was waived by a license condition, license exempt commodities were present, will be classified along with all other areas (besides the affected and unaffected areas described above) as "no survey" areas (or non-impacted under MARSSIM).

(3) Affected (or Class 1 or 2) areas will be gridded, and measurements taken as recommended by NUREG 5849, MARSSIM, or the most current NRC guidance. Because of the rugged design of the commodities, scanning will only be performed in those areas known to be contaminated. For unaffected (or Class 3) areas, scanning will not be required, and the use of random sampling and survey units will be employed to minimize the number of sample locations to that allowed by the guidance documents.

(4) Characterization surveys will only be required in areas known to be contaminated. Verification surveys will be required only in areas that required clean-up.

(5) Furniture and fixtures monitoring will only be required in affected (or Class 1 or 2) areas.

(6) Surveys of drains, vents, and ducts will only be required in affected (or Class 1 or 2) areas.

During the 13 Mar 96 meeting, your representative agreed that this level of effort is reasonable and even conservative given the commodity design, management, and choice of radionuclides.

It was also agreed during the referenced meeting that: the NRC should be notified of surveys in affected areas (class 1 or 2 under MARSSIM), but does not need to be notified of surveys in unaffected (or Class 3 under MARSSIM) areas;

survey results do not need to be provided to the NRC unless requested by the NRC; and in the event that contamination is found that requires extensive clean-up, the NRC will be informed immediately.

## 12. Emergency Preparedness.

In accordance with the criteria set forth in 10 CFR 30.32(i)(1)(i), the quantity of radioactive material at the typical bulk storage facility would not require the establishment of a formal emergency plan for responding to a release. However, emergency response personnel are available to respond to emergency situations (e.g., medical, fire, hazardous material, etc.).



Item 11. Waste Management

Radioactive Waste. The Department of Defense Executive Agency for Low Level Radioactive Waste (located at Rock Island, Illinois) is the central manager for disposal of all DOD low level radioactive waste generated by the Joint Services and other Federal Agencies. The Executive Agency ensures the radioactive waste generated under the license issued for this application is packaged shipped and disposed in accordance with current Army, NRC and DOT regulations and disposal facility criteria through:

- a. Compliance with Industrial Operations Command shipping procedures for unwanted radioactive materials.
- b. On site management of removal actions
- c. Detailed instructions to installations making shipments.

Enclosure 1

SOURCE DRAWINGS

TAX FROM : 487 262 7988

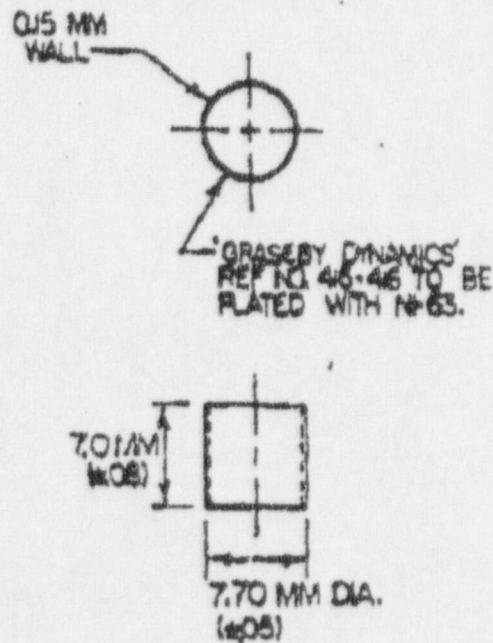
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BRASSER  
D. M. E. KROONEN & SONS

P. 12.

JAN 08 1997

ATTACHMENT 1

NER-004R NI-63 RING  
SOURCE ASSEMBLY

2.6-6



35° ANGLE PROJECTION  
35 JOB

100 MILLIMETRES FULL SIZE


 SERVICE DRG. No.  
SHEET  
No.  
OF

SECURITY CLASSIFICATION

LSEED

FINISH:-

BR/0614

-2336

A) ELECTROLESS Ni PLATE TO DEF. 03-5/1

B) PLATE WITH Ni63 TO 10 mCi NOMINAL (TOLERANCE:  $\pm 5$  mCi)

THIS ITEM TO BE SUPPLIED

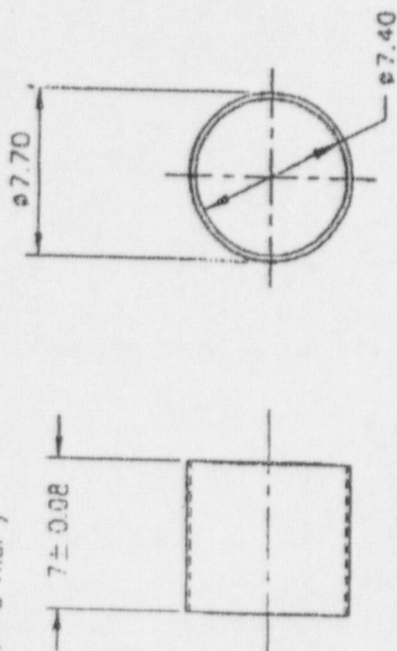
AND TESTED TO 8V/0614-0416 BY:-

 NEW ENGLAND NUCLEAR  
 DUFONT UK LIMITED  
 BIOTEC-NOLOGY DIVISION  
 WEDGEWOOD WAY  
 STEVENAGE, HERTS. SG1 4QN

OR

 AMERSHAM INTERNATIONAL LIMITED  
 LINCOLN PLACE  
 GREEN END  
 AYLESBURY  
 BUCKS.  
 HER'S. HP20 2TP

SIMILAR TO 3D/1402-416

REMOVE ALL BURRS AND SHARP EDGES  
RESPONSIBLE AUTHORITY

SOURCE

SECURITY CLASSIFICATION

CONTRACTORS DRG. No.

3D 0614-0416

SERVICE DRG. No.

CONTRACTOR

Grassby Dynamics Ltd

WATFORD HERTS ENGLAND

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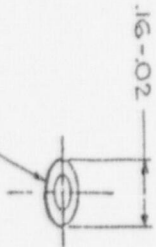
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| REVISIONS |   |           |                    |
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| X1        | REPLACES REV XO WITH CHANGE,<br>ERR FRA FX 6057 | 7/6/72-30 | <i>[Signature]</i> |
| —         | PRODUCTION RELEASE ERR FRA FX 6018              | 77-02-04  | <i>[Signature]</i> |
| A         | NOR FBA5040, 790105                             | 800530    | <i>[Signature]</i> |
| B         | NOR FOU2502, 800212                             | 800718    | <i>[Signature]</i> |
| C         | NOR FAJ2001/840320<br>(ECP FAJ2002/840321)      | 860711    | <i>[Signature]</i> |
| D         | NOR MBJ3005/880422                              | 890222    | <i>[Signature]</i> |

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GLASS, VIAL  
.02 THICK (NOM)



SECTION A-A

CURRENT DESIGN ACTIVITY CASE CODE 1920C  
U.S. ARMY AND ENGINEERING CENTERS  
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTERS  
PICATINNY ARSENAL, NEW JERSEY 07804-5000  
PART NO. 11733738

APPLICABLE DOCUMENTS

S. Q. A. P. 11733738

SOURCE USED ON:  
M64 SIGHTUNIT  
M64A1 SIGHTUNIT  
M67 SIGHTUNIT

SOURCE USED ON:

M64 SIGHTUNIT

M64A1. SIGHTUNIT

M67 SIGHTUNIT

| SUGGESTED SOURCE(S) OF SUPPLY   | VENDOR PART NO   |
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| M. B. MICROTEC AG<br>FREIBURGSTRASSE 624<br>CH-3172-NIEDERWANGEN<br>SWITZERLAND<br>SELF POWERED<br>LIGHTING LTD.<br>(CODE IDENT NO. 29218)<br>8 WESTCHESTER PLAZA<br>ELMSFORD, N.Y. 10523 | NOT<br>AVAILABLE |
| SAUNDERS-ROE<br>DEVELOPMENTS LTD.<br>MILLINGTON ROAD<br>HAYES MIDDLESEX<br>UB3 4NB ENGLAND  | NOT<br>AVAILABLE |
| BRANDHURST CO. LTD.<br>P.O. BOX 70<br>HIGH WYCOMBE<br>BUCKINGHAMSHIRE<br>HP12-3PS ENGLAND   | NOT<br>AVAILABLE |

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| MR. MICHAEL<br>PROPERTIES |           | UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES |  | U. S. ARMY<br>FRANKFORD Arsenal<br>PHILADELPHIA, PA. 19137 |             |
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| MA                        |           | </   |  |  |             |

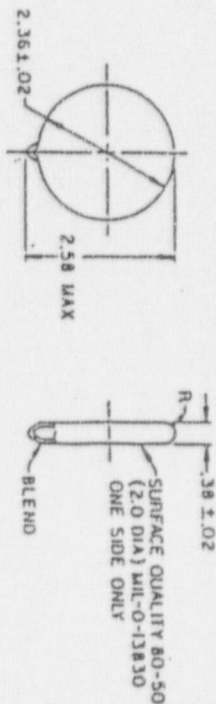






- NOTES:-
- 1- MARKING, LABELING AND SHIPPING OF PACKAGES AND CONTAINERS SHALL BE IN ACCORDANCE WITH DSAD 4115.8 RADIOACTIVE COMMODITIES IN DOO SUPPLY SYSTEM.
  - 2- THERE SHALL BE NO EVIDENCE OF PHYSICAL FAILURE SUCH AS FRACTURING OR LIGHT LOSS DUE TO EXPOSING THE LAMP TO -50°F AND +150°F FOR A PERIOD OF 8 HOURS AT EACH TEMPERATURE.
  - 3- AFTER SUBMERGING THE LAMP IN ROOM TEMPERATURE WATER FOR 4 HOURS, RADIOACTIVE CONTENT OF THE WATER SHALL NOT EXCEED .005 MICROCURIES.
  - 4- VIAL TO BE FILLED WITH PRODUCTION GRADE TRITIUM HYDRIUM FOR 4 HOURS, LESS THAN 1% TRITIUM OXIDE, BALANCE OF COMPOSITIONS FOR CHEMICALLY INERT. 10.0 CURIES PLATINUM.
  - 5- COLOR OF LIGHT EMITTED GREEN, SPECTRAL PEAK 5250 Å ± 50 Å.
  - 6- IF PEAK WIDTH 700 Å ± 50 Å.
  - 7- ALLOWED TO STABILIZE FOR A PERIOD OF 2 DAYS FROM MANUFACTURE, FOLLOWING THE STABILIZATION PERIOD AND UP TO 10 DAYS FROM DATE OF MANUFACTURE, COUNTING MEASUREMENTS SHALL NOT EXCEED .005 MICROCURIES. E.G. POWER MEASURED OVER AN ACCEPTANCE PERIOD. FURTHER, THE FINAL COUNTING MEASUREMENT AT TIME OF ACCEPTANCE SHALL BE 420 MICROCURIES ± 5% MINIMUM.
  - 8- MATERIAL, GLASS, TYPE 1, CLASS A, SPEC. DD-G-341.08.04
  - 9- IDENTIFICATION OF THE SUGGESTED SOURCES OF SUPPLY HEREON IS NOT TO BE CONSIDERED AS A GUARANTEE OF PATENT OR CONTINUED AVAILABILITY AS A SOURCE OF SUPPLY FOR THE ITEM.
  - 10- SUGGESTED SOURCES OF SUPPLY: SEE TABLE

SOURCE USED ON:  
MIAI COLLIMATOR



| SUGGESTED SOURCES OF SUPPLY  | VENDOR PART NO. |
|--|-----------------|
| SELF POWERED LIGHTING LTD<br>8 WEST CHESTER PLAZA<br>ELMSTON, N.Y. 10523<br>PSC# 25218       | NOT AVAILABLE   |
| BRANDHURST CO. LTD.<br>P.O. BOX 70<br>HIGH WYCOMBE<br>DUNKINGHAM, Herts-SP1 1EJ, ENGLAND     | NOT AVAILABLE   |
| IN-microtec Inc<br>Fralburgstrasse 624<br>CH-3112 Wädenswil<br>Switzerland                   | NOT AVAILABLE   |
| SOURCES NOT OF VENDOR'S LTD<br>MILLINGTON ROAD<br>MAYES, MIDDLESEX UB3 4NS<br>UNITED KINGDOM | NOT AVAILABLE   |

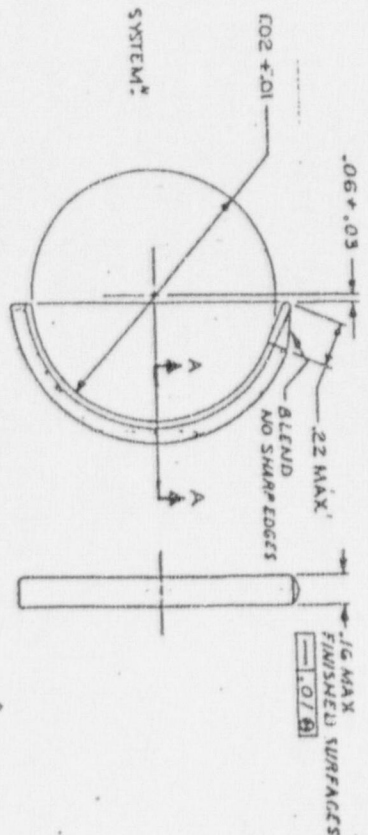
APPLICABLE DOCUMENTS  
SQAP - SQ10556135

SPECIFICATION CONTROL DRAWING  
PART NO. 10556135

|                             |  |                      |  |
|-----------------------------|--|----------------------|--|
| NO. 10556135                |  | REV. 1.0             |  |
| DATE: 10/11/81              |  | BY: J. L. B.         |  |
| DRAWN BY: J. L. B.          |  | CHECKED BY: J. L. B. |  |
| APPROVED BY: J. L. B.       |  | DATE: 10/11/81       |  |
| MATERIAL: LAMP              |  | PART NO. 10556135    |  |
| DESCRIPTION: RADIO LUMINOUS |  | DATE: 10/11/81       |  |
| QUANTITY: 1                 |  | DATE: 10/11/81       |  |

| REV. | DESCRIPTION                             | DATE     | BY       | CHKD.    |
|------|---|----------|----------|----------|
| 1    | PRODUCTION RELEASE                      | 10/11/81 | J. L. B. | J. L. B. |
| 2    | NEW FOR 2001 67-68-01 67-68-01 67-68-01 | 10/11/81 | J. L. B. | J. L. B. |
| 3    | NEW FOR 2001 67-68-01 67-68-01 67-68-01 | 10/11/81 | J. L. B. | J. L. B. |

| NO | REV | DATE      | DESCRIPTION    | BY | CHKD |
|----|-----|-----------|----------------|----|------|
| 1  |     | 17 OCT 84 | INITIAL DESIGN |    |      |
| 2  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 3  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 4  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 5  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 6  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 7  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 8  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 9  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 10 |     | 17 OCT 84 | REVISED DESIGN |    |      |



LAMP FACE WIDTH .15-.01  
 NOTE 10  
 THIS SURFACE TO BE  
 FREE OF PAINT  
 GLASS WALL THICKNESS .020 ± .005  
 11-.02  
 PAINT, EPOXY, SPEC MIL-B-55030 COLOR  
 WHITE NO. 11875 OR RED-370-535 AS  
 INDICATED FOR FULL LENGTH OF  
 VIAL. .005 MAX THICKNESS.  
 ALTERNATIVE: PAINT, EPOXY, WHITE,  
 1178530.  
 CAUTION: PAINT NOT TO EXTEND INTO  
 CORNER RADIUS.

SECTION A-A  
 SCALE: 10/1

- NOTES:-
- 1- MARKING, LABELING AND SHIPPING OF PACKAGES AND CONTAINERS SHALL BE IN ACCORDANCE WITH DSAM 4145.8 "RADIOACTIVE COMMODITIES IN THE DOD SUPPLY SYSTEM".
  - 2- THERE SHALL BE NO EVIDENCE OF PHYSICAL FAILURE SUCH AS FRACTURING OR LIGHT LOSS DUE TO EXPOSING THE LIGHT SOURCE TO -80° AND +160° F. FOR A PERIOD OF EIGHT HOURS AT EACH TEMPERATURE. SUBSEQUENT TO SUBMERGING THE LIGHT SOURCE IN WATER FOR 4 HOURS AT ROOM TEMPERATURE, RADIOACTIVE CONTENT OF THE WATER SHALL NOT EXCEED .005 MICROCURIE.
  - 3- PRIOR TO MAKING BRIGHTNESS MEASUREMENTS, LAMP SHALL BE ALLOWED TO STABILIZE FOR A PERIOD OF 25 DAYS AFTER MANUFACTURE.
  - 4- FOLLOWING THE STABILIZATION PERIOD AND UP TO 120 DAYS FROM DATE OF MANUFACTURE, BRIGHTNESS MEASUREMENTS SHALL NOT SHOW A DECAY IN EXCESS OF 2.5% WHEN MEASURED OVER ANY CONSECUTIVE 30 DAY PERIOD. FURTHER THE FULL BRIGHTNESS MEASUREMENT AT THE OF ACCEPTANCE SHALL BE 420 MICROAMPERES MM.
  - 5- VIAL TO BE FILLED WITH PRODUCTION GRADE TRITIUM AS MINIMUM 94% PURE, LESS THAN 1% THORIUM OXIDE, BALANCE OF CONSTITUENTS TO BE CHEMICALLY PURE. TOTAL Q6 CURES MAXIMUM.
  - 6- COLOR OF PHOSPHOR GREEN SPECTRAL PEAK 5250 Å ± 50 Å.
  - 7- V2 PEAK WIDTH 700 Å ± 50 Å.
  - 8- MINIMUM LIGHTED AREA 0.17 IN<sup>2</sup>.
  - 9- THE MICROLAMBERT UNITS SHOULD BE ESTABLISHED BY A METHOD TRACEABLE TO THE ARMY METROLOGY CALIBRATION CENTER, REDSTONE ARSENAL, ALABAMA.
  - 10- BRIGHTNESS MEASUREMENT SHALL BE MADE ON THE CENTER OF THE LAMP WITH A CIRCULAR APERTURE BETWEEN 50% AND 75% OF LAMP FACE WIDTH.
  - 11- VIAL MATERIAL: GLASS, TYPE I, CLASS A, SPEC ASTM E-330.
  - 12- PREPARE SURFACE OF GLASS, AND MIX, APPLY AND CURE EPOXY PAINT IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS.

IDENTIFICATION OF THE "SUGGESTED SOURCE(S) OF SUPPLY" HEREON IS NOT TO BE CONSTRUED AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY AS A SOURCE OF SUPPLY FOR THE ITEM(S).

SOURCE USED ON:  
 M13A1 PANORAMIC TELESCOPE  
 M187 MOUNT, TELESCOPE  
 M90A2 TELESCOPE, STRAIGHT

| SUGGESTED SOURCES OF SUPPLY  | VENDOR        | PART NO. |
|--|---------------|----------|
| SELF-POWERED LIGHTING LTD<br>9 WEST CROFTON PLACE<br>LONDON SW10 2DZ                       | NOT AVAILABLE |          |
| ADVANCED CO. LTD<br>40 BOK RD<br>HIGH WYCOMBE<br>BUCKINGHAMSHIRE HP12 3QS<br>ENGLAND       | NOT AVAILABLE |          |
| AB-ARGOTEC INC<br>FARMINGTON STRASSIE 684<br>CH-312 NIEUCHÂT-VALENTIN<br>SWITZERLAND       | NOT AVAILABLE |          |
| SOURCES-ROD DEVELOPMENTS LTD<br>HAYES WATKINS ROAD<br>HAYES WATKINS ROAD<br>UNITED KINGDOM | NOT AVAILABLE |          |

APPLICATION DOCUMENT(S)  
 QAP-SQ 702-1-2

SPECIFICATION CONTROL DRAWING  
 PART NO. 10556228

| NO | REV | DATE      | DESCRIPTION    | BY | CHKD |
|----|-----|-----------|----------------|----|------|
| 1  |     | 17 OCT 84 | INITIAL DESIGN |    |      |
| 2  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 3  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 4  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 5  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 6  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 7  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 8  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 9  |     | 17 OCT 84 | REVISED DESIGN |    |      |
| 10 |     | 17 OCT 84 | REVISED DESIGN |    |      |

REVISIONS  
 1- 17 OCT 84  
 2- 17 OCT 84  
 3- 17 OCT 84  
 4- 17 OCT 84  
 5- 17 OCT 84  
 6- 17 OCT 84  
 7- 17 OCT 84  
 8- 17 OCT 84  
 9- 17 OCT 84  
 10- 17 OCT 84

NOTE 1-

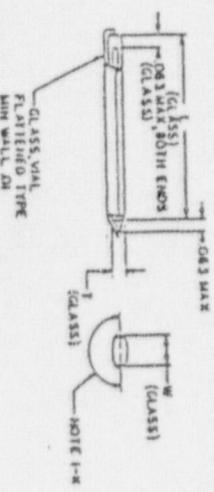
1-REQUIREMENTS

- A-WALL MATERIAL: CLASS, TYPE, CLASS, SPEC. DO-C-34.
- B-COLOR OF PHOSPHOR GREEN SPECTRAL PEAK 520.1501 501 V2 PEAK WIDTH.
- C-WALL TO BE FILLED WITH PRODUCTION GRADE FIBRE IN MINIMUM 90% PURE.
- D-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- E-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- F-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- G-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- H-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- I-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- J-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- K-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- L-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- M-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- N-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- O-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- P-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- Q-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- R-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- S-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- T-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- U-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- V-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- W-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- X-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- Y-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.
- Z-155 HAN IN INITIAL ONCE BALANCE OF CONSTRUCTION TABLE. CHEMICALLY.

| NO. | DATE     | TIME  | LOCATION | REMARKS  |
|-----|----------|-------|----------|----------|
| 1   | 11/15/50 | 11:00 | 11729510 | 11729510 |
| 2   | 11/15/50 | 11:00 | 11729510 | 11729510 |
| 3   | 11/15/50 | 11:00 | 11729510 | 11729510 |
| 4   | 11/15/50 | 11:00 | 11729510 | 11729510 |
| 5   | 11/15/50 | 11:00 | 11729510 | 11729510 |
| 6   | 11/15/50 | 11:00 | 11729510 | 11729510 |
| 7   | 11/15/50 | 11:00 | 11729510 | 11729510 |
| 8   | 11/15/50 | 11:00 | 11729510 | 11729510 |
| 9   | 11/15/50 | 11:00 | 11729510 | 11729510 |
| 10  | 11/15/50 | 11:00 | 11729510 | 11729510 |

SOURCE USED ON:

- M134A1 MOUNT, TELESCOPE
- M14A1 QUADRANT, FIRE CONTROL
- M17 FIRE CONTROL QUADRANT
- M171 MOUNT, TELESCOPE & Q
- M18 FIRE CONTROL QUADRANT
- M187 MOUNT, TELESCOPE
- M1A2 QUADRANT, FIRE CONTROL
- M64 SIGHTUNIT
- M64A1 SIGHTUNIT
- M67 SIGHTUNIT



| PART NO.   | ACTIVITY | MINIMUM BRIGHTNESS | L      | M     | T     |
|------------|----------|--------------------|--------|-------|-------|
| 11729510-1 | 0.75     | 500                | 33-01  | 11-01 | 05-01 |
| 11729510-2 | 0.75     | 500                | 150-01 | 14-01 | 01-01 |

| SPECIFICATION CONTROL DRAWING |  |
|-------------------------------|--|
| PART NO. SEE TABLE            |  |
| L.A.M.                        |  |
| RADOLUBIOUS                   |  |
| 11729510                      |  |



NOTE:-

1-REQUIREMENTS

A-WIAL MATERIAL: GLASS, TYPE I, CLASS A, SPEC 80-G-54L.

B-COLOR OF PHOSPHOR GREEN SPECTRAL PEAK 5250A ± 50A 1/2 PEAK WIDTH 700A ± 50A.

C-VIAL TO BE FILLED WITH PRODUCTION GRADE TRITIUM BY MINIMUM 84% PURE LESS THAN IN TRITIUM OXIDE BALANCE OF CONSTITUENTS TO BE CHEMICALLY PURE.

D-THEME SHALL BE NO EVIDENCE OF PHYSICAL FAILURE SUCH AS FRACTURING OF LIGHT LOSS DUE TO EXPOSURE OF THE LAMP TO -80°F AND -160°F FOR A PERIOD OF 8 HOURS AT EACH TEMPERATURE.

E-AFTER SUBMERGING THE LAMP IN ROOM TEMPERATURE WATER FOR 4 HOURS, THE WATER CONTENT OF THE WATER SHALL NOT EXCEED 1005 MICROCURIES.

F-PROOF TO HANDLING BRIGHTNESS MEASUREMENTS, LAMPS SHALL BE ALLOWED TO STABILIZE FOR A PERIOD OF 25 DAYS AFTER MANUFACTURE.

G-FOLLOWING THE STABILIZATION PERIOD AND UP TO 120 DAYS FROM DATE OF MANUFACTURE, BRIGHTNESS MEASUREMENTS SHALL NOT SHOW DECAY IN EXCESS OF 25% WHEN MEASURED OVER ANY CONSECUTIVE 30-DAY PERIOD. THE FINAL BRIGHTNESS MEASUREMENT AT TIME OF ACCEPTANCE SHALL BE 500 MICROCURIES MINIMUM.

H-MARKING, LABELING, AND SHIPPING AND CONTAINERS SHALL BE IN ACCORDANCE WITH D544 4145.8 RADIOACTIVE COMMODITY IN THE DDO SUPPLY SYSTEM.

J-PREPARE SURFACE OF GLASS, AND MIX APPLY AND CURE FINISH IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.

K-SURFACE FINISH:-

1-LACQUER, ACRYLIC SPEC 4E-L-8032, COLOR WHITE NO.17875 OF FED-510-595, 1005 MAX THICKNESS.

2-ALTERNATIVE FINISH: PAINT, EPOXY, MIL-P-47115, COLOR WHITE NO.17875 OF FED-510-595, 1005 MAX THICKNESS.

3-ALTERNATIVE FINISH: EPOXY PAINT, WHITE, 11785530, 1005 MAX THICKNESS.

4-IDENTIFICATION OF THE SUGGESTED SOURCE OF SUPPLY HEREON IS NOT TO BE CONSTRUED AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY AS A SOURCE OF SUPPLY FOR THE ITEM.

5-SUGGESTED SOURCE OF SUPPLY:-

SELF POWERED DEVELOPMENTS LTD.

8 WEST CHESTER PLAZA

ELMSTON, NEW YORK 10523

VENOOR PART NO. NOT AVAILABLE

SAUNCE-ROE DEVELOPMENT LTD.

MILLINGTON ROAD

HAYES, MIDDLESEX

ENGL AND LBS 414

VENOOR PART NO. NOT AVAILABLE

BRANDENST CO LTD.

BOX BOX TO

HIGH WTCOME BUCKINGHAM SHIRE

ENGLAND HP25 3P5

VENOOR PART NO. NOT AVAILABLE

M.B. MICROTEC AG.

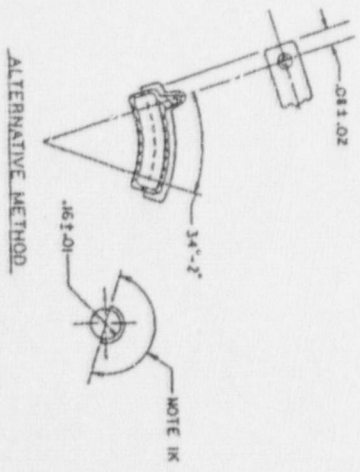
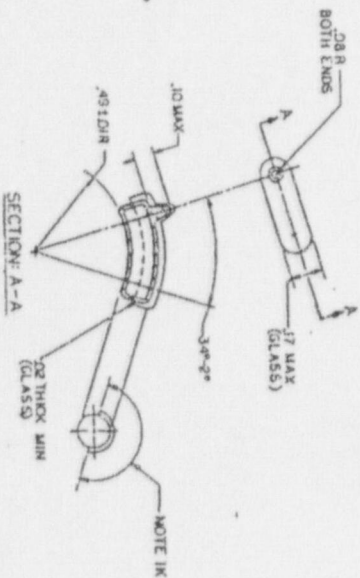
FRIEDRICHSTRASS 624

CH-3172 MUDENMANN

SWITZERLAND

VENOOR PART NO. NOT AVAILABLE

SOURCE USED ON:  
M137 TELESCOPE, PANORAMI  
M137AI TELESCOPE, PANORAMI



| OAP 50 702-1, 2 APPLIES |             |          |          |
|-------------------------|-------------|----------|----------|
| NO.                     | DESCRIPTION | DATE     | BY       |
| 1                       | 11123514    | 11/22/54 | 11/22/54 |
| 2                       | 11123514    | 11/22/54 | 11/22/54 |
| 3                       | 11123514    | 11/22/54 | 11/22/54 |
| 4                       | 11123514    | 11/22/54 | 11/22/54 |
| 5                       | 11123514    | 11/22/54 | 11/22/54 |
| 6                       | 11123514    | 11/22/54 | 11/22/54 |
| 7                       | 11123514    | 11/22/54 | 11/22/54 |
| 8                       | 11123514    | 11/22/54 | 11/22/54 |
| 9                       | 11123514    | 11/22/54 | 11/22/54 |
| 10                      | 11123514    | 11/22/54 | 11/22/54 |

SPECIFICATION CONTROL DRAWING

PART NO. 11729514

PHILADELPHIA, PA.

RADIO LAMP

11729514

11729514

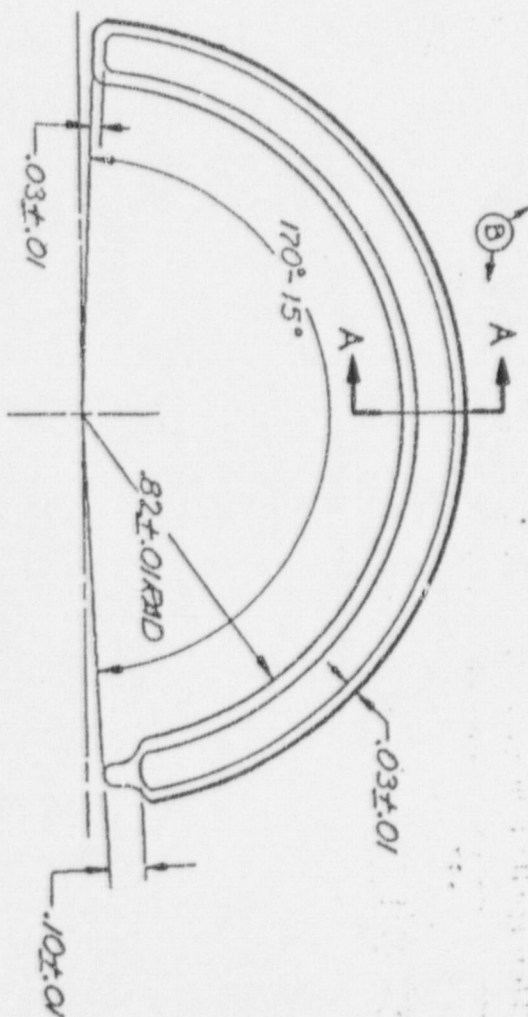
11729514

| NO. | DESCRIPTION | DATE     | BY       |
|-----|-------------|----------|----------|
| 1   | 11123514    | 11/22/54 | 11/22/54 |
| 2   | 11123514    | 11/22/54 | 11/22/54 |
| 3   | 11123514    | 11/22/54 | 11/22/54 |
| 4   | 11123514    | 11/22/54 | 11/22/54 |
| 5   | 11123514    | 11/22/54 | 11/22/54 |
| 6   | 11123514    | 11/22/54 | 11/22/54 |
| 7   | 11123514    | 11/22/54 | 11/22/54 |
| 8   | 11123514    | 11/22/54 | 11/22/54 |
| 9   | 11123514    | 11/22/54 | 11/22/54 |
| 10  | 11123514    | 11/22/54 | 11/22/54 |

| LINE | DESCRIPTION                       | DATE     | AMOUNT |
|------|-----------------------------------|----------|--------|
| X0   | PROTOTYPE RELEASE ONLY FX0005     | 11-8-64  | 1.3    |
| -    | PRODUCTION RELEASE ERR FRAT 30637 | 11-8-64  |        |
| A    | SEE ERR FRA F40865                | 11-08-64 |        |
| B    | SEE ERR FRA F40884                | 11-08-64 |        |
| C    | SEE ERR FRA F60143                | 11-08-64 |        |
| D    | WOR FBX2003 78-05-10              | 11-02-81 |        |
| E    | MOAFDA2018 81-03-06               | 11-03-81 |        |
| F    | ERR29Z1294D                       |          |        |
|      | (ICPFD0A2025/900430)              | 5011101  | 91-554 |

4. HANDLING, SHIPPING, LABELING AND DISPOSAL OF RADIOACTIVE COMMODITIES SHALL BE IN ACCORDANCE WITH D5AM. 4145.8 "RADIOACTIVE COMMODITIES IN THE DOD SUPPLY SYSTEM."

- LACQUER, ACRYLIC, SPEC MIL-L-81352,  
COLOR WHITE NO. 17875 OF FED-STD-595  
(FULL LENGTH OF VIAL  $180 \pm 10^\circ$  ARC)  
.005 MAX THICKNESS.



CONSENT BEHIND ACTIVITY CARD CODE 18800  
U.S. ARMY  
ARMED AND DANGEROUS  
SICILY 0111-1940

SECTION A-A  
PART No. 11729517

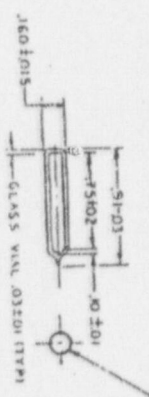
5QAP-11729517

[illegible]

SOURCE USED ON:  
M114A1 ELBOW TELESCOPE



| REV | DESCRIPTION             | DATE    | BY |
|-----|-------------------------|---------|----|
| 1   | REV. ACT. & REV. W/LOWE | 3-30-54 | W  |
| 2   | REV. ACT. & REV. W/LOWE | 3-30-54 | W  |
| 3   | REV. ACT. & REV. W/LOWE | 3-30-54 | W  |
| 4   | REV. ACT. & REV. W/LOWE | 3-30-54 | W  |
| 5   | REV. ACT. & REV. W/LOWE | 3-30-54 | W  |
| 6   | REV. ACT. & REV. W/LOWE | 3-30-54 | W  |
| 7   | REV. ACT. & REV. W/LOWE | 3-30-54 | W  |
| 8   | REV. ACT. & REV. W/LOWE | 3-30-54 | W  |
| 9   | REV. ACT. & REV. W/LOWE | 3-30-54 | W  |
| 10  | REV. ACT. & REV. W/LOWE | 3-30-54 | W  |



PAINT, EPOXY, SPEC. MIL. M. 10000, COAT NO. 1 (177P) OF  
 100 MIL THICKNESS.  
 ALTERNATIVE PAINT: EPOXY, WHITE 11723510

1. AFTER SURFACING THE LAMP IN ROOM TEMPERATURE DATED FROM 4 HOURS, RADIOACTIVE CONTENT OF THE LAMP SHALL NOT EXCEED .005 MICROCURIE.
2. AFTER SURFACING THE LAMP IN ROOM TEMPERATURE DATED FROM 4 HOURS, RADIOACTIVE CONTENT OF THE LAMP SHALL NOT EXCEED .005 MICROCURIE.
3. AFTER SURFACING THE LAMP IN ROOM TEMPERATURE DATED FROM 4 HOURS, RADIOACTIVE CONTENT OF THE LAMP SHALL NOT EXCEED .005 MICROCURIE.
4. AFTER SURFACING THE LAMP IN ROOM TEMPERATURE DATED FROM 4 HOURS, RADIOACTIVE CONTENT OF THE LAMP SHALL NOT EXCEED .005 MICROCURIE.
5. AFTER SURFACING THE LAMP IN ROOM TEMPERATURE DATED FROM 4 HOURS, RADIOACTIVE CONTENT OF THE LAMP SHALL NOT EXCEED .005 MICROCURIE.
6. AFTER SURFACING THE LAMP IN ROOM TEMPERATURE DATED FROM 4 HOURS, RADIOACTIVE CONTENT OF THE LAMP SHALL NOT EXCEED .005 MICROCURIE.
7. AFTER SURFACING THE LAMP IN ROOM TEMPERATURE DATED FROM 4 HOURS, RADIOACTIVE CONTENT OF THE LAMP SHALL NOT EXCEED .005 MICROCURIE.
8. AFTER SURFACING THE LAMP IN ROOM TEMPERATURE DATED FROM 4 HOURS, RADIOACTIVE CONTENT OF THE LAMP SHALL NOT EXCEED .005 MICROCURIE.
9. AFTER SURFACING THE LAMP IN ROOM TEMPERATURE DATED FROM 4 HOURS, RADIOACTIVE CONTENT OF THE LAMP SHALL NOT EXCEED .005 MICROCURIE.
10. AFTER SURFACING THE LAMP IN ROOM TEMPERATURE DATED FROM 4 HOURS, RADIOACTIVE CONTENT OF THE LAMP SHALL NOT EXCEED .005 MICROCURIE.

| DESCRIPTION | REVISION |
|-------------|----------|
| 1. TO       | 1. TO    |
| 2. TO       | 2. TO    |
| 3. TO       | 3. TO    |
| 4. TO       | 4. TO    |
| 5. TO       | 5. TO    |
| 6. TO       | 6. TO    |
| 7. TO       | 7. TO    |
| 8. TO       | 8. TO    |
| 9. TO       | 9. TO    |
| 10. TO      | 10. TO   |

SOURCE USED ON:  
 M14A1 ELBOW TELESCOPE

### SOURCE CONTROL DRAWING

|                     |          |
|---------------------|----------|
| PART NO. 11729519   |          |
| LAMP RADIO LUMINOUS |          |
| DATE                | 11729519 |
| 19700               |          |
| 11729519            |          |



# REQUIREMENTS:-

1. MARKING, LABELING, AND SHIPPING OF PACKAGES AND CONTAINERS SHALL BE IN ACCORDANCE WITH D54M 4145.8 \*RADIOACTIVE.
2. COMMODITIES IN THE DOD SUPPLY SYSTEM.
3. THERE SHALL BE NO EVIDENCE OF PHYSICAL FAILURE SUCH AS FRACTURING OR LIGHT LOSS DUE TO EXPOSING THE LIGHT SOURCE TO -80° AND +160°F FOR A PERIOD OF EIGHT HOURS AT EACH TEMPERATURE.
4. AFTER SUBMERGING THE LAMP IN ROOM TEMPERATURE WATER FOR 4 HOURS, RADIOACTIVE CONTENT OF THE WATER SHALL NOT EXCEED .005 MICROCURIES.
5. PRIOR TO MAKING BRIGHTNESS MEASUREMENTS, LAMPS SHALL BE ALLOWED TO STABILIZE FOR A PERIOD OF 25 DAYS AFTER MANUFACTURE.
6. FOLLOWING THE STABILIZATION PERIOD AND UP TO 120 DAYS FROM THE DATE OF MANUFACTURE, BRIGHTNESS MEASUREMENTS SHALL NOT SHOW A DECAY IN EXCESS OF 6% WHEN MEASURED OVER ANY CONSECUTIVE 30 DAY PERIOD. FURTHER, THE FINAL BRIGHTNESS MEASUREMENT AT TIME OF ACCEPTANCE SHALL BE 1000 MICROLAMBERTS MINIMUM.

## NOTES:-

1. SPECS MIL-F-13926 AND ANSI V14.5-1973 APPLY.
2. VIAL TO BE FILLED WITH PRODUCTION GRADE TRITIUM H<sub>2</sub> MINIMUM 94% PURE, LESS THAN 1% TRITIUM OXIDE, BALANCE OF CONSTITUENTS TO BE CHEMICALLY INERT, TOTAL O.<sub>2</sub> CUMUL MINIMUM.
3. INTERNAL PRESSURE 2.50 ATMOSPHERES (NOMINAL) AT 70°F.
4. COLOR OF PHOSPHOR: GREEN SPECTRAL PEAK 5250 Å ± 50Å.
5. VIAL MATERIAL: GLASS, TYPE 1, CLASS A, SPEC ASTM E438.
6. PREPARE SURFACE OF GLASS, AND MIX, APPLY AND CURE EPOXY PAINT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

| SUGGESTED SOURCE OF SUPPLY   |                 |
|--|-----------------|
| VENDOR   | VENDOR PART NO. |
| SELF-POWERED LIGHTING LTD.<br>(CODE IDENT NO. 29218)<br>8 WESTCHESTER PLAZA<br>ELMSFORD, N.Y., 10523 | NOT AVAILABLE   |
| BRANDHURST CO., LTD.<br>P.O. BOX 70<br>HIGH WYCOMBE<br>BUCKINGHAMSHIRE HP12-3PS<br>UNITED KINGDOM    | NOT AVAILABLE   |
| SANDER-ROE DEVELOPMENTS LTD.<br>MILLINGTON ROAD<br>MAYES, MIDDLESEX UB94NB<br>UNITED KINGDOM         | NOT AVAILABLE   |
| MB-MICROTEC INC.<br>FRIEBURGSSTRASSE 624<br>CH-3172 NEIDERRAGEN/BERN<br>SWITZERLAND                  | NOT AVAILABLE   |

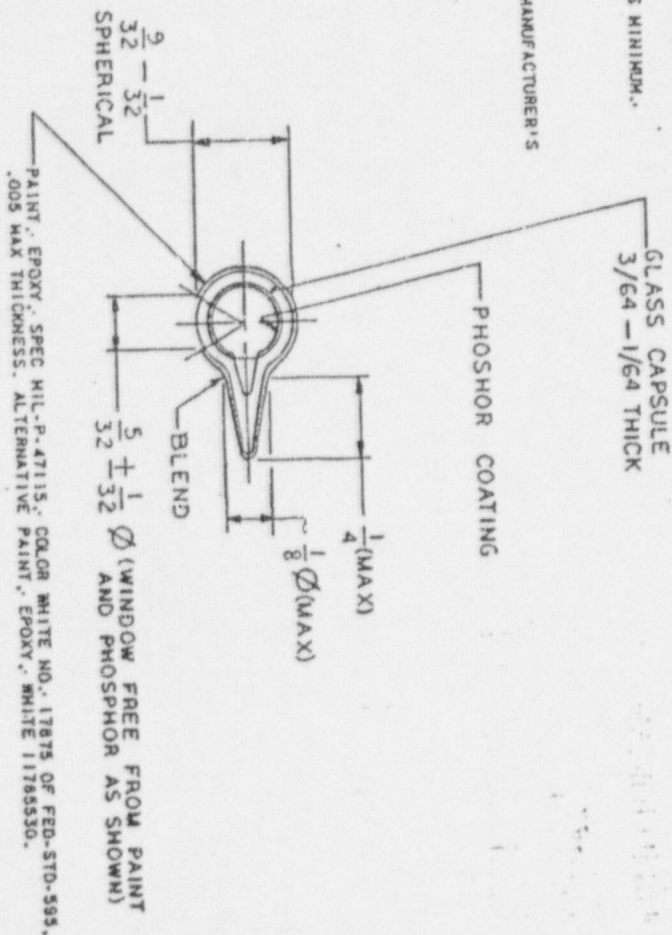
DISTRIBUTION STATEMENT A  
APPROVED FOR PUBLIC RELEASE  
DISTRIBUTION IS UNLIMITED.

SOURCE USED ON:  
M13A1 PANORAMIC, TELESCOP

OAP 11730273 APPLIES

## SPECIFICATION CONTROL DRAWING

|                       |         |                      |  |                            |  |
|-----------------------|---------|----------------------|--|----------------------------|--|
| MECHANICAL PROPERTIES |         | DO NOT SCALE DRAWING |  | UNLESS OTHERWISE SPECIFIED |  |
| YR                    |         | TS                   |  | RA                         |  |
| EL2                   |         | RA                   |  |                            |  |
| CL1730274             | PAN TEL | RA                   |  |                            |  |
| NEXT ASSY             | USED ON | RA                   |  |                            |  |
| APPLICATION           |         |                      |  |                            |  |



PAINT, EPOXY, SPEC MIL-P-47115, COLOR WHITE NO. 17875 OF FED-STD-595, .005 MAX THICKNESS. ALTERNATIVE PAINT, WHITE 11785530.

CURRENT SERIAL ACTIVITY CODE 1300  
MANUFACTURE BY: DODGE AND COMPANY  
TREATMENT: ANNEAL, 875, 1500, 1700, 1800, 1900, 2000

PART NO. 11730273

FRANKFORD ARSENAL, PHILADELPHIA, PA

LAMP, RADIO LUMINOUS

SCALE 4/1 UNIT WT. SHEET

| ITEM | DESCRIPTION  | DATE   | APPROVAL |
|------|--|--------|----------|
| F    | REPLACES REV E WITH CHANGE NOR F3A2058/83-06-06 ECP F3A2071/83-06-23 | 850801 | OK       |
| G    | NOR D9A2034 890526   | 891107 | OK       |
| H    | NOR D2A2001/920602   | 92077  | OK       |



# REQUIREMENTS:

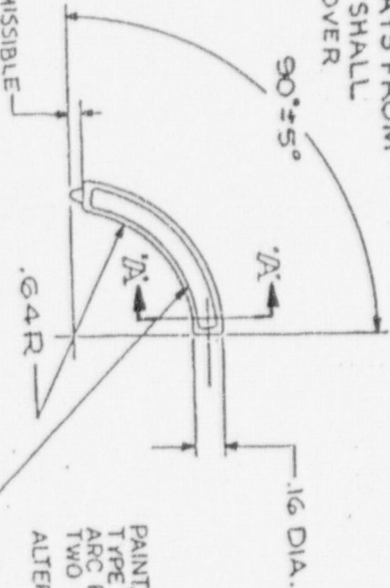
1. THERE SHALL BE NO EVIDENCE OF PHYSICAL FAILURE SUCH AS FRACTURING OR LIGHT LOSS DUE TO EXPOSING THE LAMP TO -80°F AND +160°F FOR A PERIOD OF 8 HOURS AT EACH TEMPERATURE.
2. AFTER SUBMERGING THE LAMP IN ROOM TEMPERATURE WATER FOR 4 HOURS, RADIOACTIVE CONTENT OF THE WATER SHALL NOT EXCEED .005 MICROCURIE.
3. VIAL TO BE FILLED WITH TRITIUM (H<sub>3</sub>) OF 94%-96% PURITY, TOTAL 10 CURIES MAXIMUM.
4. PRIOR TO MAKING BRIGHTNESS MEASUREMENTS, LAMPS SHALL BE ALLOWED TO STABILIZE FOR A PERIOD OF 25 DAYS FROM MANUFACTURE.
5. FOLLOWING THE STABILIZATION PERIOD AND UP TO 120 DAYS FROM DATE OF MANUFACTURE, BRIGHTNESS MEASUREMENTS SHALL NOT SHOW A DECAY IN EXCESS OF 2.5% WHEN MEASURED OVER ANY CONSECUTIVE 30 DAY PERIOD. FURTHER, THE FINAL BRIGHTNESS MEASUREMENT AT TIME OF ACCEPTANCE SHALL BE 600 MICROLAMBERTS MINIMUM.
6. INTERNAL PRESSURE 2.50 ATMOSPHERES (NOMINAL) AT +70°F.
7. COLOR OF PHOSPHOR: GREEN SPECTRAL PEAK 5250Å ± 50Å, 1/2 PEAK WIDTH 700Å ± 50Å.

## SUGGESTED SOURCE(S) OF SUPPLY

| VENDOR   | VENDOR PART NO. |
|--|-----------------|
| SELF POWERED LIGHTING LTD<br>CODE IDENT NO. 29218<br>8 WESTCHESTER PLAZA<br>ELMSFORD, N.Y. 10523 | NOT AVAILABLE   |
| SAUNDERS-ROE DEVELOPMENTS LTD.<br>MILLINGTON ROAD<br>HAYES MIDDLESEX<br>UB3 4NB ENGLAND          | NOT AVAILABLE   |
| BRANDHURST CO. LTD.<br>P.O. BOX 70<br>HIGH WYCOMBE<br>BUCKINGHAMSHIRE<br>HP12-3PS ENGLAND        | NOT AVAILABLE   |
| M.B. MICROTEC AG<br>FREIBURGSTRASSE 624<br>CH-3172-NIEDERWANGEN<br>SWITZERLAND                   | NOT AVAILABLE   |

.0625 MAX. PERMISSIBLE

SOURCE USED ON:  
M64 SIGHTUNIT  
M64A1 SIGHTUNIT  
M67 SIGHTUNIT



GLASS, VIAL  
.03 THICK (NOM)

PAINT, EPOXY, MIL-C-22750,  
TYPE I, COLOR 17875 (180 DEGREES  
ARC FOR FULL LENGTH OF VIAL), APPLY  
TWO COATS (MIN) OF FED-STD-595.  
ALTERNATIVE COATING: DRAWING NO. 11785530.

## SECTION A-A

APPLICABLE DOCUMENTS  
SQAP 11733736

SPECIFICATION CONTROL DRAWING  
CURRENT DESIGN ACTIVITY CODE CODE 18200  
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER  
FACILITY ARSENAL, NEW JERSEY 07806-3000  
PART NO. 11733736

| REV | DESCRIPTION                                 | DATE     | APPROVED |
|-----|---|----------|----------|
| XI  | REPLACES REV XO WITH CHANGE, ERR FRAFX 6030 | 76-12-30 | W. H. H. |
| A   | NOR FBA5041, 790109                         | 800530   | W. H. H. |
| B   | NOR F9J2515, 79-11-06                       | 80-08-08 | W. H. H. |
| C   | NOR F4J200X/840320 (ECP F4J2002/840321)     | 860711   | W. H. H. |
| D   | NOR MBJ3005/880422                          | 890222   | W. H. H. |
| E   | NOR D2J2007/920901                          | 921016   | W. H. H. |

|                            |  |  |  |                      |  |                      |  |
|----------------------------|--|--|--|----------------------|--|----------------------|--|
| MATERIAL                   |  | DIMENSIONS ON DRAWING                    |  | DATE                 |  | ORIGINAL             |  |
| C11733741 MT. TUSCP        |  | TOLERANCES ON DIMENSIONS: .01 ANGLES: .5 |  | 74 MAR 11            |  | 74 MAR 11            |  |
| SIX ENGINEERING RECORDS    |  | MATERIAL                                 |  | DRAWN                |  | CHECKED              |  |
| NEXT ASSY                  |  | USED ON                                  |  | BY                   |  | DATE                 |  |
| APPLICATION                |  | MATERIAL                                 |  | BY                   |  | DATE                 |  |
| DO NOT APPLY EXTERIOR COAT |  | PROTECTIVE FINISH                        |  | BY                   |  | DATE                 |  |
| FOR MIL-STD-200            |  | PROTECTIVE FINISH                        |  | BY                   |  | DATE                 |  |
| SUBMITTED                  |  | SUBMITTED                                |  | SUBMITTED            |  | SUBMITTED            |  |
| M. H. QUINN                |  | M. H. QUINN                              |  | M. H. QUINN          |  | M. H. QUINN          |  |
| APPROVED                   |  | APPROVED                                 |  | APPROVED             |  | APPROVED             |  |
| W. H. H.                   |  | W. H. H.                                 |  | W. H. H.             |  | W. H. H.             |  |
| SCALE: 2:1                 |  | SCALE: 2:1                               |  | SCALE: 2:1           |  | SCALE: 2:1           |  |
| C 19200                    |  | C 19200                                  |  | C 19200              |  | C 19200              |  |
| 11733736                   |  | 11733736                                 |  | 11733736             |  | 11733736             |  |
| LAMP, RADIO LUMINOUS       |  | LAMP, RADIO LUMINOUS                     |  | LAMP, RADIO LUMINOUS |  | LAMP, RADIO LUMINOUS |  |
| U. S. ARMY                 |  | U. S. ARMY                               |  | U. S. ARMY           |  | U. S. ARMY           |  |
| FACILITY ARSENAL           |  | FACILITY ARSENAL                         |  | FACILITY ARSENAL     |  | FACILITY ARSENAL     |  |
| P. H. 19137                |  | P. H. 19137                              |  | P. H. 19137          |  | P. H. 19137          |  |







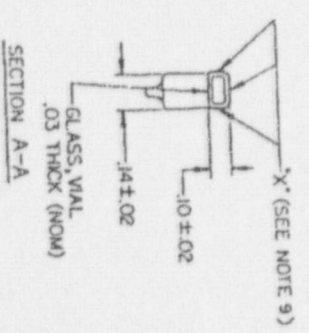
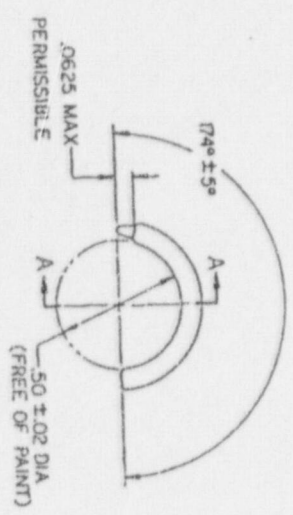


# REQUIREMENTS

- 1-MARKING, LABELING AND SHIPPING OF PACKAGES AND CONTAINERS SHALL BE IN ACCORDANCE WITH DEAN 4642 RADIOACTIVE COMPONENTS IN THE DOD SUPPLY SYSTEM.
- 2-THERE SHALL BE NO EVIDENCE OF PHYSICAL FAILURE SUCH AS FRACTURING OR LIGHT LOSS DUE TO EXPOSING THE LIGHT SOURCE TO -80°F AND +160°F FOR A PERIOD OF 8 HOURS AT EACH TEMPERATURE.
- 3-AFTER SUBMERGING THE LAMP IN ROOM TEMPERATURE WATER FOR 4 HOURS, RADIOACTIVE CONTENT OF THE WATER SHALL NOT EXCEED 1005 MICROCURIE.
- 4-VIAL TO BE FILLED WITH PRODUCTION GRADE TITANIUM H<sub>2</sub> MINIMUM 94% PURE, LESS THAN 1% TITANIUM DIOXIDE BALANCE OF CONSTITUENTS TO BE CHEMICALLY INERT TOTAL OXIDES MAXIMUM 5% PRIOR TO MAKING BRIGHTNESS MEASUREMENTS, LAMPS SHALL BE ALLOWED TO STABILIZE FOR A PERIOD OF 25 DAYS FROM MANUFACTURE.
- 5-FOLLOWING THE STABILIZATION PERIOD AND UP TO 120 DAYS FROM DATE OF MANUFACTURE, BRIGHTNESS MEASUREMENTS SHALL NOT SHOW A DECAY IN EXCESS OF 2.5% WHEN MEASURED OVER ANY CONSECUTIVE 30 DAY PERIOD. FURTHER, THE FINAL BRIGHTNESS MEASUREMENT AT TIME OF ACCEPTANCE SHALL BE 430 MICROLAMBERTS MINIMUM.
- 7-INTERNAL PRESSURE 2.50 ATMOSPHERES NOMINAL AT +70°F.
- 8-COLOR OF PHOSPHOR: GREEN, SPECTRAL PEAK 5250Å ± 50Å, 1/2 PEAK WIDTH 700Å ± 50Å.
- 9-SURFACES MARKED "X" COATING, EPOXY, M22750-15-17925 PER MIL-C-22750 OR EPOXY PAINT, WHITE, 11765530. APPLY TWO COATS MINIMUM, FULL LENGTH OF VIAL.

## SUGGESTED SOURCE OF SUPPLY

| VENDOR  | VENDOR PART NO. |
|---|-----------------|
| SELF POWERED LIGHTING LTD<br>CODE IDENT NO 29218<br>8 WESTCHESTER PLAZA<br>ELMSFORD, N.Y. 10523 | NOT AVAILABLE   |
| SAUNDER-ROE DEVELOPMENTS LTD<br>WILKINGTON ROAD<br>HAYES MIDDLESEX UB3 4NB<br>ENGLAND           | NOT AVAILABLE   |
| BRANDHURST CO. LTD.<br>P.O. BOX 70<br>HIGH WYCOMBE<br>BUCKINGHAMSHIRE HP12-3PS<br>ENGLAND       | NOT AVAILABLE   |
| M.B. MICROTEC AG<br>FRIEBURGERSTRASSE 624<br>CH-3172-NIEDERWANGEN<br>SWITZERLAND                | NOT AVAILABLE   |



## APPLICABLE DOCUMENTS

SOAP 11739555

## SPECIFICATION CONTROL DRAWING

PART NO. 11739555

## LAMP

RADIOLUMINOUS

11739555

SOURCE USED ON:  
M64 SIGHTUNIT  
M64A1 SIGHTUNIT

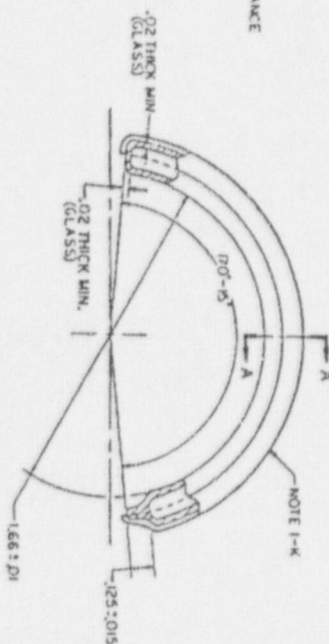
| REV | DESCRIPTION  | DATE     | BY  | CHKD |
|-----|--|----------|-----|------|
| 1   | NOVA P4/2515, 79-11-06<br>RECP FOLDS 80-02-50<br>WITH CHANGE | 80-04-04 | WOG |      |
| 2   | C NOVA P4/2000/8-40-250 (560711) M64                         |          |     |      |
| 3   | D NOVA P4/2013/09-20-03 (56052-13)                           |          |     |      |
| 4   | E NOVA P4/2000/4 300511 300603                               |          |     |      |

PRODUCTION DRAWING APPROVED FOR  
FURNITURE AND DISTRIBUTION IS UNLIMITED



## 1 - REQUIREMENTS

- A-VIAL: VETRIAL: GLASS, TYPE (GLASS ASSPEC DO-G-5-4L.  
 B-COLOR OF PHOSPHORESCENT SPECTRAL PEAK 5200 Å: SOL 1/2 PEAK WITH  
 700 Å SOL 1  
 C-TOTAL TO BE FILLED WITH PRODUCTION GRADE TRITANIUM IN MINIMUM 90% PURE,  
 LESS THAN 1% TRITANIUM OXIDE, BALANCE OF CONSTITUENTS TO BE CHEMICALLY  
 PURE, TOTAL 22 CUBIC INCHES.  
 D-THE SHALL BE NO EVIDENCE OF PHYSICAL FAILURE SUCH AS FRACTURING OR  
 LIGHT LOSS DUE TO EXPOSURE. THE LAMP TO -80°F AND +100°F FOR A  
 PERIOD OF 8 HOURS AT EACH TEMPERATURE.  
 E-ATTER SUBMERGING THE LAMP IN ROOM TEMPERATURE WATER FOR 4 HOURS,  
 RADIOACTIVE CONTENT OF THE WATER SHALL NOT EXCEED .005 MICROCURIES,  
 F-PRIOR TO MAKING BRIGHTNESS MEASUREMENTS, LAMP SHALL BE ALLOWED TO  
 STABILIZE FOR A PERIOD OF 25 DAYS AFTER MANUFACTURE.  
 G-FOLLOWING THE STABILIZATION PERIOD AND UP TO 120 DAYS, FROM DATE OF  
 MANUFACTURE, BRIGHTNESS MEASUREMENTS SHALL NOT SHOW A DECAY IN EXCESS  
 OF 25% WHEN MEASURED OVER ANY CONSECUTIVE 30-DAY PERIOD. THE  
 MINOR BRIGHTNESS MEASUREMENT AT TIME OF ACCEPTANCE SHALL BE 420  
 MICROLUMENS PER SQUARE INCH.  
 H-MARKING LABELING AND SHIPPING OF PACKAGES AND CONTAINER SHALL BE IN ACCORDANCE  
 WITH DODM 44143 RADIOACTIVE COMMODITIES IN THE DOD SUPPLY SYSTEM.  
 J-PREPARE SURFACTANT OF GLASS, AND WET, APPLY AND CURE FINISH IN ACCORDANCE  
 WITH MANUFACTURER'S RECOMMENDATION.  
 K-SURFACE FINISH:-  
 1-LACQUEER, ACETIC, SPEC. MIL-81352, COLOR WHITE NO. 17875 OF FED-510-592,  
 .005 MAX THICKNESS.  
 2-ATTRITING FINISH: PAINT, EPOXY, MIL-P-47115, COLOR WHITE NO. 17875 OF  
 FED-510-592, .005 MAX THICKNESS.  
 3-ALTERNATIVE FINISH: EPOXY PAINT, WHITE, 11715350, .005 MAX THICKNESS.  
 Z-ORIENTATION OF THE SUGGESTED SOURCE OF SUPPLY HEREON IS NOT TO BE CONSTRUED  
 AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY AS A SOURCE OF SUPPLY  
 FOR THE ITEM.  
 3-SUGGESTED SOURCE OF SUPPLY:-  
 SELF POWERED LIGHTING LTD.  
 8 WEST CHESTER PLAZA  
 ELIZABETH, N.J. 07201  
 VENDOR PART NO. NOT AVAILABLE  
 SAUNDERS-ROE DEVELOPMENTS LTD.  
 MILLINGTON ROAD  
 WIDNES, LANCASHIRE  
 WIDNES, ENGLAND  
 VENDOR PART NO. NOT AVAILABLE  
 BRANDHART CO LTD.  
 P.O. BOX 10  
 WELINGTON ROAD,  
 HIGLI WYCOMBE,  
 BUCKS HP23 5PS ENGLAND  
 VENDOR PART NO. NOT AVAILABLE  
 M.B. MICROTEC AG.  
 CH-3422 NIEDERWANGEN  
 FREIBURGSTRASSE 624  
 SWITZERLAND  
 VENDOR PART NO. NOT AVAILABLE



SECTION A-A

SOURCE USED ON:  
M138 ELBOW TELESCOPE

[illegible]

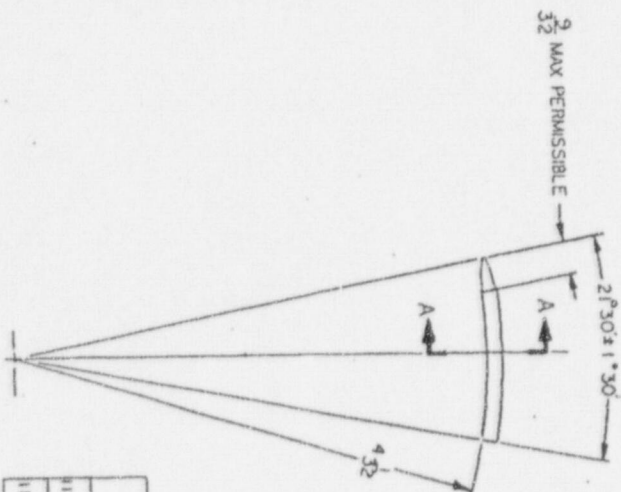
# REQUIREMENTS

1. MARKING, LABELING AND SHIPPING OF PACKAGES AND CONTAINERS SHALL BE IN ACCORDANCE WITH DSA 4145.8 RADIOACTIVE COMMODITIES IN THE DOD SUPPLY SYSTEM.
2. THERE SHALL BE NO EVIDENCE OF PHYSICAL FAILURE SUCH AS FRACTURING OR LIGHT LOSS DUE TO EXPOSURE OF THE LIGHT SOURCE TO -60° AND +160° F FOR A PERIOD OF EIGHT HOURS AT EACH TEMPERATURE.
3. SUBSEQUENT TO SUBMERGING THE LIGHT SOURCE IN WATER FOR 4 HOURS AT ROOM TEMPERATURE, RADIOACTIVE CONTENT OF THE WATER SHALL NOT EXCEED .005 MICROCURIE.
4. PRIOR TO MAKING BRIGHTNESS MEASUREMENTS, LAMPS SHALL BE ALLOWED TO STABILIZE FOR A PERIOD OF 25 DAYS FROM MANUFACTURE.
5. FOLLOWING THE STABILIZATION PERIOD AND UP TO 120 DAYS FROM DATE OF MANUFACTURE, BRIGHTNESS MEASUREMENTS SHALL NOT SHOW A DECAY IN EXCESS OF 2.5% WHEN MEASURED OVER ANY CONSECUTIVE 30 DAY PERIOD. FURTHER, THE FINAL BRIGHTNESS MEASUREMENT AT TIME OF ACCEPTANCE SHALL BE 520 MICROAMBERTS MINIMUM.
6. VIAL TO BE FILLED WITH PRODUCTION GRADE TRITIUM H3 MINIMUM 94% PURE, LESS THAN 76 TRITIUM OXIDE, BALANCE OF CONSTITUENTS TO BE CHEMICALLY INERT. 0.80 CURIE MAX.
7. COLOR OF PHOSPHOR: SEE TABULATION.
8. VIAL MATERIAL: GLASS, TYPE I, CLASS A, .020 MIN WALL THICKNESS, SPEC DO-6-541.
9. A. PAINT, EPOXY M22750-15-77925 PER MIL-C-22750  
B. EPOXY PAINT, WHITE, 11785531.005 MAX THICKNESS, APPLY TWO COATS (MIN).

IDENTIFICATION OF THE SUGGESTED SOURCE(S) OF SUPPLY HEREON IS NOT TO BE CONSIDERED AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY AS SOURCE OF SUPPLY FOR THE ITEM(S).

| SUGGESTED SOURCES OF SUPPLY   | VENDOR        | VENUE (PART NO.) |
|---|---------------|------------------|
| SELF-POWERED LIGHTING LTD<br>8 WEST CHESTER PLAZA<br>ELLSFORD, N.Y. 10523<br>CODE IDENT NO 29218              | NOT AVAILABLE |                  |
| BRANDHURST CO. LTD.<br>P.O. BOX 70<br>BUCKINGHAMSHIRE HP12-3PS<br>ENGLAND                                     | NOT AVAILABLE |                  |
| MENG & BENETELI MACLEARN AG<br>FRIEDBURGERSTRASSE 624<br>CH-3172-NIEDERWANGEN<br>SWITZERLAND                  | NOT AVAILABLE |                  |
| SAUNDERS-ROE DEVELOPMENTS LTD<br>WESTLAND GROUP<br>NORTH HYDE RD<br>HAYES, MIDDLESEX UB34NR<br>UNITED KINGDOM | NOT AVAILABLE |                  |

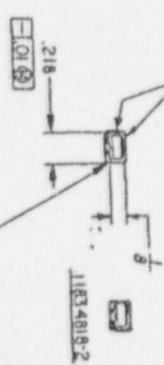
SOURCE USED ON:  
M224 HANDLE AND FIRING M



APPLY LACQUER, ACRYLIC, SPEC COLOR WHITE NO.17875, SPEC MIL-E-1352 FULL LENGTH OF VIAL .005 MAX THICKNESS AS SHOWN.  
NOTE - CLEAN SURFACE PRIOR TO APPLICATION.  
ALTERNATIVE - SEE NOTE 9

| PART NO    | CURIES MAX | INTERNAL PRESSURE AT JOF | COLOR OF PHOSPHOR | SPECTRAL PEAK | 1/2 PEAK WIDTH |
|------------|------------|--------------------------|-------------------|---------------|----------------|
| 11834818-1 | 0.8        | 2.50                     | GREEN             | 5250Å ± 50    | 700Å ± 50      |
| 11834818-2 | 0.8        | 2.50                     | GREEN             | 5250Å ± 50    | 700Å ± 50      |

CLASS SEE NOTE B-  
SECTION A-A



| NO | DESCRIPTION      | QTY | UNIT |
|----|------------------|-----|------|
| 1  | SEE ENR 1417-300 | 1   | EA   |
| 2  | SEE ENR 1417-300 | 1   | EA   |
| 3  | SEE ENR 1417-300 | 1   | EA   |
| 4  | SEE ENR 1417-300 | 1   | EA   |
| 5  | SEE ENR 1417-300 | 1   | EA   |
| 6  | SEE ENR 1417-300 | 1   | EA   |
| 7  | SEE ENR 1417-300 | 1   | EA   |
| 8  | SEE ENR 1417-300 | 1   | EA   |
| 9  | SEE ENR 1417-300 | 1   | EA   |
| 10 | SEE ENR 1417-300 | 1   | EA   |

APPLICABLE DOCUMENTS

| NO | DESCRIPTION      | DATE        | ISSUED |
|----|------------------|-------------|--------|
| 1  | SEE ENR 1417-300 | 13 FEB 1979 | 1      |
| 2  | SEE ENR 1417-300 | 13 FEB 1979 | 1      |
| 3  | SEE ENR 1417-300 | 13 FEB 1979 | 1      |
| 4  | SEE ENR 1417-300 | 13 FEB 1979 | 1      |
| 5  | SEE ENR 1417-300 | 13 FEB 1979 | 1      |
| 6  | SEE ENR 1417-300 | 13 FEB 1979 | 1      |
| 7  | SEE ENR 1417-300 | 13 FEB 1979 | 1      |
| 8  | SEE ENR 1417-300 | 13 FEB 1979 | 1      |
| 9  | SEE ENR 1417-300 | 13 FEB 1979 | 1      |
| 10 | SEE ENR 1417-300 | 13 FEB 1979 | 1      |

PART NO SEE TABULATION

LAMP RADIOILLUMINOUS

119200 11834818

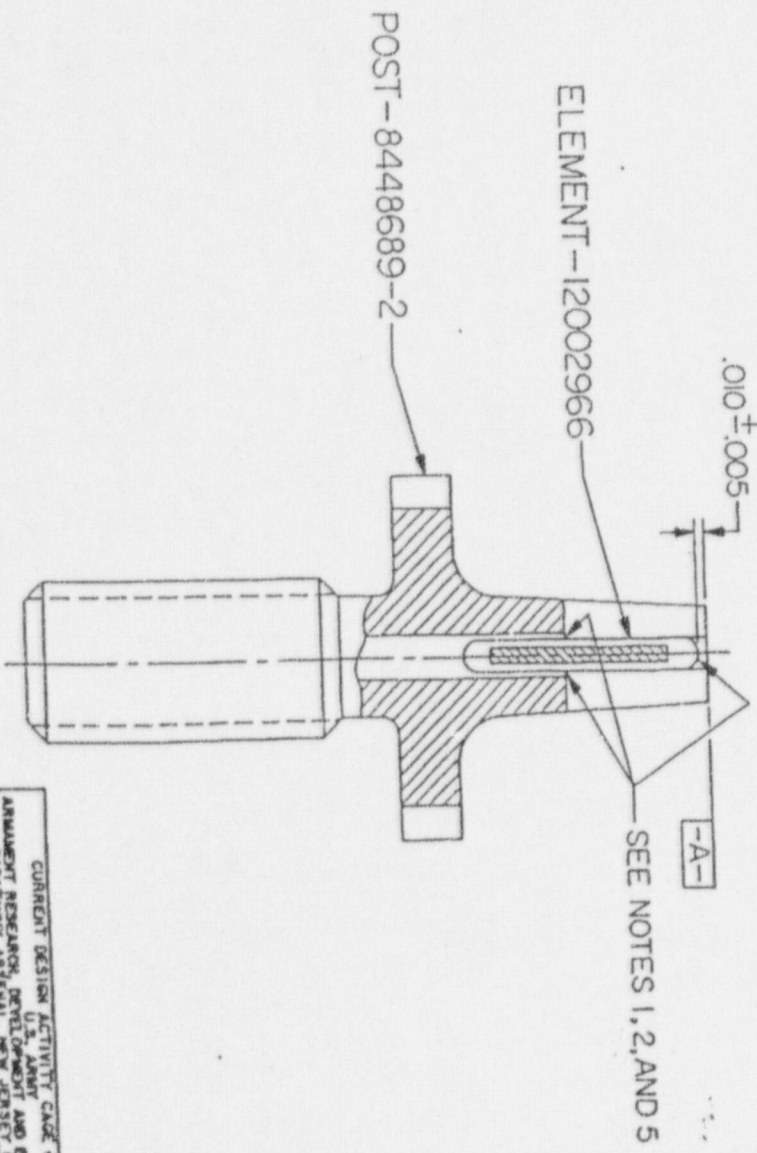
NOTES:

1. PRIME WITH PRIMER, TYPE I, MIL-A-46106.
2. APPLY SILICONE ADHESIVE: ONLY THE SILICONE ADHESIVE DESCRIBED ON THIS DRAWING HAS BEEN APPROVED FOR USE IN THE APPLICATION SPECIFIED HEREON. A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY ARDEC.

| APPROVED SOURCE OF SUPPLY |                   |
|---------------------------|-------------------|
| VENDOR                    | VENDOR'S ITEM NO. |
| DOW CORNING CORP.         | SILASTIC 730 RTV  |
| MIDLAND, MICHIGAN 48640   |                   |

3. REMOVABLE RADIOACTIVE CONTAMINATION SHALL BE LESS THAN 1000 DPM.
4. THE APPROXIMATE LIFE LIMIT OF THIS RADIOACTIVE ASSEMBLY IS 12.5 YEARS FROM DATE OF MANUFACTURE.
5. .005 MAX ALLOWABLE PRIMER AND ADHESIVE ABOVE SURFACE -A-.
6. IMMEDIATELY AFTER PRIMER AND ADHESIVE APPLICATION, EACH POST ASSEMBLY SHALL BE CONDITIONED FOR 7 DAYS (168 HRS) MINIMUM AT 72°F ± 7°F. HUMIDITY CONTROL IS NOT REQUIRED.

MIL-W-13855 APPLIES.



SEE PL-12002965

SOURCE USED ON:  
M16A1 RIFLE, 5.56MM

| MECHANICAL PROPERTIES         |     |
|-------------------------------|-----|
| Y1                            | MIN |
| Y2                            | MAX |
| EL 2                          |     |
| SA                            |     |
| SH                            |     |
| BH                            |     |
| NEXT ASSY USED ON APPLICATION |     |

POST ASSEMBLY

PART NO. 12002965

DEPT OF THE ARMY  
U.S. ARMY WEAPONS COMMAND  
ROCK ISLAND, ILLINOIS, 61201

CURRENT DESIGN ACTIVITY CASE CODE 19200  
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER  
PICATINNY ARSENAL, NEW JERSEY 07804-2000

|                                   |             |                                   |  |
|-----------------------------------|-------------|-----------------------------------|--|
| DATE 5 MAY 73c M.                 |             | CONTRACT NO.                      |  |
| PREPARED                          | REVIEWED    | APPROVED                          |  |
| CHECKED                           | ENGINEER    | SUBMITTED                         |  |
| John Bunker<br><i>[Signature]</i> |             | John Bunker<br><i>[Signature]</i> |  |
| SITE CODE (CONT NO.)              | DRAWING NO. | SCALE 1 OF 1                      |  |
| C 19204                           | 12002965    |                                   |  |



| REVISIONS |  | DATE | BY | REASON                  |
|-----------|--|------|----|-------------------------|
| 1         |  |      |    | REDAWN WITHOUT CHANGE   |
| 2         |  |      |    | MOD D914025E (C048P203) |

# NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-STD-100

2. MATERIAL: DOROSILICATE GLASS

3. TRITIUM CONTENT 10.0 ± 2 CURIES

4. MAXIMUM LEAKAGE RATE OF .05 MICROCURIES PER 24 HOURS, MEASURED BY LIQUID SCINTILLATION TECHNIQUE IN ACCORDANCE WITH ANSI N340

5. IDENTIFY PER MIL-STD-130, 1920-SEE TABULATION MFR-CAGE CODE

6. QUALITY ASSURANCE REQUIREMENTS (QAR-3) APPLY TO THIS DRAWING (QAR NO. SAME AS PART NO.)

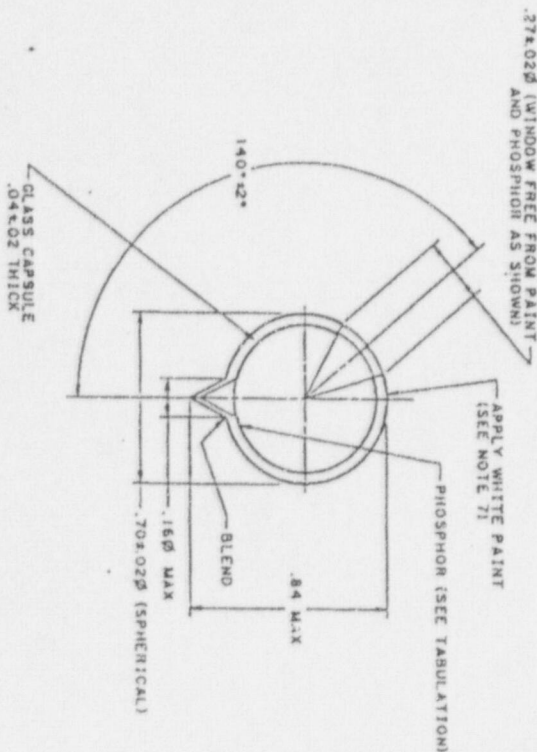
7. APPLY GLOSS WHITE PAINT, COLOR NO. 17873.

8. USING EITHER:  
A. LACQUEL, ACRYLIC, MIL-L-8332, .003 THICK MAX. OR  
B. PAINT, EPOXY, WHITE, MIL-P-112, .003 THICK MAX. OR  
C. 1183320, .003 THICK MAX

9. THE INTEGRATED SPECTRAL EMISSION OF A YELLOW TRITIUM LIGHT SOURCE SHALL NOT BE LESS THAN 6.3 FOR THE SUMMATION OF THE RESULTANT WEIGHTED VALUES OBTAINED FOR ALL OF THE DEFINED WAVELENGTHS FOR THAT LIGHT SOURCE AS SHOWN BELOW.

SPECTRAL EMISSION WEIGHTING FACTORS FOR SPECIFIC WAVELENGTHS

| WAVELENGTH (NM) | WEIGHTING FACTOR |
|-----------------|------------------|
| 330.0           | 0.001            |
| 350.0           | 0.010            |
| 360.0           | 0.040            |
| 370.0           | 0.296            |
| 380.0           | 0.892            |
| 390.0           | 0.296            |
| 400.0           | 0.292            |
| 410.0           | 0.292            |
| 420.0           | 0.292            |
| 430.0           | 0.292            |
| 440.0           | 0.292            |
| 450.0           | 0.292            |
| 460.0           | 0.292            |
| 470.0           | 0.292            |
| 480.0           | 0.292            |
| 490.0           | 0.292            |
| 500.0           | 0.292            |
| 510.0           | 0.292            |
| 520.0           | 0.292            |
| 530.0           | 0.292            |
| 540.0           | 0.292            |
| 550.0           | 0.292            |
| 560.0           | 0.292            |
| 570.0           | 0.292            |
| 580.0           | 0.292            |
| 590.0           | 0.292            |
| 600.0           | 0.292            |
| 610.0           | 0.292            |
| 620.0           | 0.292            |
| 630.0           | 0.292            |
| 640.0           | 0.292            |



| PART NO.   | PHOSPHOR COLOR | BANDWIDTH AT 50% INTENSITY | SOURCE BRUSH THICKNESS    |
|------------|----------------|----------------------------|---------------------------|
| 12304729-1 | GREEN          | 75 NANOMETERS              | 3.0 FOOT LAMBERTS MINIMUM |
| 12304729-2 | YELLOW         | SEE NOTE 8                 | 3.0 FOOT LAMBERTS MINIMUM |

SOURCE USED ON:  
MRS COLLIMATOR, INFINITY

LIGHT SOURCE

| PART NO. SEE TABULATION           |                              |
|-----------------------------------|------------------------------|
| U.S. ARMY TANK-AUTOMOTIVE COMMAND | WARRREN, MICHIGAN 48397-5000 |
| DATE                              | 19207                        |
| 12304729                          |                              |

USE THIS SPACE FOR NOTES

1. DRAWING: 12304729-1

2. TITLE: LIGHT SOURCE

3. DATE: 19207

4. PART NO.: 12304729

5. DRAWING NO.: 12304729

6. DRAWING DATE: 19207

7. DRAWING BY: J. S. WILSON

8. DRAWING CHECKED: J. S. WILSON

9. DRAWING APPROVED: J. S. WILSON

10. DRAWING REVISIONS: 1. 12304729-1

CONTRACT NO. 48397-5000

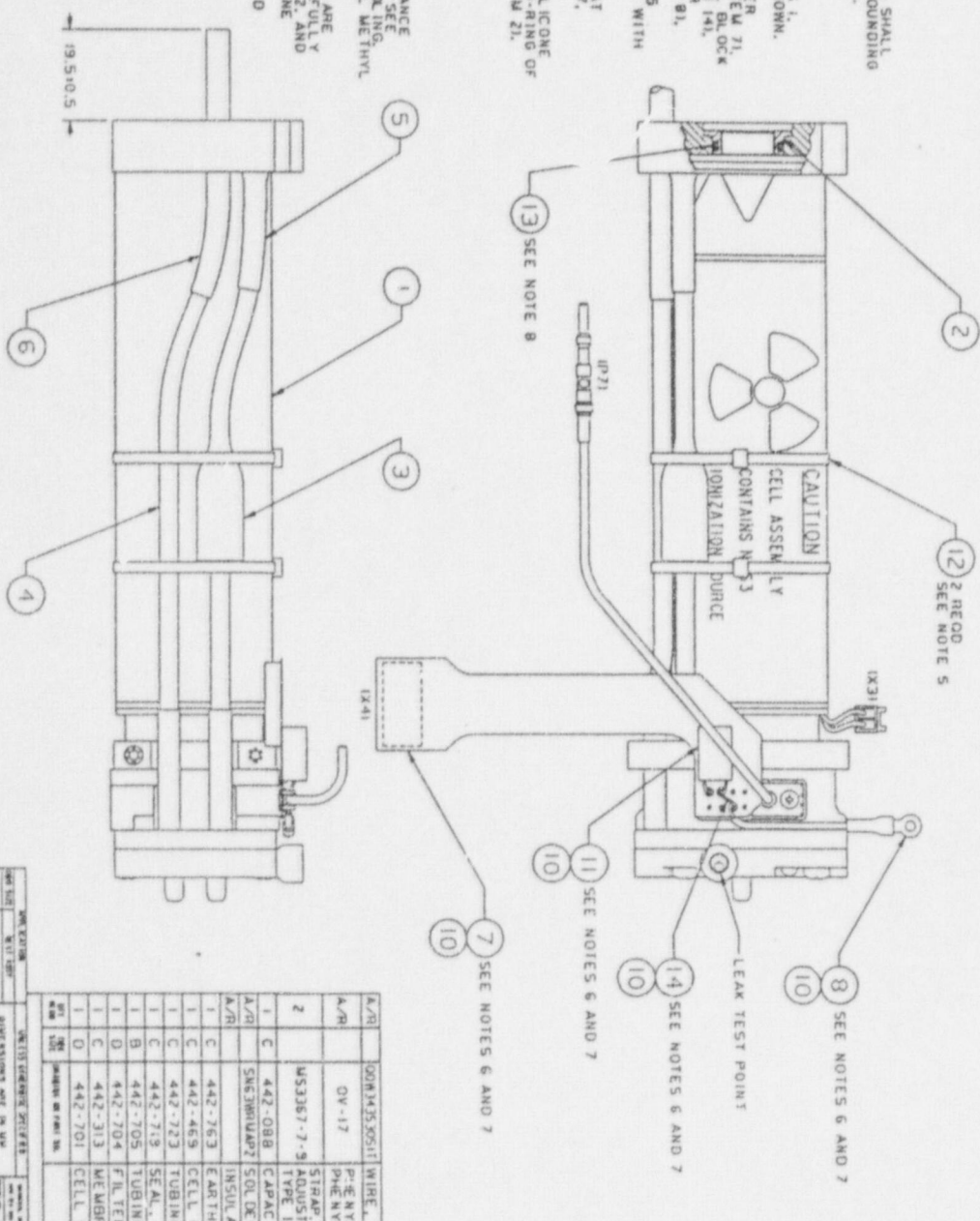
U.S. ARMY TANK-AUTOMOTIVE COMMAND

WARRREN, MICHIGAN 48397-5000

DEVICE DRAWINGS

Enclosure 2

|             |   |   |   |   |   |   |   |
|-------------|---|---|---|---|---|---|---|
| 8           | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| REF: 151085 |   |   |   |   |   |   |   |



|      |           |          |         |      |          |
|------|-----------|----------|---------|------|----------|
| LINE | DATE/TIME | CALL     | NO.     | EXT. | NAME     |
| 129  |           |          |         |      | RECEIVED |
| 130  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 131  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 132  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 133  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 134  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 135  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 136  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 137  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 138  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 139  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 140  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
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| 166  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
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| 193  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 194  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
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| 196  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
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| 198  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 199  | 44-7-53   | RECEIVED | 44-7-53 |      |          |
| 200  | 44-7-53   | RECEIVED | 44-7-53 |      |          |

| A/R | ITEM NO.      | DESCRIPTION OF PARTS   | QTY REQD    |
|-----|---------------|--|-------------|
| A/R | 100M1435J0611 | WIRE, ELECT., COPPER   | QD-W-743    |
| A/R | OV-17         | PHENYL METHYL SILICONE, 50X<br>PHENYL SEE NOTE 91  | 13          |
| Z   | M3387-7-3     | STRAP, TIE DOWN ELECTRICAL COMPONENTS,<br>ADJUSTABLE, SELF-CLIMBING, PLASTIC,<br>TYPE I, CLASS 1 | 12          |
| I   | 442-088       | CAPACITOR, METALIZED POLYESTER   | 11          |
| A/R | SMB2HWA02     | SOLDER, ROSIN CORE   | QO-S-571    |
| A/R |               | INSULATING COMPOUND, ELECT., TYPE SR   | ML-11-46028 |
| I   | 442-763       | EARTH STRAP ASSEMBLY   | 8           |
| I   | 442-465       | CELL FILM WIRE ASSEMBLY  | 7           |
| I   | 442-723       | TUBING, NONMETALLIC  | 6           |
| I   | 442-719       | SEAL, NONMETALLIC  | 5           |
| I   | 442-705       | TUBING, NONMETALLIC  | 4           |
| I   | 442-704       | FILTER ASSEMBLY  | 3           |
| I   | 442-313       | MEMBRANE ASSEMBLY  | 2           |
| I   | 442-701       | CELL SIEVE ASSEMBLY  | 1           |
| END |               |  |             |
|     |               | TOTAL REVISION NO PARTIAL  | REVISION    |
|     |               | (PAGE 02)  | END         |

[illegible]

1975-1980, 1981-1982, 1983-1984, 1985-1986, 1987-1988, 1989-1990, 1991-1992, 1993-1994, 1995-1996, 1997-1998, 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007-2008, 2009-2010, 2011-2012, 2013-2014, 2015-2016, 2017-2018, 2019-2020, 2021-2022, 2023-2024, 2025-2026, 2027-2028, 2029-2030, 2031-2032, 2033-2034, 2035-2036, 2037-2038, 2039-2040, 2041-2042, 2043-2044, 2045-2046, 2047-2048, 2049-2050, 2051-2052, 2053-2054, 2055-2056, 2057-2058, 2059-2060, 2061-2062, 2063-2064, 2065-2066, 2067-2068, 2069-2070, 2071-2072, 2073-2074, 2075-2076, 2077-2078, 2079-2080, 2081-2082, 2083-2084, 2085-2086, 2087-2088, 2089-2090, 2091-2092, 2093-2094, 2095-2096, 2097-2098, 2099-2100, 2101-2102, 2103-2104, 2105-2106, 2107-2108, 2109-2110, 2111-2112, 2113-2114, 2115-2116, 2117-2118, 2119-2120, 2121-2122, 2123-2124, 2125-2126, 2127-2128, 2129-2130, 2131-2132, 2133-2134, 2135-2136, 2137-2138, 2139-2140, 2141-2142, 2143-2144, 2145-2146, 2147-2148, 2149-2150, 2151-2152, 2153-2154, 2155-2156, 2157-2158, 2159-2160, 2161-2162, 2163-2164, 2165-2166, 2167-2168, 2169-2170, 2171-2172, 2173-2174, 2175-2176, 2177-2178, 2179-2180, 2181-2182, 2183-2184, 2185-2186, 2187-2188, 2189-2190, 2191-2192, 2193-2194, 2195-2196, 2197-2198, 2199-2200, 2201-2202, 2203-2204, 2205-2206, 2207-2208, 2209-2210, 2211-2212, 2213-2214, 2215-2216, 2217-2218, 2219-2220, 2221-2222, 2223-2224, 2225-2226, 2227-2228, 2229-2230, 2231-2232, 2233-2234, 2235-2236, 2237-2238, 2239-2240, 2241-2242, 2243-2244, 2245-2246, 2247-2248, 2249-2250, 2251-2252, 2253-2254, 2255-2256, 2257-2258, 2259-2260, 2261-2262, 2263-2264, 2265-2266, 2267-2268, 2269-2270, 2271-2272, 2273-2274, 2275-2276, 2277-2278, 2279-2280, 2281-2282, 2283-2284, 2285-2286, 2287-2288, 2289-2290, 2291-2292, 2293-2294, 2295-2296, 2297-2298, 2299-2300, 2301-2302, 2303-2304, 2305-2306, 2307-2308, 2309-2310, 2311-2312, 2313-2314, 2315-2316, 2317-2318, 2319-2320, 2321-2322, 2323-2324, 2325-2326, 2327-2328, 2329-2330, 2331-2332, 2333-2334, 2335-2336, 2337-2338, 2339-2340, 2341-2342, 2343-2344, 2345-2346, 2347-2348, 2349-2350, 2351-2352, 2353-2354, 2355-2356, 2357-2358, 2359-2360, 2361-2362, 2363-2364, 2365-2366, 2367-2368, 2369-2370, 2371-2372, 2373-2374, 2375-2376, 2377-2378, 2379-2380, 2381-2382, 2383-2384, 2385-2386, 2387-2388, 2389-2390, 2391-2392, 2393-2394, 2395-2396, 2397-2398, 2399-2400, 2401-2402, 2403-2404, 2405-2406, 2407-2408, 2409-2410, 2411-2412, 2413-2414, 2415-2416, 2417-2418, 2419-2420, 2421-2422, 2423-2424, 2425-2426, 2427-2428, 2429-2430, 2431-2432, 2433-2434, 2435-2436, 2437-2438, 2439-2440, 2441-2442, 2443-2444, 2445-2446, 2447-2448, 2449-2450, 2451-2452, 2453-2454, 2455-2456, 2457-2458, 2459-2460, 2461-2462, 2463-2464, 2465-2466, 2467-2468, 2469-2470, 2471-2472, 2473-2474, 2475-2476, 2477-2478, 2479-2480, 2481-2482, 2483-2484, 2485-2486, 2487-2488, 2489-2490, 2491-2492, 2493-2494, 2495-2496, 2497-2498, 2499-2500, 2501-2502, 2503-2504, 2505-2506, 2507-2508, 2509-2510, 2511-2512, 2513-2514, 2515-2516, 2517-2518, 2519-2520, 2521-2522, 2523-2524, 2525-2526, 2527-2528, 2529-2530, 2531-2532, 2533-2534, 2535-2536, 2537-2538, 2539-2540, 2541-2542, 2543-2544, 2545-2546, 2547-2548, 2549-2550, 2551-2552, 2553-2554, 2555-2556, 2557-2558, 2559-2560, 2561-2562, 2563-2564, 2565-2566, 2567-2568, 2569-2570, 2571-2572, 2573-2574, 2575-2576, 2577-2578, 2579-2580, 2581-2582, 2583-2584, 2585-2586, 2587-2588, 2589-2590, 2591-2592, 2593-2594, 2595-2596, 2597-2598, 2599-2600, 2601-2602, 2603-2604, 2605-2606, 2607-2608, 2609-2610, 2611-2612, 2613-2614, 2615-2616, 2617-2618, 2619-2620, 2621-2622, 2623-2624, 2625-2626, 2627-2628, 2629-2630, 2631-2632, 2633-2634, 2635-2636, 2637-2638, 2639-2640, 2641-2642, 2643-2644, 2645-2646, 2647-2648, 2649-2650, 2651-2652, 2653-2654, 2655-2656, 2657-2658, 2659-2660, 2661-2662, 2663-2664, 2665-2666, 2667-2668, 2669-2670, 2671-2672, 2673-2674, 2675-2676, 2677-2678, 2679-2680, 2681-2682, 2683-2684, 2685-2686, 2687-2688, 2689-2690, 2691-2692, 2693-2694, 2695-2696, 2697-2698, 2699-2700, 2701-2702, 2703-2704, 2705-2706, 2707-2708, 2709-2710, 2711-2712, 2713-2714, 2715-2716, 2717-2718, 2719-2720, 2721-2722, 27

THIRD ANGLE  
PROJECTION

5  4

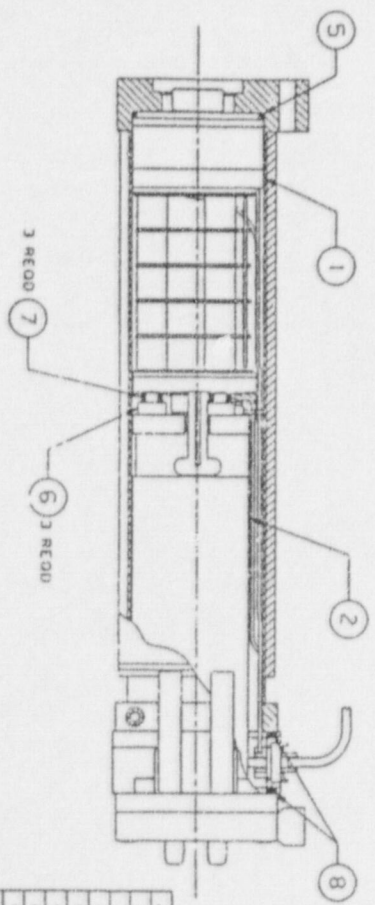
METRIC

|                    |            |         |         |          |  |
|--------------------|------------|---------|---------|----------|--|
| MODULE, DRIFT TUBE |            | LEDA MC |         | PART OFF |  |
| QTY                | UNIT PRICE | QTY     | 442-069 |          |  |
| 0                  | 81361      |         |         |          |  |
| UNIT PRICE         | QTY        |         |         |          |  |
| 2                  | 1          |         |         |          |  |



[illegible]

- 
- Diagram of the Cell Assembly showing the internal components and wiring. The diagram includes a top view and a side view. The top view shows a rectangular assembly with a central circular component labeled "CELL ASSEMBLY" and "CONTAINS - W-63 IONISATION SOURCE". The side view shows the assembly mounted on a base with various electrical connections. Callouts 3, 4, and 5 point to specific components: 3 points to a terminal block, 4 points to a cable, and 5 points to a connector. Text labels include "CAUTION", "ACTIVITY: 370 MBq (10 microcurie)", and "SEE NOTE 5".



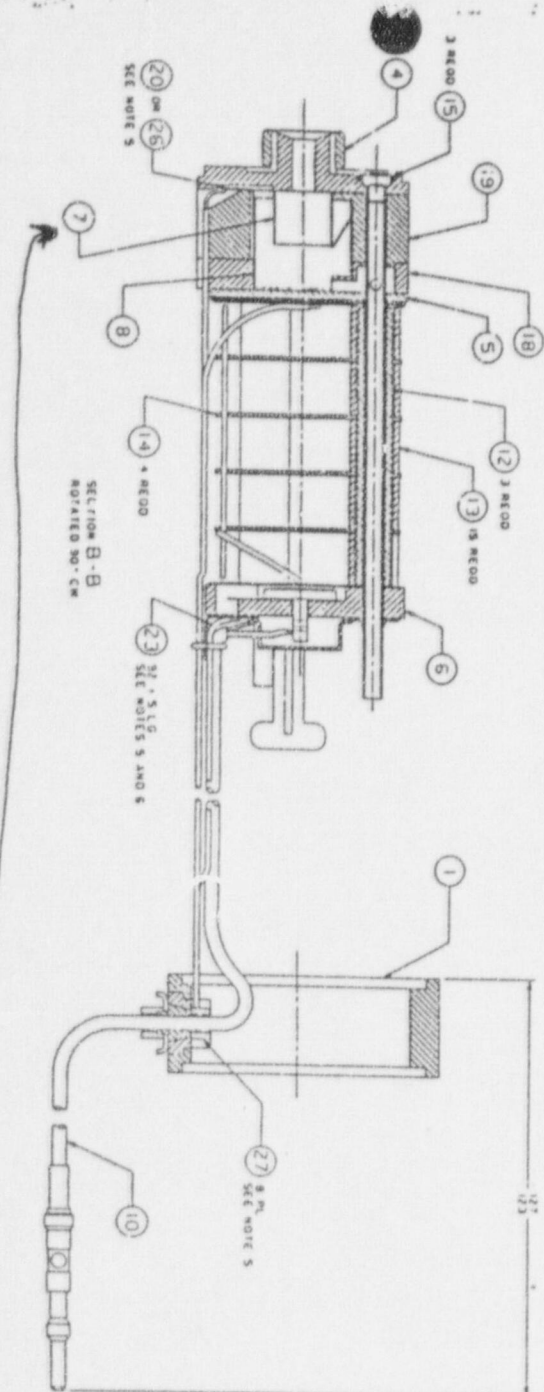
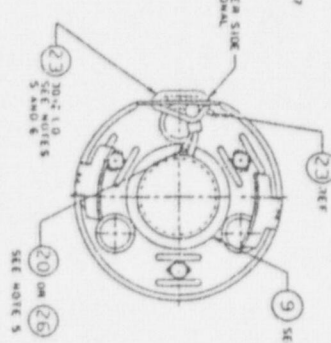
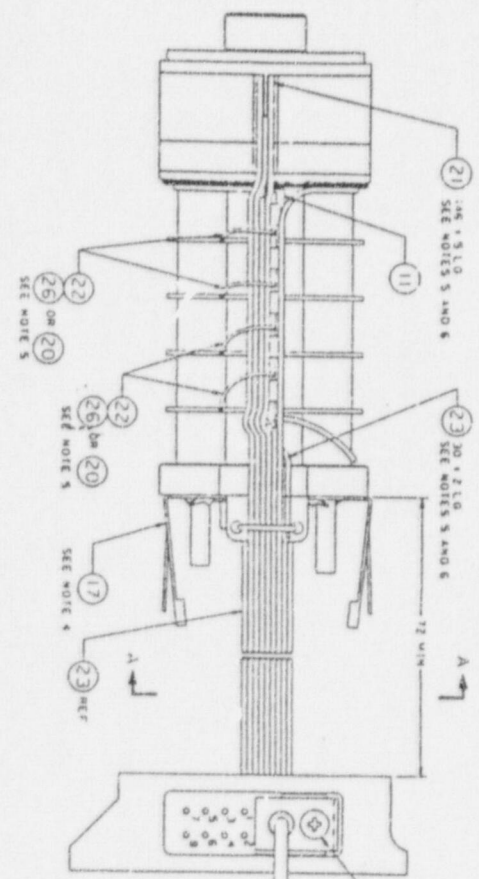
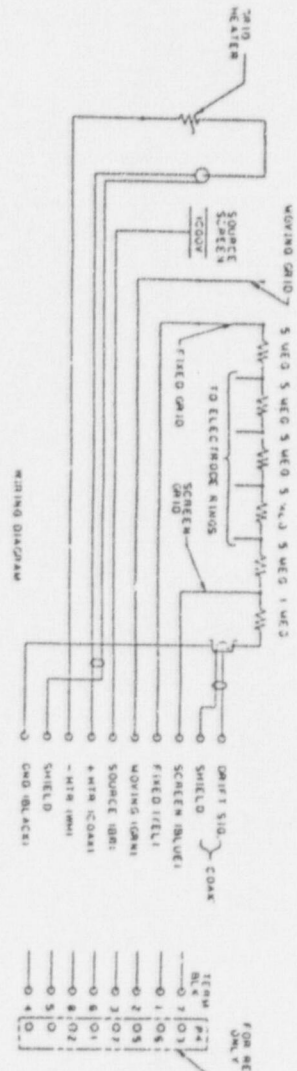
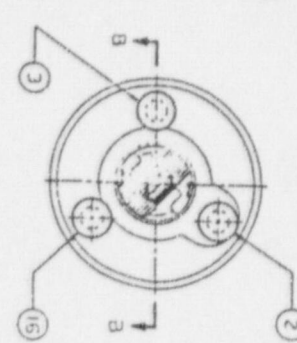
THIRD ANGLE  
PROJECTION



METRIC

1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 26

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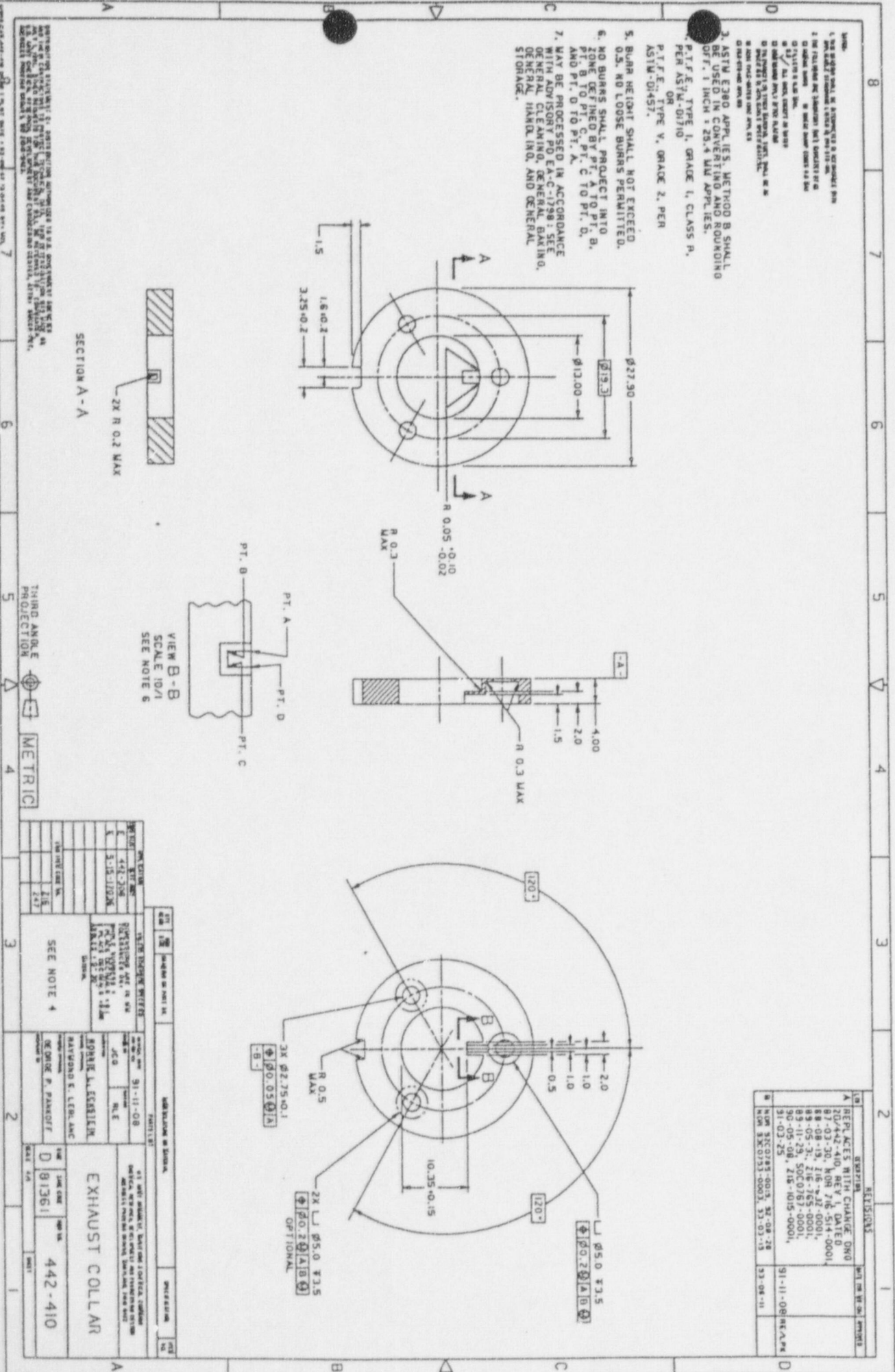


RAD SOURCE IS ITEM 7  
5-12-17-21

| ITEM | DESCRIPTION | QTY | UNIT | REMARKS |
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| 100  | ...         | ... | ...  | ...     |



same as ICAH





SECURITY CLASSIFICATION

METRIC

5 0

25

USED ON

7R/416

DO NOT SCALE

-306

83/4

-306



3RD ANGLE PROJECTION



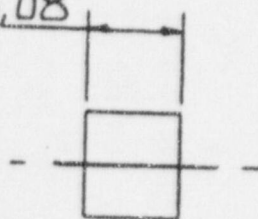
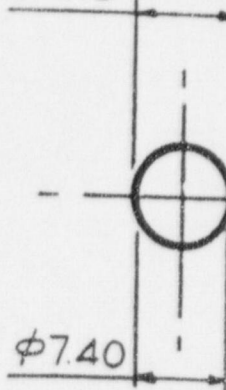
BS 308

ACTUAL  
SIZE

HANDLING STORE IN ACCORDANCE  
WITH GDL PC/021

NOTE

DIMENSIONS APPLY AFTER ELECTROLESS NICKEL  
PLATING.

 $7.0 \pm 0.08$ 

 $\phi 7.70$ 

 $\phi 7.40$ 

FINISH

1 ELECTROLESS Ni PLATE.  
TO DEF. 03-5/1

2 PLATE WITH Ni63  
-10 Mcl  $\pm \frac{3}{5}$  Mcl.

REMOVE ALL BURRS AND SHARP EDGES

MATERIAL

E3BRASS CZ108

TO BS 2874

FINISH

SEE  
ABOVE

DIMENSIONS IN MILLIMETRES

TOLERANCES UNLESS OTHERWISE STATED

WHOLE No.  $\pm$  ANGULAR DIMS.  $\pm$ 1 DEC. PLACE  $\pm$  DRILLED HOLES  $+$ 2 DEC. PLACES  $\pm 0.05$ 

PROD APP

SCALE 2/1

SURFACE ROUGHNESS

ENG APP

MJD

CHKD BY

MJD

TRCD BY

T.O's

DRN BY

T.O's

GRASEBY DYNAMICS LTD.  
BUSHEY-HERTS-ENGLAND

TITLE

SOURCE

|                               |       |          |
|-------------------------------|-------|----------|
| DCN 17099                     | 2     | 16.9.85  |
| PR DCN 17150                  | 1     | 1.5.85   |
| DCN-16066                     | H     | 6.7.84   |
| PPR D2 11256                  |       |          |
| AS 15651                      | Ga    | 20.2.84  |
| DR 10917                      |       |          |
| PROCEDURE WORDING<br>MODIFIED | G     | 25.8.83  |
| PROCEDURES ADDED              | F     | 17.3.83  |
| FINISH WAS DEF 03-10/1        | E     | 12.1.83  |
| FINISH NOTE ADDED.            | D     | 26.11.82 |
| TOL $\pm 0.08$ - ADDED        | C     | 15.11.82 |
| MATL WAS CZ121 (M)            | B     | 29.9.82  |
|                               | A     | 26.6.82  |
| MODIFICATION                  | ISSUE | DATE     |

SECURITY CLASSIFICATION

CONTRACTORS REFERENCE No.

40 416 - 416

SERVICE DRAWING NUMBER

SHEET

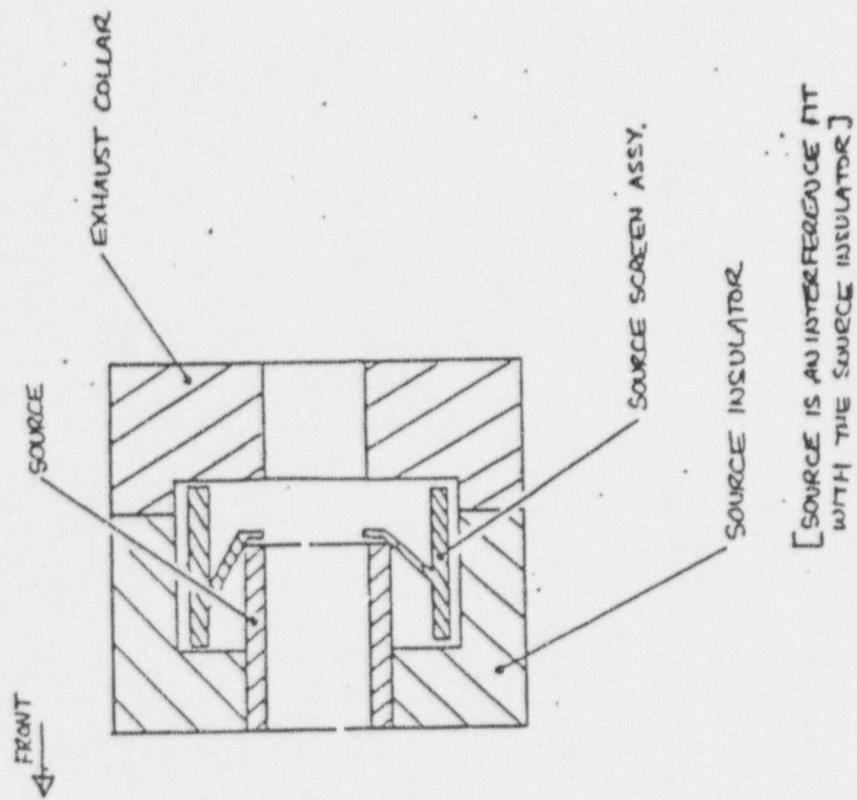
1 OF 1

SHTS

A  
4

MY 1249498

R99 021 155 1



| FSCM  | PART NUMBER | NAME AND ADDRESS  |
|-------|-------------|---|
| 51431 | AMM 5       | AMERSHAM/SEARLE CORP.<br>2636 S CLEARBROOK DRIVE<br>ARLINGTON HEIGHTS, IL 60005 |
| 5K923 | NRD A001    | NRD DIV. MARK III INDUSTRIES<br>2937 ALI BOULEVARD<br>GRAND ISLAND, NY. 14072   |

FOR QUALITY ASSURANCE PROVISIONS  
SEE QAP 5-15-8155

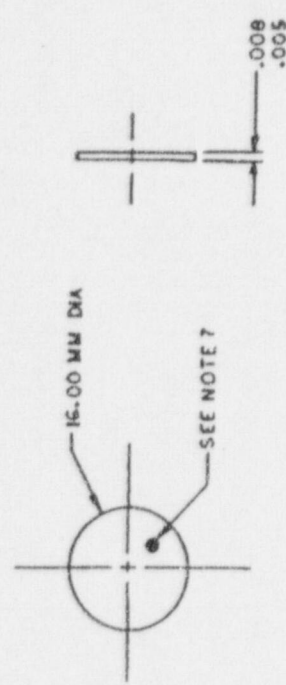
5.-AMERICIUM 241-SPECIAL FORM

6.- SOURCE MAT'L TO BE 125 ±20% MICROCURIES/5 q. CM. OVER ENTIRE DISK, ONE SIDE ONLY.

7.- MARK APPROX 1/8" DIA SPOT ON INACTIVE SIDE.

8.- CAUTION-RADIOACTIVE MATERIAL- PROCESS AND HANDLING IN ACCORDANCE WITH CODE OF FEDERAL REGULATIONS - CFR-10. TRANSPORTATION IN ACCORDANCE WITH CFR-49

9.- THE AMERICIUM FOIL SOURCE SHOULD BE WIPE TESTED USING STANDARD SCINTILLATION TECHNIQUES BEFORE ASSEMBLY INTO CELL. TOTAL REMOVABLE SURFACE CONTAMINATION SHOULD BE LESS THAN 5 NANOCURIES.



NOTES:

- THIS DRAWING SHALL BE INTERPRETTED IN ACCORDANCE WITH APPLICABLE STANDARDS LISTED IN MIL SPEC 8836-0000
- THE FOLLOWING ARE MANDATORY:
  - RESINATE BURRS
  - BREAK SHARP EDGES .010 MAX
  - PILLETS .010 MAX R.
  - ALL OVER, EXCEPT AS NOTED
  - DIMENSIONS APPLY AFTER PLATING
  - TOLERANCES ON STOCK MATERIAL SIZES, SHALL BE AS SPECIFIED IN APPLICABLE SPECIFICATIONS.
- ONLY THE ITEM DESCRIBED ON THIS DRAWING WHEN PROCURED FROM THE VENDOR(S) LISTED HEREON IS APPROVED BY CHEMICAL SYSTEMS LABORATORY, ABERDEEN PROVING GROUND, MD.21010 FOR USE IN THE APPLICATION(S) SPECIFIED HEREON. A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR APPROVAL BY CHEMICAL SYSTEMS LABORATORY, ABERDEEN PROVING GROUND, MD.21010.
- IDENTIFICATION OF THE APPROVED SOURCE(S) HEREON IS NOT TO BE CONSTRUED AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY AS A SOURCE OF SUPPLY FOR THE ITEM DESCRIBED ON THE DRAWING.

SOURCE CONTROL DRAWING

| QTY REQD                           | PLUMBING OR PART NO | NOMENCLATURE   | MATERIAL | SPECIFICATION  | ITE IN |
|------------------------------------|---------------------|--|----------|--|--------|
| LIST OF MATERIALS                  |                     |  |          |  |        |
| APPLICATION<br>85-15-8154          |                     | UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>TOLERANCES ON<br>2 PLACE DECIMALS ±.25 MM<br>3 PLACE DECIMALS ±.125<br>FRACTIONS ± 1/32<br>ANGLES ± 1° |          | APPROVALS<br>DESIGNED BY<br>CHECKED BY<br>DRAWN BY<br>DATE<br>80-08-15   |        |
| END ITEM CODE NO.<br>Z03           |                     | SEE NOTE 546   |          | U.S. ARMY AMMUNITION RESEARCH AND DEVELOPMENT COMMAND<br>CHEMICAL SYSTEMS LABORATORY<br>AMBERSID DRIVE BRIDGES BROADLAND, VIRGINIA |        |
| DISK, SOURCE                       |                     | CODE BODY NO.<br>81361   |          | SIZE<br>C  |        |
| HONEYWELL INC<br>ST PETERSBURG FLA |                     | SCALE 2/1  |          | DAK11-78-C-0040 SHEET  |        |



REVISIONS

001 95C R 071 MO94

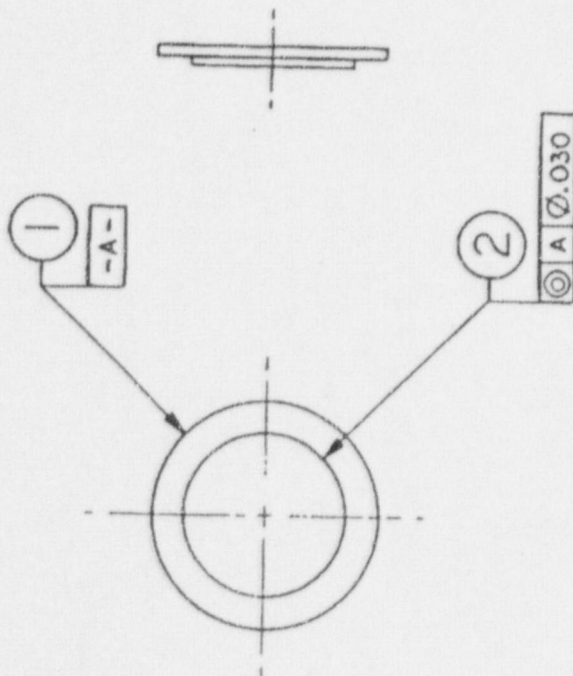
DESCRIPTION  
HONR Z03-008-001 INC

LYME

DATE \_\_\_\_\_

三

S. CAUTION — RADIOACTIVE MATERIAL —  
PROCESS AND HANDLE IN ACCORDANCE  
WITH CODE OF FEDERAL REGULATIONS —  
CFR-10, TRANSPORTATION IN ACCORDANCE  
WITH CFR-49



SEE NOTES 3 AND 4

NOTES

1. THIS DRAWING SHALL BE INTERPRETED IN ACCORDANCE WITH APPLICABLE STANDARDS LISTED IN MIL SPEC DDD D4000.
2. THE FOLLOWING ARE MANDATORY WHEN INDICATED BY ■
- ☐ REMOVE BURRS    ☐ BREAK SHARP EDGES .010 MAX
  - ☐ FILLETS .010 MAX R.
  - ☐  $\sqrt{\text{V}}$  ALL OVER, EXCEPT AS NOTED
  - ☐ DIMENSIONS APPLY AFTER PLATING
  - ☐ TOLERANCES ON STOCK MATERIAL SIZES, SHALL BE AS SPECIFIED IN APPLICABLE SPECIFICATIONS.
3. ATTACH ITEM 2 TO ITEM 1 WITH MARKING AGAINST ITEM 1.
4. CEMENT ITEM 2 TO ITEM 1 USING ITEM 3.

SEE PARTS LIST PL5-15-8154

3. ATTACH ITEM 2 TO ITEM 1 WITH MARKING SPOT AGAINST ITEM 1.

4. CEMENT ITEM 2 TO ITEM 1 USING ITEM 3

|  |          |
|--|----------|
| B5-15-8101   | Z O 3    |
|  |          |
|  |          |
|  |          |
| UNLESS OTHERWISE SPECIFIED<br>SUPPLYING ARE IN POUNDS<br>TOLERANCES ON:<br>2 PLACE DECIMALS ± .01<br>3 PLACE DECIMALS ± .005<br>FRACTIONS ± 1/16<br>MILLS ± .010 |          |
| MATERIAL   |          |
| NEXT ASSY  | CODE NO. |
| APPLICATION  |          |

| REVISIONS |             |      |          |
|-----------|-------------|------|----------|
| LTN       | DESCRIPTION | DATE | APPROVED |
|           |             |      |          |
|           |             |      |          |
|           |             |      |          |
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|           |             |      |          |

NOTES: THIS DRAWING IS FOR USE ONLY IN CONNECTION WITH DISCLOSURE OF THE UNITED STATES GOVERNMENT AND SHALL NOT BE LOANED, REPRODUCED, COPIED, EITHER WHOLLY OR IN PART FOR ANY OTHER PURPOSE EXCEPT WHEN SPECIFICALLY AUTHORIZED.

LIST OF MATERIALS

| LINE | QTY REQD | DRAWING OR PART NO. | NOMENCLATURE                  | MATERIAL | FSC#  | SPECIFICATION | ITEM NO. |
|------|----------|---------------------|-------------------------------|----------|-------|---------------|----------|
| 1    | ---      | B5-15-8154          | SOURCE{SCREEN ASSEMBLY        |          |       |               | ---      |
| 2    |          |                     |                               |          |       |               |          |
| 3    | 1        | C5-15-8156-1        | SCREEN, CELL                  |          |       |               | 1        |
| 4    | 1        | C5-15-8155          | DISK, SOURCE                  |          |       |               | 2        |
| 5    | AR       |                     | CEMENT COND. EPOXY            |          |       |               | 3        |
| 6    |          | 3022                | ACME CHEMICAL & INSULATION CO |          | 70103 |               |          |
| 7    |          |                     |                               |          |       |               |          |
| 8    |          |                     |                               |          |       |               |          |
| 9    |          |                     |                               |          |       |               |          |
| 10   |          |                     |                               |          |       |               |          |
| 11   |          |                     |                               |          |       |               |          |
| 12   |          |                     |                               |          |       |               |          |
| 13   |          |                     |                               |          |       |               |          |
| 14   |          |                     |                               |          |       |               |          |
| 15   |          |                     |                               |          |       |               |          |
| 16   |          |                     |                               |          |       |               |          |
| 17   |          |                     |                               |          |       |               |          |
| 18   |          |                     |                               |          |       |               |          |
| 19   |          |                     |                               |          |       |               |          |
| 20   |          |                     |                               |          |       |               |          |
| 21   |          |                     |                               |          |       |               |          |
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| 30   |          |                     |                               |          |       |               |          |

|  |  |   |               |
|--|--|---|---------------|
| APPLICATION<br>NEXT ASSY   | DRAWING DATE<br>80-08-15   | U.S. ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND<br>CHEMICAL SYSTEMS LABORATORY<br>ABERDEEN PROVING GROUND, MARYLAND 21010 |               |
| B5-15-8101   | <div style="display: flex; justify-content: space-between;"> <div> <small>DRAWN BY</small><br/>FAS </div> <div> <small>CHECKED BY</small><br/>WC </div> </div> | <div style="font-size: 2em; margin: 0;">SOURCE{SCREEN<br/>ASSEMBLY</div>  |               |
| <small>SUBMITTED</small><br><div style="font-family: cursive; font-size: 1.2em;">[Signature]</div> |  |   |               |
| <small>APPROVED</small><br><div style="font-family: cursive; font-size: 1.2em;">[Signature]</div>  |  |   |               |
| END ITEM CODE NO.  | APPROVED BY (OFFICE OF OR)   | CODE IDENT NO.  | SIZE          |
| Z03  | [Signature]  | 81361   | B PL5-15-8154 |
| HONEYWELL INC<br>ST PETERSBURG, FLA  |  | SCALE — 10AANK11-78-C-0040 1 SHEET  |               |

FOR SUPPLEMENTARY QUALITY ASSURANCE PROVISIONS SEE SQAP 5-15-8101

| REVISIONS | DESCRIPTION |
|-----------|-------------|
|           |             |

LTYR

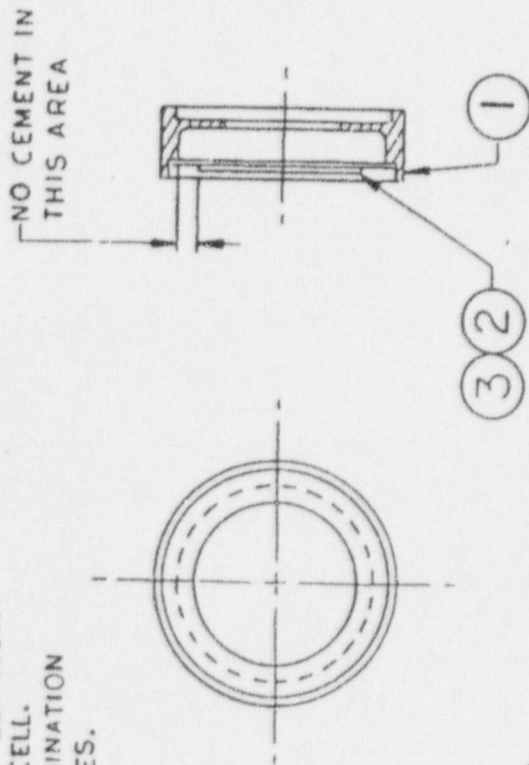
DATE \_\_\_\_\_

MOLLABS INC.

M17

23

5. THE AMERICIUM FOIL SOURCE SHOULD BE WIPE TESTED USING STANDARD SCINTILLATION TECHNIQUES BEFORE ASSEMBLY INTO CELL. TOTAL REMOVABLE SURFACE CONTAMINATION SHOULD BE LESS THAN 5 NANOCURIES



NOTES:

1. THIS DRAWING SHALL BE INTERPRETED IN ACCORDANCE WITH APPLICABLE STANDARDS LISTED IN MIL SPEC D-10-1000
2. THE FOLLOWING ARE MANDATORY WHEN INDICATED BY ■
- ☐ REMOVE BURRS    ☐ BREAK SHARP EDGES .010 MAX
  - ☐ FILLETS .010 MAX R.
  - ☐ "V" ALL OVER, EXCEPT AS NOTED
  - ☐ DIMENSIONS APPLY AFTER PLATING
  - ☐ TOLERANCES ON STOCK MATERIAL SIZES, SHALL BE AS SPECIFIED ; APPLICABLE SPECIFICATIONS.
3. CEMENT ITEM 2 TO ITEM 1 USING ITEM 3.
4. CAUTION - RADIOACTIVE MATERIAL--PROHIBITED TO TOUCH AND HANDLE IN ACCORDANCE WITH CODES AND REGULATIONS OF FEDERAL REGULATIONS CFR-10.

SEE PARTS LIST PL5-15-8101

|   |      |                            |  |                        |  |                                 |
|---|------|----------------------------|--|------------------------|--|---------------------------------|
| 05-15-8103                                  | Z 03 | UNLESS OTHERWISE SPECIFIED |  | ORIGINAL DATE 80-08-15 | U.S. ARMY AMMUNITION RESEARCH AND DEVELOPMENT COMMAND<br>CHEMICAL SYSTEMS LABORATORY<br>AMMUNITION PROving GROUND, MARYLAND, 21010 |                                 |
| IN REPAIRS ARE IN INCHES<br>TOLERANCES ARE: |      | SHAFTMATEL                 |  | CHECKER                | ON LEADER  | SCREEN AND<br>RETAINER ASSEMBLY |
| 2 PLACE DECIMALS ± .01                      |      | FAS                        |  | WC                     |  |                                 |
| 3 PLACE DECIMALS ± .005                     |      | SUBMITTED                  |  |                        |  |                                 |
| FRACTIONS ± 1/16<br>HOLE ± 0.001            |      | APPROVED                   |  |                        |  |                                 |
| MATERIAL                                    |      | APPROVED BY PRICE OR CR    |  | CODE IDENT NO.         |  | SIZE                            |
|   |      | Z. R. Heston               |  | 81361                  |  | B                               |
| NEXT ASSY                                   |      | CODE NO.                   |  | B5-15-810              |  |                                 |
| APPLICATION                                 |      |                            |  | SCALE 2/1              |  | DAK1178-C-0040                  |



REVISIONS: THIS DRAWING IS FOR USE ONLY IN CONNECTION WITH THE PROJECTS FOR WHICH IT WAS DEVELOPED. IT IS NOT TO BE USED FOR ANY OTHER PURPOSES. ANY CHANGES TO THIS DRAWING MUST BE APPROVED BY THE PROJECT MANAGER AND THE DESIGNER. ANY CHANGES TO THIS DRAWING MUST BE APPROVED BY THE PROJECT MANAGER AND THE DESIGNER. ANY CHANGES TO THIS DRAWING MUST BE APPROVED BY THE PROJECT MANAGER AND THE DESIGNER.

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(a) ALTERNATE

| REVISIONS |                     |          |                    |
|-----------|---------------------|----------|--------------------|
| REV       | DESCRIPTION         | DATE     | APPROVED           |
| A         | INC NOR 203-203-001 | 2 MAY 83 | <i>[Signature]</i> |
|           |                     |          |                    |
|           |                     |          |                    |
|           |                     |          |                    |
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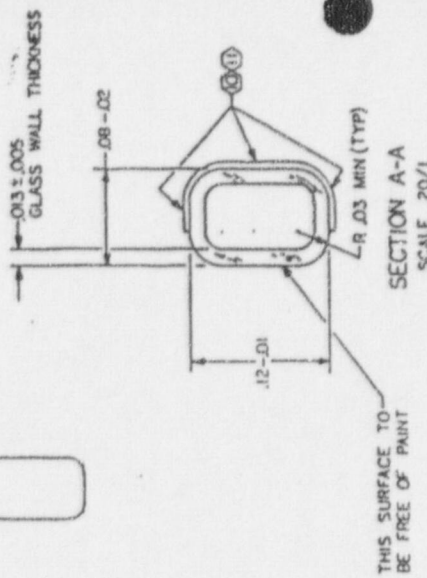
# LIST OF MATERIALS

| LINE | QTY REQD | DRAWING OR PART NO. | NOMENCLATURE                  | MATERIAL | FSC M | SPECIFICATION | ITEM NO. |
|------|----------|---------------------|-------------------------------|----------|-------|---------------|----------|
| 1    | ---      | BS-15-8101          | SCREEN AND RETAINER ASSEMBLY. |          |       |               | ---      |
| 2    |          |                     |                               |          |       |               |          |
| 3    | 1        | BS-15-8056          | RETAINER, SOURCE              |          |       |               | 1        |
| 4    | 1        | BS-15-8154          | SOURCE AND SCREEN ASSEMBLY    |          |       |               | 2        |
| 5    | AR       | ABLEBOND #63-4      | CEMENT COND. EPOXY            | (a)      |       |               | 3        |
| 6    |          |                     | ABLESTIK LABS                 |          |       |               |          |
| 7    |          |                     | 833 WEST 182 RD ST            |          |       |               |          |
| 8    |          |                     | GARDENA, CA 90248             |          |       |               |          |
| 9    | ALT      | 3026                | E-SOLDER                      | (a)      |       |               | 4        |
| 10   |          |                     | ACME CHEMICAL                 |          | 70103 |               |          |
| 11   |          |                     |                               |          |       |               |          |
| 12   |          |                     |                               |          |       |               |          |
| 13   |          |                     |                               |          |       |               |          |
| 14   |          |                     |                               |          |       |               |          |
| 15   |          |                     |                               |          |       |               |          |
| 16   |          |                     |                               |          |       |               |          |
| 17   |          |                     |                               |          |       |               |          |
| 18   |          |                     |                               |          |       |               |          |
| 19   |          |                     |                               |          |       |               |          |
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|                          |  |                                    |  |  |  |
|--------------------------|--|------------------------------------|--|--|--|
| APPLICATION<br>NEXT ASBY |  | 80-08-15                           |  | U.S. ARMY AIRCRAFT RESEARCH AND DEVELOPMENT COMMAND<br>CHEMICAL SYSTEMS LABORATORY<br>ADDRESS PROVED BROWN, BAYLARD, 21910 |  |
| D5-15-8103               |  | FAS WC                             |  | SCREEN AND<br>RETAINER ASSEMBLY  |  |
| SUBMITTED                |  | SUBMITTED                          |  |  |  |
| APPROVED                 |  | APPROVED                           |  |  |  |
| END ITEM CODE NO.        |  | HONEYWELL INC<br>ST PETERSBURG FLA |  | CODE EXHIBIT NO. 81361 B PL5-15-8101   |  |
| Z 03                     |  | SCALE 2/1                          |  | DAAK11-78-G-0040 15-81   |  |

1

SACAR FORM 68, 1 DEC 67 (TEMP), REPLACES SACAR FORM 68, 1 MAR 67 (FINAL).



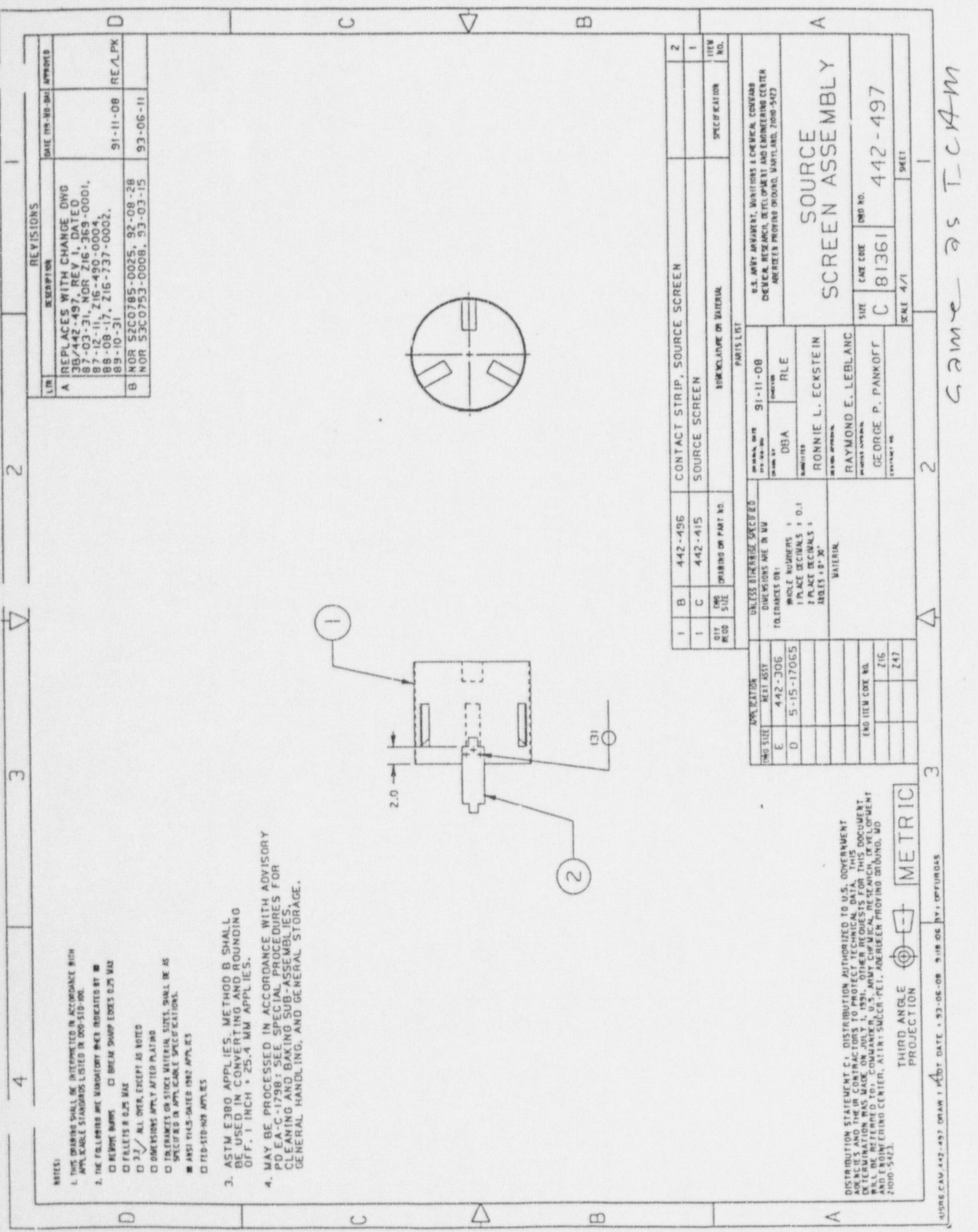
PART NO. 9356141

[illegible]

LAMP. RADIO LUMINOUS







NOTES:

1. THIS DRAWING SHALL BE INTERPRETED IN ACCORDANCE WITH APPLICABLE STANDARDS LISTED IN DOD-STD-100.
2. THE FOLLOWING ARE DIMENSIONAL NOTES INDICATED BY:
  - FRACTIONAL DIMENSIONS
  - DECIMAL DIMENSIONS
  - DIMENSIONS IN INCHES
  - DIMENSIONS IN MILLIMETERS
  - DIMENSIONS IN FEET AND INCHES
  - DIMENSIONS IN METRIC
3. ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED.
4. ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED.
5. ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED.
6. ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED.
7. ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED.
8. ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED.
9. ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED.
10. ALL DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED.

3. ASTM E300 APPLIES. METHOD B SHALL BE USED IN CONVERTING AND ROUNDING OFF. 1 INCH = 25.4 MM APPLIES.

4. MAY BE PROCESSED IN ACCORDANCE WITH ADVISORY PD EA-C-11798; SEE SPECIAL PROCEDURES FOR CLEANING AND BAKING SUB-ASSEMBLIES, GENERAL HANDLING, AND GENERAL STORAGE.

| REVISIONS |   |                 |
|-----------|---|-----------------|
| REV       | DESCRIPTION   | DATE (YY-MM-DD) |
| A         | REPLACES WITH CHANGE DWG 38/442-497, REV 1, DATED 87-03-31, NOR Z16-369-0001, 87-12-11, Z16-490-0004, 88-08-17, Z16-737-0002, 89-10-31. | 91-11-08        |
| B         | NOR 520785-0025, 92-08-28 NOR 530753-0008, 93-03-15   | 93-06-11        |

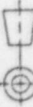
| CONTACT STRIP, SOURCE SCREEN |               |
|------------------------------|---------------|
| ITEM NO.                     | SPECIFICATION |
| 1                            |               |
| 2                            |               |

| PARTS LIST |                              |
|------------|------------------------------|
| QTY        | DESCRIPTION                  |
| 1          | CONTACT STRIP, SOURCE SCREEN |
| 1          | SOURCE SCREEN                |

| UNLESS OTHERWISE SPECIFIED |                              |
|----------------------------|------------------------------|
| QTY                        | DESCRIPTION                  |
| 1                          | CONTACT STRIP, SOURCE SCREEN |
| 1                          | SOURCE SCREEN                |

DISTRIBUTION STATEMENT C. DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES AND THEIR CONTRACTORS TO PROTECT TECHNICAL DATA. THIS DETERMINATION WAS MADE ON JULY 1, 1991. OTHER REQUESTS FOR THIS DOCUMENT WILL BE REFERRED TO: COMMANDER, U.S. ARMY CHEMICAL RESEARCH, DEVELOPMENT AND ENGINEERING CENTER, 2100-5423.

THIRD ANGLE PROJECTION



METRIC

SOURCE SCREEN ASSEMBLY

U.S. ARMY ARMY, MUNITIONS & CHEMICAL COMMAND  
CHEMICAL RESEARCH, DEVELOPMENT AND ENGINEERING CENTER  
AMBERGEE PROOFING GROUND, WARTLAND, 2100-5423

91-11-08  
DDB  
RLE  
SUBMITTED  
RONNIE L. ECKSTEIN  
DESIGNED  
RAYMOND E. LEBLANC  
PROJECT MANAGER  
GEORGE P. PANKOFF  
ENGINEER

SIZE  
C 81361  
DWD NO.  
442-497  
SHEET  
4/1

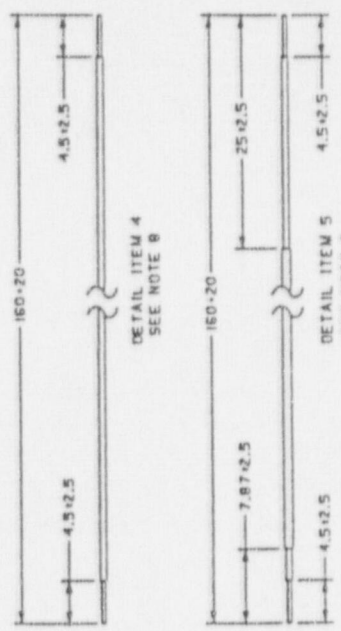
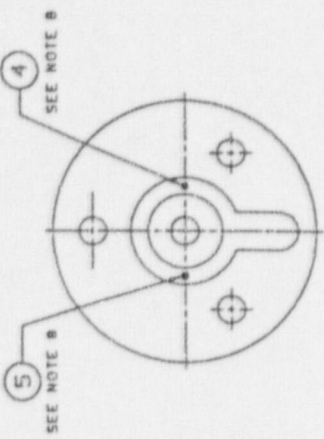
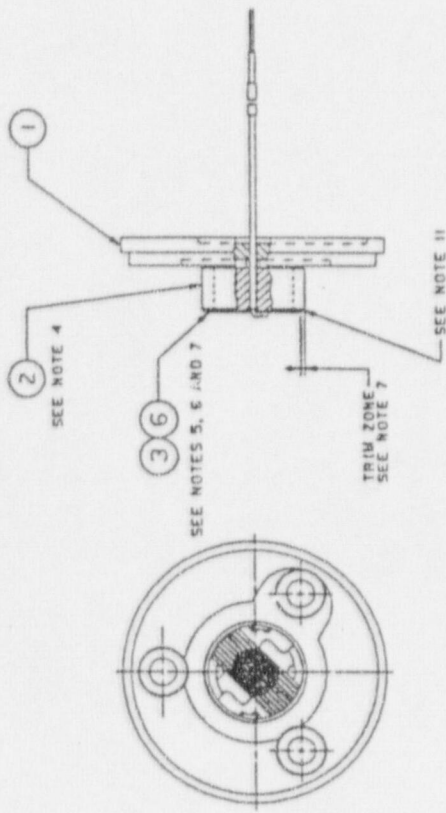






NOTES:  
 1. THE BODY SHALL BE ASSEMBLED IN ACCORDANCE WITH THE FOLLOWING DIMENSIONS AND TOLERANCES:  
 2. THE FOLLOWING DIMENSIONS ARE TOLERANCES UNLESS OTHERWISE SPECIFIED:  
 3. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.  
 4. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.  
 5. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.  
 6. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.  
 7. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.  
 8. DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

3. ASTM E380 APPLIES. METHOD B SHALL BE USED IN CONVERTING AND ROUNDING OFF. 1 INCH = 25.4 MM APPLIES.
4. ASSEMBLE OUTER RING (ITEM 2) ONTO SENSOR BODY (ITEM 1) ENSURING ALIGNMENT OF HOLES ON THE SENSOR BODY. THIS OPERATION SHALL BE PERFORMED PRIOR TO NOTE 5 OR PRIOR TO NOTE 8.
5. BOND GRID HEATER (ITEM 3) ONTO OUTER RING (ITEM 2) USING ADHESIVE (ITEM 6).
6. APPLY AND CURE ADHESIVE (ITEM 6) ACCORDING TO THE MANUFACTURER'S RECOMMENDED INSTRUCTIONS.
7. TRIM EXCESS MATERIAL OF GRID HEATER (ITEM 3). GRID HEATER SHALL NOT EXTEND BEYOND OUTER DIAMETER OF OUTER RING (ITEM 2).
8. PRIOR TO ASSEMBLY OF WIRES (ITEMS 4 AND 5) TO GRID HEATER (ITEM 3) TRIM WIRES AS SHOWN.
9. SENSOR ASSEMBLY RESISTANCE, WHEN MEASURED AT THE END OF THE CONDUCTORS (ITEMS 4 AND 5) SHALL BE  $9.35 \pm 1.75$  OHMS.
10. SOLDER IN ACCORDANCE WITH MIL-STD-2000 USING ITEM 7.
11. AFTER ASSEMBLY OF ITEMS 2, 3, 4, AND 5, CHAMFER 0.4 MAX X 0.4 MAX ENSURING ITEMS 4 AND 5 ARE FREE OF CHAMFER.
12. MAY BE PROCESSED IN ACCORDANCE WITH ADVISORY PO EA-C-1298.1. SEE WORK STATION, CLEANING AND BAKING SPECIAL PROCEDURES FOR SUBASSEMBLIES, GENERAL HANDLING, AND GENERAL STORAGE.

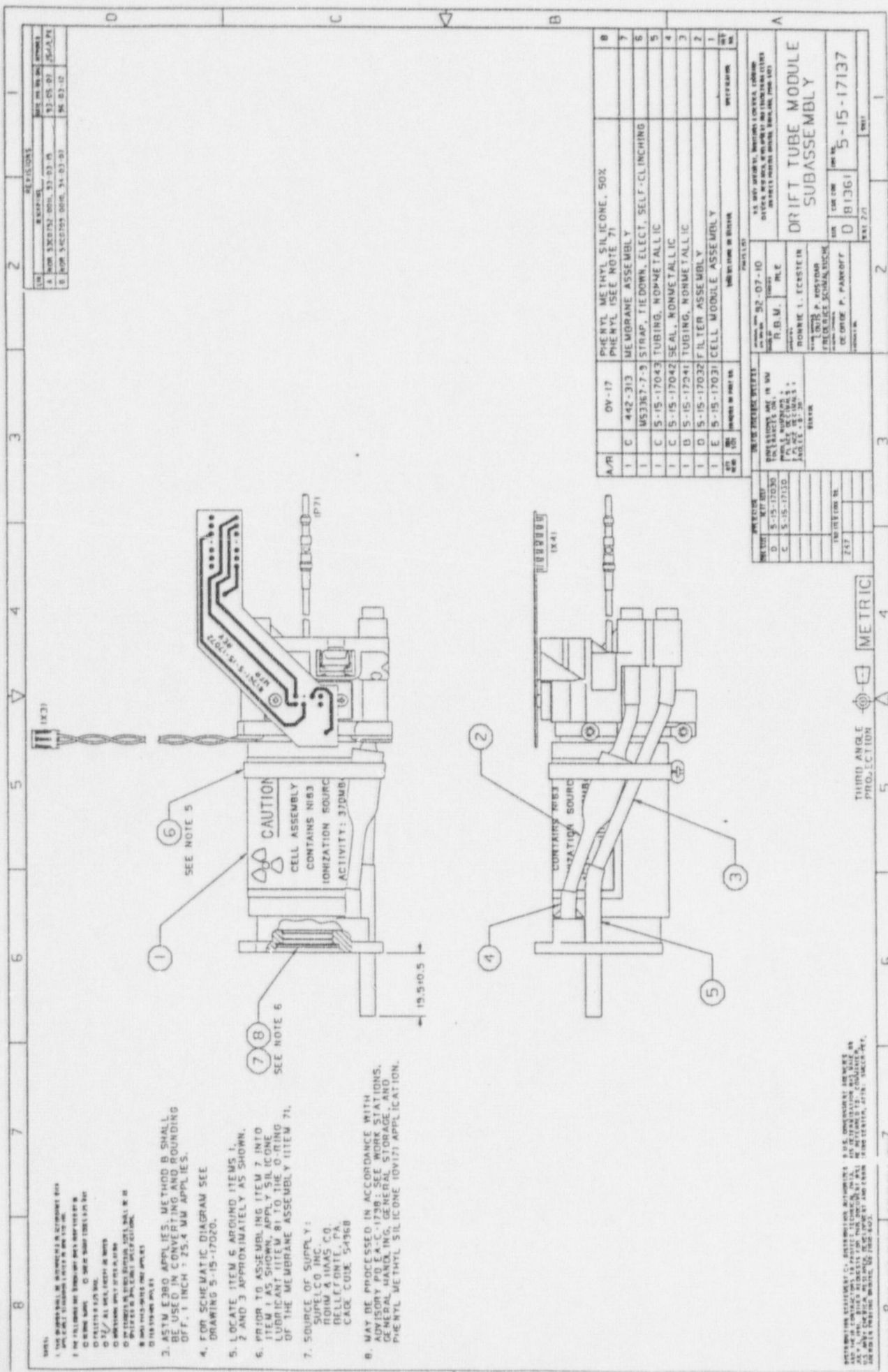


| A/P                | 5100000000  | SOLDER, ROSIN CORED                        | 00-S-571       | 7 |
|--------------------|-------------|--|----------------|---|
| A/P                | W-BOND 800  | ADHESIVE, EPOXY-PHENOLIC, CABLE CODE 88952 |                | 8 |
| A/P                | C 442-162   | CABLE, COAXIAL                             |                | 5 |
| A/P                | W16178-5500 | WIRE, ELECT., 28 AWG, COLOR WHITE          | W16-16178-5500 | 4 |
| I                  | D 442-533   | HEATER, GRID                               |                | 3 |
| I                  | C 442-503   | RING, OUTER, SENSOR                        |                | 2 |
| I                  | D 442-502   | SENSOR BODY                                |                | 1 |
| MATERIALS LIST     |             |  |                |   |
| PARTS LIST         |             |  |                |   |
| ITEM NO. QTY. UNIT |             |  |                |   |
| 1                  | 1           | SENSOR BODY                                |                |   |
| 2                  | 1           | RING, OUTER, SENSOR                        |                |   |
| 3                  | 1           | HEATER, GRID                               |                |   |
| 4                  | 1           | WIRE, ELECT., 28 AWG, COLOR WHITE          |                |   |
| 5                  | 1           | CABLE, COAXIAL                             |                |   |
| 8                  | 1           | ADHESIVE, EPOXY-PHENOLIC, CABLE CODE 88952 |                |   |
| 7                  | 1           | SOLDER, ROSIN CORED                        |                |   |

|                        |  |                      |  |
|------------------------|--|----------------------|--|
| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
| REV: 0                 |  | REV: 0               |  |
| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
| REV: 0                 |  | REV: 0               |  |
| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
| REV: 0                 |  | REV: 0               |  |
| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| REV: 0                 |  | REV: 0               |  |
| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
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| REV: 0                 |  | REV: 0               |  |
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| REV: 0                 |  | REV: 0               |  |
| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| REV: 0                 |  | REV: 0               |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
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| REV: 0                 |  | REV: 0               |  |
| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
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| REV: 0                 |  | REV: 0               |  |
| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
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| BY: [Signature]        |  | CHECKED: [Signature] |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
| BY: [Signature]        |  | CHECKED: [Signature] |  |
| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
| REV: 0                 |  | REV: 0               |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
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| REV: 0                 |  | REV: 0               |  |
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| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
| REV: 0                 |  | REV: 0               |  |
| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| TITLE: SENSOR ASSEMBLY |  | PART NO: 442-425     |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| DATE: 91-11-08         |  | TIME: 10:00          |  |
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| TITLE: SENSOR ASSEMBLY |  |                      |  |

ICAM

similar to 442-069



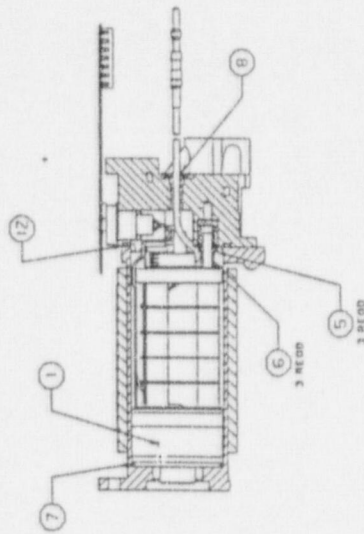
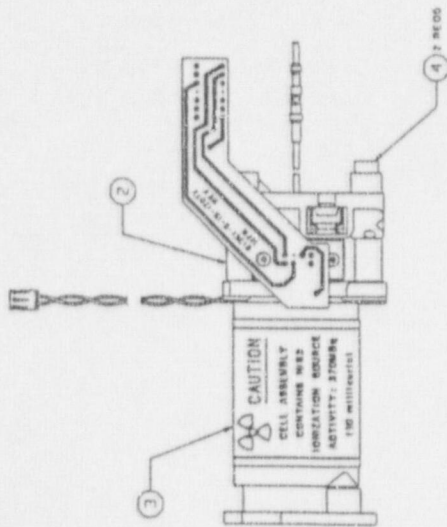
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| 6   | 5-15-17137 | ... | ...  | ...   |
| 7   | 5-15-17137 | ... | ...  | ...   |
| 8   | 5-15-17137 | ... | ...  | ...   |

| A/R | QTY | DESCRIPTION                 | UNIT |
|-----|-----|-----------------------------|------|
| 1   | 1   | PHENYL METHYL SILICONE, 50% | ...  |
| 2   | 1   | PHENYL METHYL SILICONE, 50% | ...  |
| 3   | 1   | PHENYL METHYL SILICONE, 50% | ...  |
| 4   | 1   | PHENYL METHYL SILICONE, 50% | ...  |
| 5   | 1   | PHENYL METHYL SILICONE, 50% | ...  |
| 6   | 1   | PHENYL METHYL SILICONE, 50% | ...  |
| 7   | 1   | PHENYL METHYL SILICONE, 50% | ...  |
| 8   | 1   | PHENYL METHYL SILICONE, 50% | ...  |

|  |  |
|--|--|
| 1. THE DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS TO BE USED FOR THE PURPOSES SPECIFIED THEREIN. IT IS TO BE RETURNED TO THE U.S. GOVERNMENT AFTER USE. |  |
| 2. THE DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS TO BE USED FOR THE PURPOSES SPECIFIED THEREIN. IT IS TO BE RETURNED TO THE U.S. GOVERNMENT AFTER USE. |  |
| 3. THE DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS TO BE USED FOR THE PURPOSES SPECIFIED THEREIN. IT IS TO BE RETURNED TO THE U.S. GOVERNMENT AFTER USE. |  |
| 4. THE DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS TO BE USED FOR THE PURPOSES SPECIFIED THEREIN. IT IS TO BE RETURNED TO THE U.S. GOVERNMENT AFTER USE. |  |
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| 7. THE DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS TO BE USED FOR THE PURPOSES SPECIFIED THEREIN. IT IS TO BE RETURNED TO THE U.S. GOVERNMENT AFTER USE. |  |
| 8. THE DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS TO BE USED FOR THE PURPOSES SPECIFIED THEREIN. IT IS TO BE RETURNED TO THE U.S. GOVERNMENT AFTER USE. |  |

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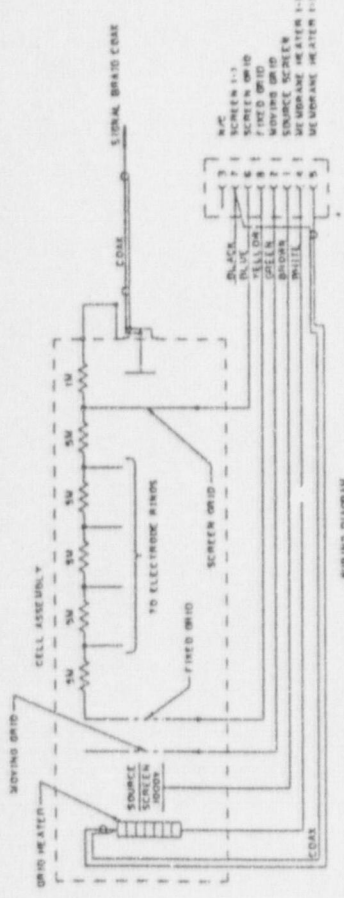
102-2hh of relims

[illegible][illegible][illegible]

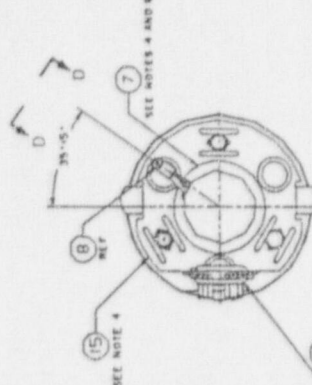


similar to 442-306

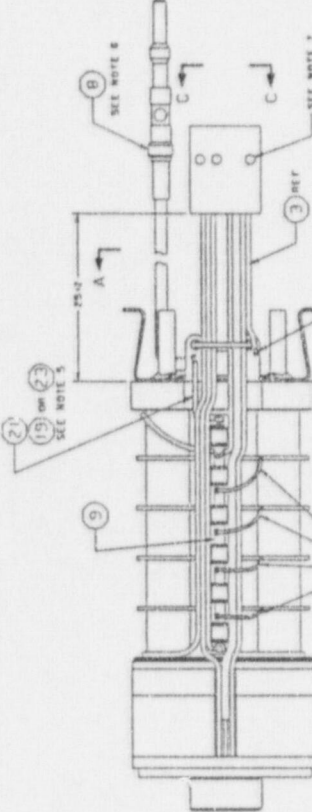
1. THE FOLLOWING PARTS ARE REQUIRED FOR THE CELL ASSEMBLY:
  - a. 1/2" DIA. BRASS ROD (100-1000)
  - b. 1/2" DIA. BRASS ROD (100-1000)
  - c. 1/2" DIA. BRASS ROD (100-1000)
  - d. 1/2" DIA. BRASS ROD (100-1000)
  - e. 1/2" DIA. BRASS ROD (100-1000)
  - f. 1/2" DIA. BRASS ROD (100-1000)
  - g. 1/2" DIA. BRASS ROD (100-1000)
  - h. 1/2" DIA. BRASS ROD (100-1000)
  - i. 1/2" DIA. BRASS ROD (100-1000)
  - j. 1/2" DIA. BRASS ROD (100-1000)
  - k. 1/2" DIA. BRASS ROD (100-1000)
  - l. 1/2" DIA. BRASS ROD (100-1000)
  - m. 1/2" DIA. BRASS ROD (100-1000)
  - n. 1/2" DIA. BRASS ROD (100-1000)
  - o. 1/2" DIA. BRASS ROD (100-1000)
  - p. 1/2" DIA. BRASS ROD (100-1000)
  - q. 1/2" DIA. BRASS ROD (100-1000)
  - r. 1/2" DIA. BRASS ROD (100-1000)
  - s. 1/2" DIA. BRASS ROD (100-1000)
  - t. 1/2" DIA. BRASS ROD (100-1000)
  - u. 1/2" DIA. BRASS ROD (100-1000)
  - v. 1/2" DIA. BRASS ROD (100-1000)
  - w. 1/2" DIA. BRASS ROD (100-1000)
  - x. 1/2" DIA. BRASS ROD (100-1000)
  - y. 1/2" DIA. BRASS ROD (100-1000)
  - z. 1/2" DIA. BRASS ROD (100-1000)



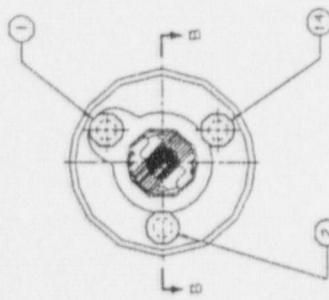
WIRING DIAGRAM



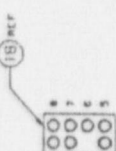
SECTION A-A



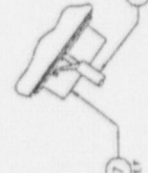
SECTION B-B



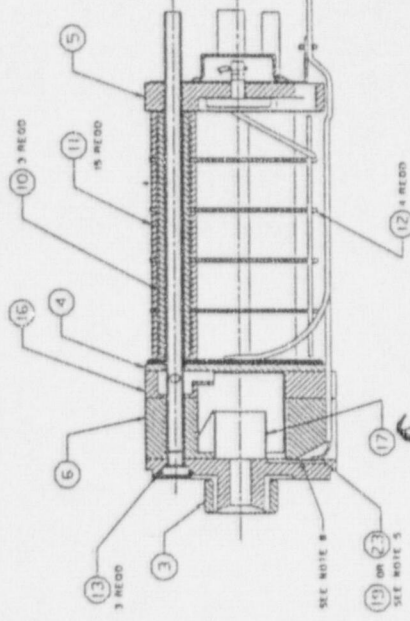
VIEW C-C



DETAIL 1



DETAIL 2



SECTION B-B

NOTED 50-100

| ITEM | DESCRIPTION         | QTY | UNIT | REMARKS |
|------|---------------------|-----|------|---------|
| 1    | GRID HEATER         | 1   | EA   |         |
| 2    | CELL ASSEMBLY       | 1   | EA   |         |
| 3    | MOVING GRID         | 1   | EA   |         |
| 4    | FIXED GRID          | 1   | EA   |         |
| 5    | SCREEN GRID         | 1   | EA   |         |
| 6    | TO ELECTRODE ARM    | 1   | EA   |         |
| 7    | TERMINAL BOARD CASE | 1   | EA   |         |
| 8    | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 9    | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 10   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 11   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 12   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 13   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 14   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 15   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 16   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 17   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 18   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 19   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 20   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 21   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 22   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 23   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 24   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 25   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 26   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 27   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 28   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 29   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 30   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 31   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 32   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 33   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 34   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 35   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 36   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 37   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 38   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 39   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 40   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 41   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 42   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 43   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 44   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 45   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 46   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 47   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 48   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 49   | 1/2" DIA. BRASS ROD | 10  | IN   |         |
| 50   | 1/2" DIA. BRASS ROD | 10  | IN   |         |

CELL ASSEMBLY

5-15-17036

DATE: 5-15-17036

BY: [Signature]

CHKD: [Signature]

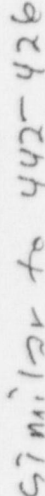
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REVISIONS:

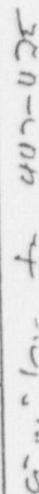
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|-----|----------------|------------|
| 1   | INITIAL DESIGN | 5-15-17036 |

RAO Source is item 17

THIRD ANGLE PROJECTION

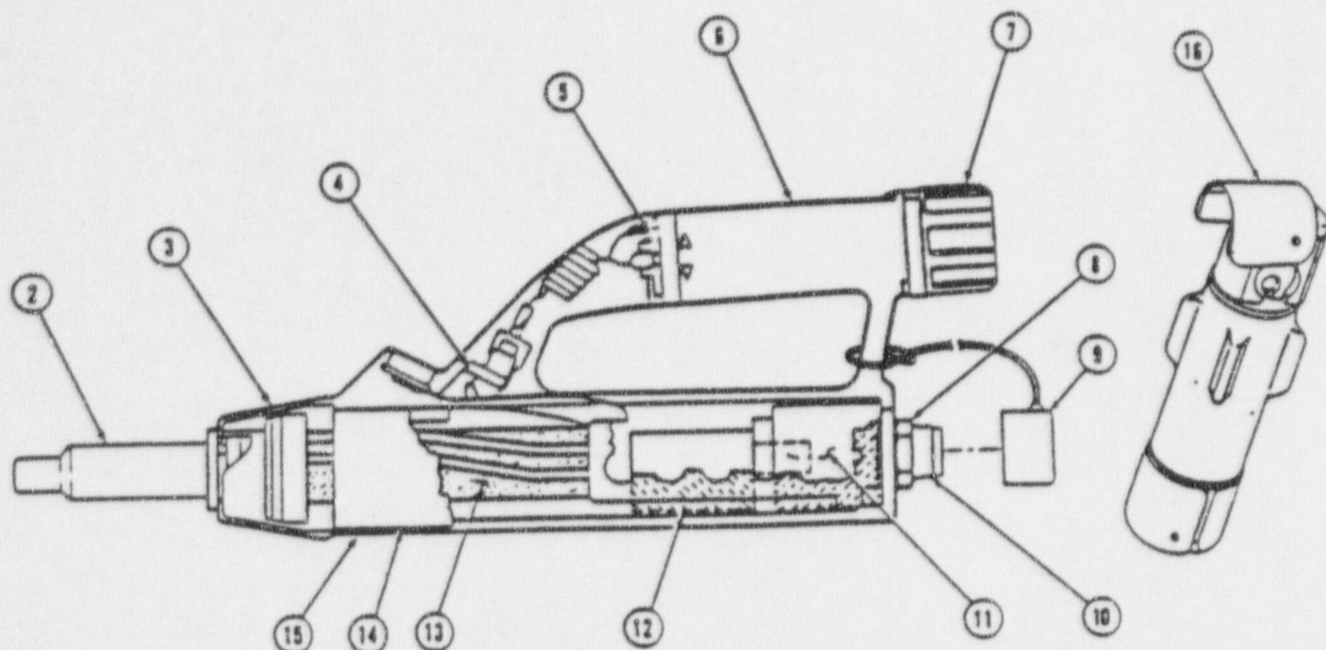


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# LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



**NOZZLE ASSEMBLY (2).** Chemical agent vapors are drawn in through this inlet for analysis by the CAM. A heater wire is wound around the tubular section of the molding. Nozzle assembly is secured to CAM with a special bayonet type locking ring. A special tool from the diagnostic test set is used to remove it from the CAM.

**CASE - FRONT END (3).** Provides a common attachment point for the nozzle protective cap, nozzle assembly, nozzle holder assembly, and drift tube module. Tabs of the PCB flexible wiring assembly mate into the case-front end.

**DISPLAY ASSEMBLY (4).** Display is a liquid crystal device back-lit by light emitting diodes (LED). Display shows operating status, concentration level, and aids in indicating a malfunction. The ON OFF and G E mode switches are part of the assembly. The mode switch controls the polarity of the cell to enable the cell to handle either positive nerve agent ions or negative blister agent ions. Two sealed rubber pads cover the switch pushbuttons.

BATTERY CONTACT ASSEMBLY (5). Provides spring loaded contacts to mate with the battery terminals and interconnect battery power to the CAM.

CASE ASSEMBLY (6). Houses display assembly and battery contact assembly. Case assembly fits over the monitor module assembly.

BATTERY CAP ASSEMBLY (7). Bayonet fitting cap which retains the battery.

LOCKNUT (8). Locknut is removed to gain access to the internal parts of the CAM.

ENVIRONMENTAL CAP ASSEMBLY (9). Consists of a tether-bayonet fitting cap protecting the chassis plate connector assembly. Provides storage for nozzle protective cap during operation.

CHASSIS PLATE/CONNECTOR ASSEMBLY (10). Provides diagnostic electronic connections for use during maintenance.

SIEVE (PUMP) ASSEMBLY (11). A second molecular sieve which adds to the total filtering of the CAM recirculatory air. It fits around the body of the pump assembly.

PUMP ASSEMBLY (12). Consists of two silicone rubber diaphragm pumps driven by a dc motor and yoke mechanism.

DRIFT TUBE MODULE (13). Consists of a cell assembly, sieve/breather assembly, and membrane assembly. The cell assembly, which contains the radioactive source, is in the form of a stack of components held together with stainless steel rods and a retaining clip. Two of the rods are drilled with holes to provide air flow paths for the drift and source regions of the cell; the rods also link the return air flow through the molecular sieve assembly and pump assembly. A membrane assembly is located at the forward end of the cell/sieve. The membrane assembly is a thin silicone rubber layer that forms a division between the outside air and the controlled environment inside the analysis section of the CAM. The membrane permits chemical agent vapor molecules to permeate to the cell assembly. Membrane is heated to about 250° F (120° C).

PCB FLEXIBLE WIRING ASSEMBLY (14). A flexible printed circuit board that has three rigid boards bonded to it to form a flexiboard that supports all circuit components.

MONITOR MODULE ASSEMBLY (15). Consists of a locknut, sieve (pump) assembly, pump assembly, drift tube module and PCB flexible wiring assembly.

CONFIDENCE SAMPLE (16). The end with a round cross-section is marked G and contains nerve agent simulant. The end with three longitudinal ribs is marked H and contains blister agent simulant. Used to test the CAM for its ability to detect G and H. Housed in carrying harness pocket.



GROUP 00 ALARM, CHEMICAL AGENT, AUTOMATIC: M22 (FIGURE C-1)

| (1)<br>ITEM<br>NO. | (2)<br>SMR<br>CODE | (3)<br>NATIONAL STOCK<br>NUMBER | (4)<br>CAGEC | (5)<br>PART<br>NUMBER | (6)<br>DESCRIPTION   | (7)<br>QTY |
|--------------------|--------------------|---------------------------------|--------------|-----------------------|--|------------|
| 1                  | PAODAF             | 6665-01-438-3673                | 81361        | EA-PRF-2059           | M88 DETECTOR   | 1          |
| 2                  |                    |                                 |              |                       | TECHNICAL MANUAL<br>ARMY TM-36665-321-12&P<br>AIR FORCE TO 11H2-23-1 | 1          |
| 4                  | PAOZZA             | 5340-01-M26-4583                | 81361        | 5-15-18985            | RAIN CAP   |            |
| 6                  | PAOOOA             |                                 | 81361        | EA-PRF-2067           | TRANSIT CASE   | 2          |
| 7                  | PAOZZA             | 6665-01-M26-4582                | 81361        | EA-PRF-2062           | CONFIDENCE SAMPLE  | 1          |
| 8                  | PAOOZA             | 6160-01-M26-4587                | 81361        | EA-PRF-2063           | BATTERY BOX  | 1          |
| ONBOARD SPARES     |                    |                                 |              |                       |  |            |
| 3                  | PACZZA             | 5340-01-M26-4579                | 81361        | 5-15-18984            | PROTECTIVE CAP   | 12         |
| 5                  | PACZZA             | 6665-01-M26-4580                | 81361        | EA-PRF-2065           | INLET NOZZLE   | 1          |
|                    |                    |                                 |              |                       | END OF FIGURE  |            |

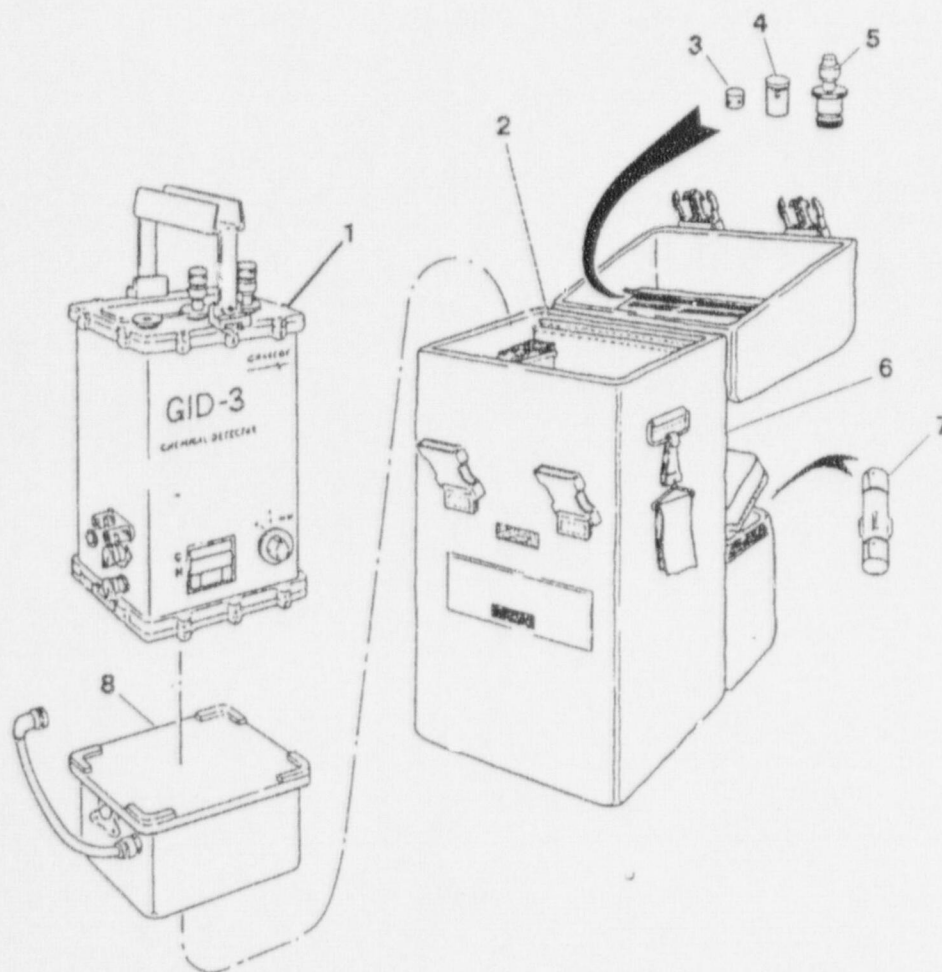
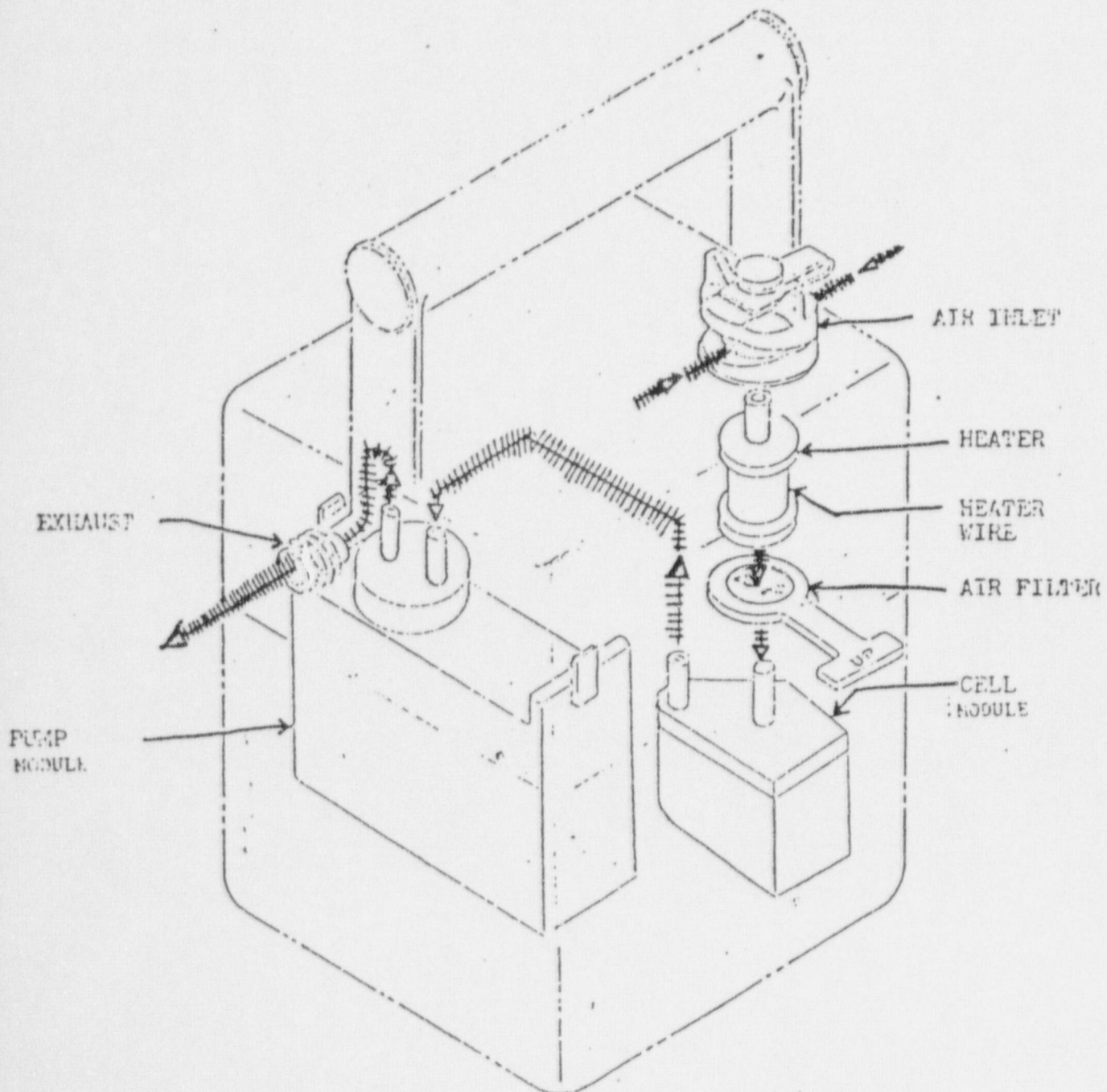
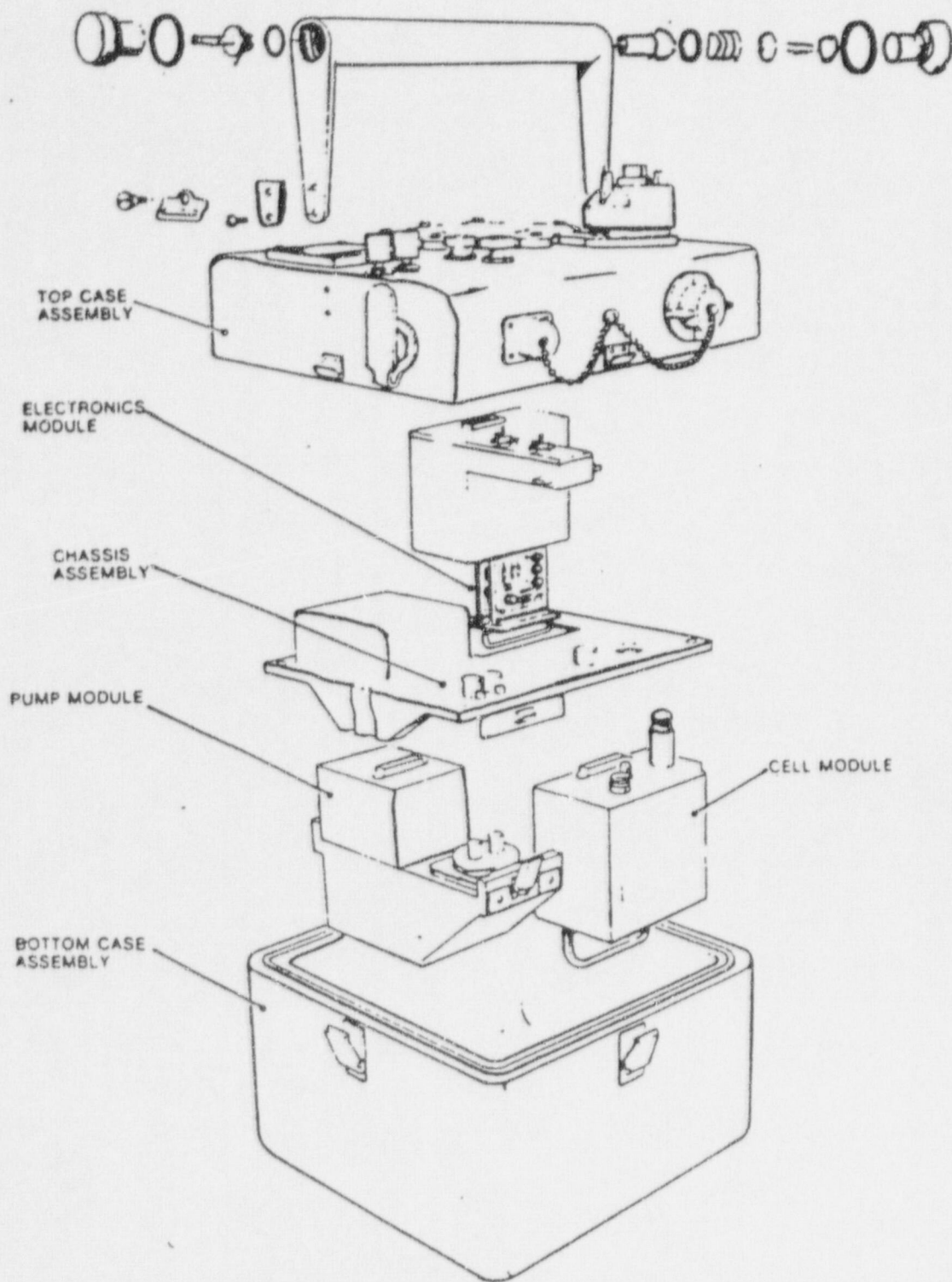


Figure C-1. Alarm, Chemical Agent, Automatic: M22



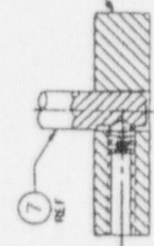
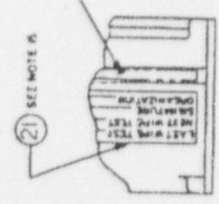
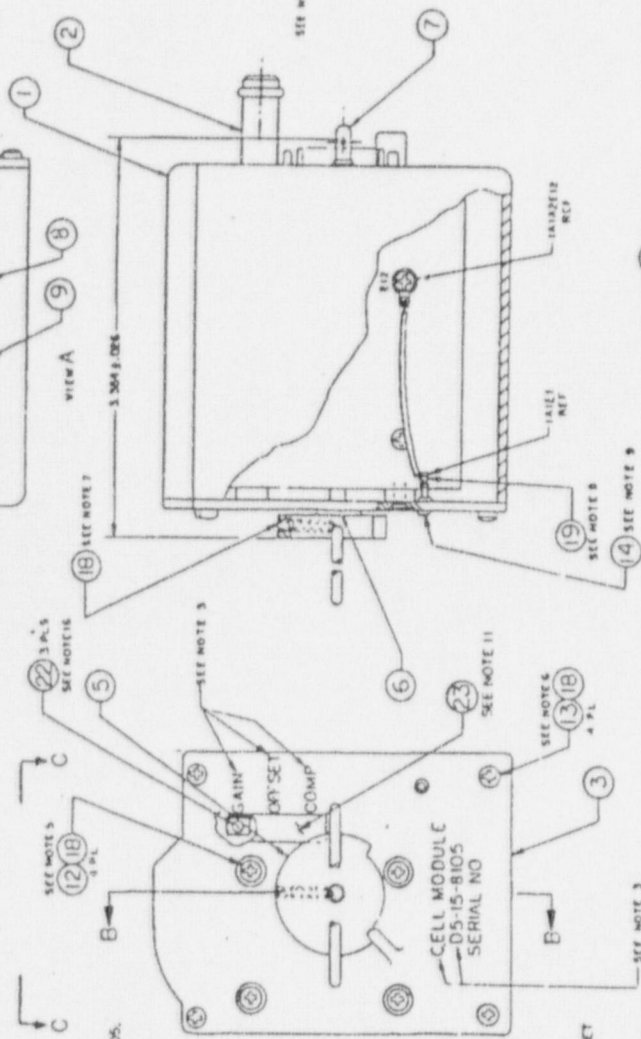
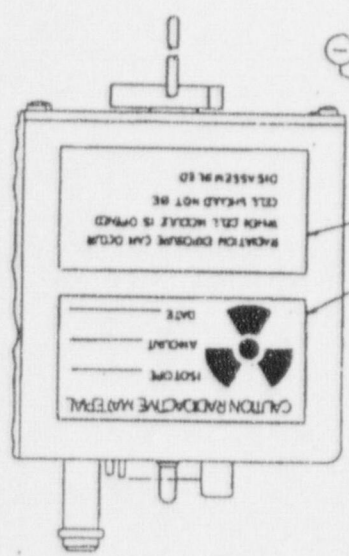


M43E-1 PNEUMATIC PATH



Isometric Sketch of the M43A1 Detector Unit

| Lab | Block | Accession Number   | Field | Notes |
|-----|-------|--|-------|-------|
| A   |       | MS 781-782-000, 783-000, 784-000, 785-000, 786-000, 787-000, 788-000, 789-000, 790-000, 791-000, 792-000, 793-000, 794-000, 795-000, 796-000, 797-000, 798-000, 799-000, 800-000, 801-000, 802-000, 803-000, 804-000, 805-000, 806-000, 807-000, 808-000, 809-000, 810-000, 811-000, 812-000, 813-000, 814-000, 815-000, 816-000, 817-000, 818-000, 819-000, 820-000, 821-000, 822-000, 823-000, 824-000, 825-000, 826-000, 827-000, 828-000, 829-000, 830-000, 831-000, 832-000, 833-000, 834-000, 835-000, 836-000, 837-000, 838-000, 839-000, 840-000, 841-000, 842-000, 843-000, 844-000, 845-000, 846-000, 847-000, 848-000, 849-000, 850-000, 851-000, 852-000, 853-000, 854-000, 855-000, 856-000, 857-000, 858-000, 859-000, 860-000, 861-000, 862-000, 863-000, 864-000, 865-000, 866-000, 867-000, 868-000, 869-000, 870-000, 871-000, 872-000, 873-000, 874-000, 875-000, 876-000, 877-000, 878-000, 879-000, 880-000, 881-000, 882-000, 883-000, 884-000, 885-000, 886-000, 887-000, 888-000, 889-000, 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VIEW C-C  
SCALE: NONE

SECTION B-B  
SCALE: 4/1  
ROTATED 90° CCW

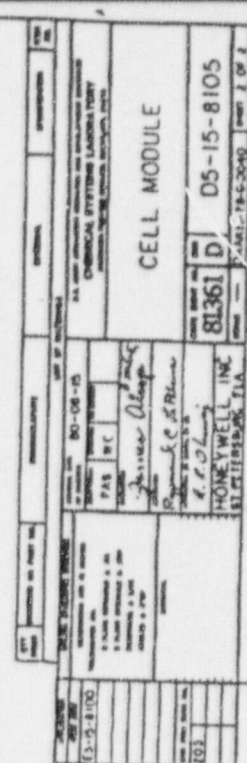
SEE PARTS LIST PL5-15-0105

|   |               |                   |                    |   |               |                   |                    |
|---|---------------|-------------------|--------------------|---|---------------|-------------------|--------------------|
| DATE<br>13-15-81  | TIME<br>10:00 | BY<br>[Signature] | FOR<br>[Signature] | DATE<br>13-15-81  | TIME<br>10:00 | BY<br>[Signature] | FOR<br>[Signature] |
| 1. <b>DATE</b><br>2. <b>TIME</b><br>3. <b>BY</b><br>4. <b>FOR</b>         |               |                   |                    | 5. <b>DATE</b><br>6. <b>TIME</b><br>7. <b>BY</b><br>8. <b>FOR</b>         |               |                   |                    |
| 9. <b>DATE</b><br>10. <b>TIME</b><br>11. <b>BY</b><br>12. <b>FOR</b>      |               |                   |                    | 13. <b>DATE</b><br>14. <b>TIME</b><br>15. <b>BY</b><br>16. <b>FOR</b>     |               |                   |                    |
| 17. <b>DATE</b><br>18. <b>TIME</b><br>19. <b>BY</b><br>20. <b>FOR</b>     |               |                   |                    | 21. <b>DATE</b><br>22. <b>TIME</b><br>23. <b>BY</b><br>24. <b>FOR</b>     |               |                   |                    |
| 25. <b>DATE</b><br>26. <b>TIME</b><br>27. <b>BY</b><br>28. <b>FOR</b>     |               |                   |                    | 29. <b>DATE</b><br>30. <b>TIME</b><br>31. <b>BY</b><br>32. <b>FOR</b>     |               |                   |                    |
| 33. <b>DATE</b><br>34. <b>TIME</b><br>35. <b>BY</b><br>36. <b>FOR</b>     |               |                   |                    | 37. <b>DATE</b><br>38. <b>TIME</b><br>39. <b>BY</b><br>40. <b>FOR</b>     |               |                   |                    |
| 41. <b>DATE</b><br>42. <b>TIME</b><br>43. <b>BY</b><br>44. <b>FOR</b>     |               |                   |                    | 45. <b>DATE</b><br>46. <b>TIME</b><br>47. <b>BY</b><br>48. <b>FOR</b>     |               |                   |                    |
| 49. <b>DATE</b><br>50. <b>TIME</b><br>51. <b>BY</b><br>52. <b>FOR</b>     |               |                   |                    | 53. <b>DATE</b><br>54. <b>TIME</b><br>55. <b>BY</b><br>56. <b>FOR</b>     |               |                   |                    |
| 57. <b>DATE</b><br>58. <b>TIME</b><br>59. <b>BY</b><br>60. <b>FOR</b>     |               |                   |                    | 61. <b>DATE</b><br>62. <b>TIME</b><br>63. <b>BY</b><br>64. <b>FOR</b>     |               |                   |                    |
| 65. <b>DATE</b><br>66. <b>TIME</b><br>67. <b>BY</b><br>68. <b>FOR</b>     |               |                   |                    | 69. <b>DATE</b><br>70. <b>TIME</b><br>71. <b>BY</b><br>72. <b>FOR</b>     |               |                   |                    |
| 73. <b>DATE</b><br>74. <b>TIME</b><br>75. <b>BY</b><br>76. <b>FOR</b>     |               |                   |                    | 77. <b>DATE</b><br>78. <b>TIME</b><br>79. <b>BY</b><br>80. <b>FOR</b>     |               |                   |                    |
| 81. <b>DATE</b><br>82. <b>TIME</b><br>83. <b>BY</b><br>84. <b>FOR</b>     |               |                   |                    | 85. <b>DATE</b><br>86. <b>TIME</b><br>87. <b>BY</b><br>88. <b>FOR</b>     |               |                   |                    |
| 89. <b>DATE</b><br>90. <b>TIME</b><br>91. <b>BY</b><br>92. <b>FOR</b>     |               |                   |                    | 93. <b>DATE</b><br>94. <b>TIME</b><br>95. <b>BY</b><br>96. <b>FOR</b>     |               |                   |                    |
| 97. <b>DATE</b><br>98. <b>TIME</b><br>99. <b>BY</b><br>100. <b>FOR</b>    |               |                   |                    | 101. <b>DATE</b><br>102. <b>TIME</b><br>103. <b>BY</b><br>104. <b>FOR</b> |               |                   |                    |
| 105. <b>DATE</b><br>106. <b>TIME</b><br>107. <b>BY</b><br>108. <b>FOR</b> |               |                   |                    | 109. <b>DATE</b><br>110. <b>TIME</b><br>111. <b>BY</b><br>112. <b>FOR</b> |               |                   |                    |
| 113. <b>DATE</b><br>114. <b>TIME</b><br>115. <b>BY</b><br>116. <b>FOR</b> |               |                   |                    | 117. <b>DATE</b><br>118. <b>TIME</b><br>119. <b>BY</b><br>120. <b>FOR</b> |               |                   |                    |
| 121. <b>DATE</b><br>122. <b>TIME</b><br>123. <b>BY</b><br>124. <b>FOR</b> |               |                   |                    | 125. <b>DATE</b><br>126. <b>TIME</b><br>127. <b>BY</b><br>128. <b>FOR</b> |               |                   |                    |
| 129. <b>DATE</b><br>130. <b>TIME</b><br>131. <b>BY</b><br>132. <b>FOR</b> |               |                   |                    | 133. <b>DATE</b><br>134. <b>TIME</b><br>135. <b>BY</b><br>136. <b>FOR</b> |               |                   |                    |
| 137. <b>DATE</b><br>138. <b>TIME</b><br>139. <b>BY</b><br>140. <b>FOR</b> |               |                   |                    | 141. <b>DATE</b><br>142. <b>TIME</b><br>143. <b>BY</b><br>144. <b>FOR</b> |               |                   |                    |
| 145. <b>DATE</b><br>146. <b>TIME</b><br>147. <b>BY</b><br>148. <b>FOR</b> |               |                   |                    | 149. <b>DATE</b><br>150. <b>TIME</b><br>151. <b>BY</b><br>152. <b>FOR</b> |               |                   |                    |
| 153. <b>DATE</b><br>154. <b>TIME</b><br>155. <b>BY</b><br>156. <b>FOR</b> |               |                   |                    | 157. <b>DATE</b><br>158. <b>TIME</b><br>159. <b>BY</b><br>160. <b>FOR</b> |               |                   |                    |
| 161. <b>DATE</b><br>162. <b>TIME</b><br>163. <b>BY</b><br>164. <b>FOR</b> |               |                   |                    | 165. <b>DATE</b><br>166. <b>TIME</b><br>167. <b>BY</b><br>168. <b>FOR</b> |               |                   |                    |
| 169. <b>DATE</b><br>170. <b>TIME</b><br>171. <b>BY</b><br>172. <b>FOR</b> |               |                   |                    | 173. <b>DATE</b><br>174. <b>TIME</b><br>175. <b>BY</b><br>176. <b>FOR</b> |               |                   |                    |
| 177. <b>DATE</b><br>178. <b>TIME</b><br>179. <b>BY</b><br>180. <b>FOR</b> |               |                   |                    | 181. <b>DATE</b><br>182. <b>TIME</b><br>183. <b>BY</b><br>184. <b>FOR</b> |               |                   |                    |
| 185. <b>DATE</b><br>186. <b>TIME</b><br>187. <b>BY</b><br>188. <b>FOR</b> |               |                   |                    | 189. <b>DATE</b><br>190. <b>TIME</b><br>191. <b>BY</b><br>192. <b>FOR</b> |               |                   |                    |
| 193. <b>DATE</b><br>194. <b>TIME</b><br>195. <b>BY</b><br>196. <b>FOR</b> |               |                   |                    | 197. <b>DATE</b><br>198. <b>TIME</b><br>199. <b>BY</b><br>200. <b>FOR</b> |               |                   |                    |
| 201. <b>DATE</b><br>202. <b>TIME</b><br>203. <b>BY</b><br>204. <b>FOR</b> |               |                   |                    | 205. <b>DATE</b><br>206. <b>TIME</b><br>207. <b>BY</b><br>208. <b>FOR</b> |               |                   |                    |
| 209. <b>DATE</b><br>210. <b>TIME</b><br>211. <b>BY</b><br>212. <b>FOR</b> |               |                   |                    | 213. <b>DATE</b><br>214. <b>TIME</b><br>215. <b>BY</b><br>216. <b>FOR</b> |               |                   |                    |
|   |               |                   |                    |   |               |                   |                    |

CELL MODULE

05-15-8105





| LTR |  | DESCRIPTION                |  | DATE     | APPROVED           |
|-----|--|----------------------------|--|----------|--------------------|
| E   |  | REPLACES PL5-15-8105, REV  |  |          |                    |
| D   |  | DATED 8 MAR 85 AND         |  |          |                    |
|     |  | ADDED SHEET 2 OF 2 AND     |  |          |                    |
|     |  | INC NOR 203-717-002        |  | 4 OCT 85 | <i>[Signature]</i> |
| F   |  | NOR S9C3068-0002, 89-04-18 |  |          |                    |
|     |  | NOR S9C3042-0001, 89-04-06 |  | 87-10-02 | <i>[Signature]</i> |

| LINE | QTY REQD | DRAWING OR PART NO. | NOMENCLATURE                  | MATERIAL           | FSCM  | SPECIFICATION  | ITEM NO. |
|------|----------|---------------------|-------------------------------|--------------------|-------|----------------|----------|
| 1    | ---      | D5-15-8105          | CELL MODULE                   |                    |       |                | ---      |
| 2    |          |                     |                               |                    |       |                |          |
| 3    | 1        | D5-15-8081          | CELL HOUSING, MACHINING       |                    |       |                | 1        |
| 4    | 1        | D5-15-8104          | CELL SUBASSY                  |                    |       |                | 2        |
| 5    | 1        | C5-15-8058          | COVER, CELL                   |                    |       |                | 3        |
| 6    |          |                     |                               |                    |       |                |          |
| 7    | 1        | C5-15-8424          | DISC, LOCKING SUBASSY         |                    |       |                | 5        |
| 8    | 2        | 5804-74-1           | WASHER, CRESENT STYLE SPRING  | SEASTROM<br>MFG CO | B6928 |                | 6        |
| 9    | 1        | B5-15-8068          | TURNLOCK FASTENER, CELL ASSY  |                    |       |                | 7        |
| 10   | 1        | B5-15-8176          | LABEL, WARNING                |                    |       |                | 8        |
| 11   | 1        | B5-15-8177          | LABEL, RADIOACTIVE MAT'L      |                    |       |                | 9        |
| 12   |          |                     |                               |                    |       |                |          |
| 13   | AR       | 1                   | SEALING COMPOUND, GRADE A A   |                    |       | MIL-S-22473    | 11       |
| 14   |          |                     |                               |                    |       |                |          |
| 15   | 4        | MS24693-C2          | SCREW, MACHINE, FLAT HEAD     |                    |       |                |          |
| 16   |          |                     | 100*4-40 X 1/4 LG             | CRES               |       |                |          |
| 17   | 4        | MS5H957-13          | SCREW, MACHINE, PAN HEAD      |                    |       |                | 12       |
| 18   |          |                     | 4-40 X 1/4 LG, CROSS-RECESSED | CRES               |       |                |          |
| 19   | 1        | SE12XC055           | TERMINAL, TURRET              | BRASS, TIN DIP     |       | MIL-T-55155/12 | 13       |
| 20   |          |                     |                               |                    |       |                | 14       |
| 21   | AR       |                     | FAB-ORG COAT LABELS           |                    |       |                |          |
| 22   |          |                     | BLACK ON CLEAR                |                    |       | MIL-STD-130    | 16       |
| 23   | AR       |                     | PROTECTIVE COATING            |                    |       | FED-STD-141    | 17       |
| 24   | AR       |                     | COMPOUND, RETAINING, GR B     |                    |       | MIL-S-22473    | 18       |
| 25   | FR       |                     | SOLDER SN60 OR 63             | SEE NOTE B         |       | QQ-S-571       | 19       |
| 26   |          |                     |                               |                    |       |                |          |
| 27   |          |                     |                               |                    |       |                |          |
| 28   |          | DOM5-15-8105        | DESCRIPTION OF MANUFACTURE    |                    |       |                |          |
| 29   | 1        | C5-15-12600         | LABEL, WIPE TEST              |                    |       |                | 21       |
| 30   | AR       | GE1201              | GLYPTAL RED ENAMEL            |                    | 50293 |                | 22       |

| APPLICATION       |  | ORIGIN, DATE OF SUBMITTAL               |  | U.S. ARMY ARMBLANT RESEARCH AND DEVELOPMENT COMMAND |  |
|-------------------|--|---|--|---|--|
| NEXT ASBY         |  | 80-08-15                                |  | CHEMICAL SYSTEMS LABORATORY                         |  |
| E5-15-8100        |  | FAS WC                                  |  | ABACKER PROVING GROUND, MARYLAND, 21010             |  |
|                   |  | SUBMITTED BY <i>[Signature]</i>         |  | CELL MODULE   |  |
|                   |  | APPROVED BY <i>[Signature]</i>          |  |   |  |
|                   |  | APPROVED BY ORDER OF <i>[Signature]</i> |  |   |  |
| END ITEM CODE NO. |  | CODE IDENT NO.                          |  | SIZE  |  |
| 203               |  | 81361                                   |  | B PL5-15-8105                                       |  |
|                   |  | SCALE                                   |  | 1 OF 2  |  |



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# REVISIONS

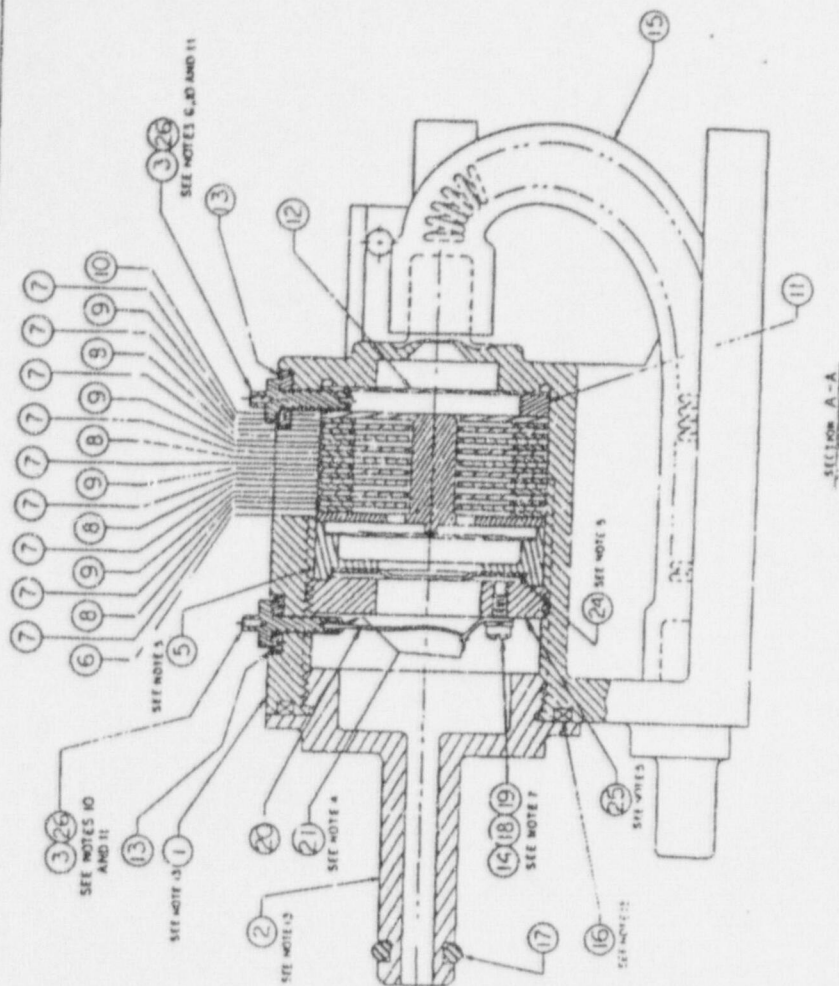
| LTG | DESCRIPTION | DATE | APPROVED |
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|     |             |      |          |
|     |             |      |          |
|     |             |      |          |

## PARTS LIST

| LINE | QTY REQD | DESCRIPTION OR PART NO. | NOMENCLATURE              | MATERIAL | SPECIFICATION | ITEM NO. |
|------|----------|-------------------------|---------------------------|----------|---------------|----------|
| 1    | 1        |                         | LABEL, VOID CHROME,       |          |               |          |
| 2    |          |                         | 1/4 X 1 INCH LONG, IMPACT |          |               |          |
| 3    |          |                         | LABEL CO., 4612 W.        |          |               |          |
| 4    |          |                         | BUFFALO AVE., TAMPA,      |          |               |          |
| 5    |          |                         | FL 33614                  |          |               | 23       |
| 6    |          |                         |                           |          |               |          |
| 7    |          |                         |                           |          |               |          |
| 8    |          |                         |                           |          |               |          |
| 9    |          |                         |                           |          |               |          |
| 10   |          |                         |                           |          |               |          |
| 11   |          |                         |                           |          |               |          |
| 12   |          |                         |                           |          |               |          |
| 13   |          |                         |                           |          |               |          |
| 14   |          |                         |                           |          |               |          |
| 15   |          |                         |                           |          |               |          |
| 16   |          |                         |                           |          |               |          |
| 17   |          |                         |                           |          |               |          |
| 18   |          |                         |                           |          |               |          |
| 19   |          |                         |                           |          |               |          |
| 20   |          |                         |                           |          |               |          |
| 21   |          |                         |                           |          |               |          |
| 22   |          |                         |                           |          |               |          |
| 23   |          |                         |                           |          |               |          |
| 24   |          |                         |                           |          |               |          |
| 25   |          |                         |                           |          |               |          |
| 26   |          |                         |                           |          |               |          |
| 27   |          |                         |                           |          |               |          |
| 28   |          |                         |                           |          |               |          |
| 29   |          |                         |                           |          |               |          |
| 30   |          |                         |                           |          |               |          |

|                          |  |                                |  |   |  |
|--------------------------|--|--------------------------------|--|---|--|
| APPLICATION<br>NEXT ASST |  | DESIGN BY 80-08-15             |  | U.S. ARMY AMMUNITION RESEARCH AND DEVELOPMENT COMMAND |  |
| ES-B-8100                |  | MA.B. WC                       |  | CHEMICAL SYSTEMS LABORATORY                           |  |
|                          |  | DESIGNED BY <i>James W. C.</i> |  | ADDRESS: PROPOSED BRANCH, BUCKLEY, ILL. 61810         |  |
|                          |  | APPROVED BY <i>James W. C.</i> |  | CELL MODULE   |  |
| END ITEM CODE NO.        |  | APPROVED BY <i>James W. C.</i> |  | CODE IDENT NO.  |  |
| 203                      |  |                                |  | 81361   |  |
|                          |  |                                |  | B PL5-15-8105   |  |
|                          |  |                                |  | SCALE   |  |
|                          |  |                                |  | SHEET 2 OF 2  |  |





| IN | Out | DESCRIPTION         | DATE     | AMOUNT | BALANCE |
|----|-----|---------------------|----------|--------|---------|
| A  |     | NOR 103-036-000 INC | 11/18/83 |        |         |
| B  |     | NOR 103-038-000 INC | 12/20/83 |        |         |
| C  |     | NOR 103-036-013 INC | 12/20/83 |        |         |
| D  |     | INC NOR 103-710-000 | 12/20/83 |        |         |
| E  |     | INC NOR 103-760-000 | 12/20/83 |        |         |
| F  |     | INC NOR 95-000-0001 | 12/20/83 |        |         |

SEE PARTS LIST PL5-15-8103

TECTOR CELL  
ASSEMBLY

|       |   |            |
|-------|---|------------|
| 81351 | D | 05-15-9103 |
|-------|---|------------|

HONEYWELL INC

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# REVISIONS

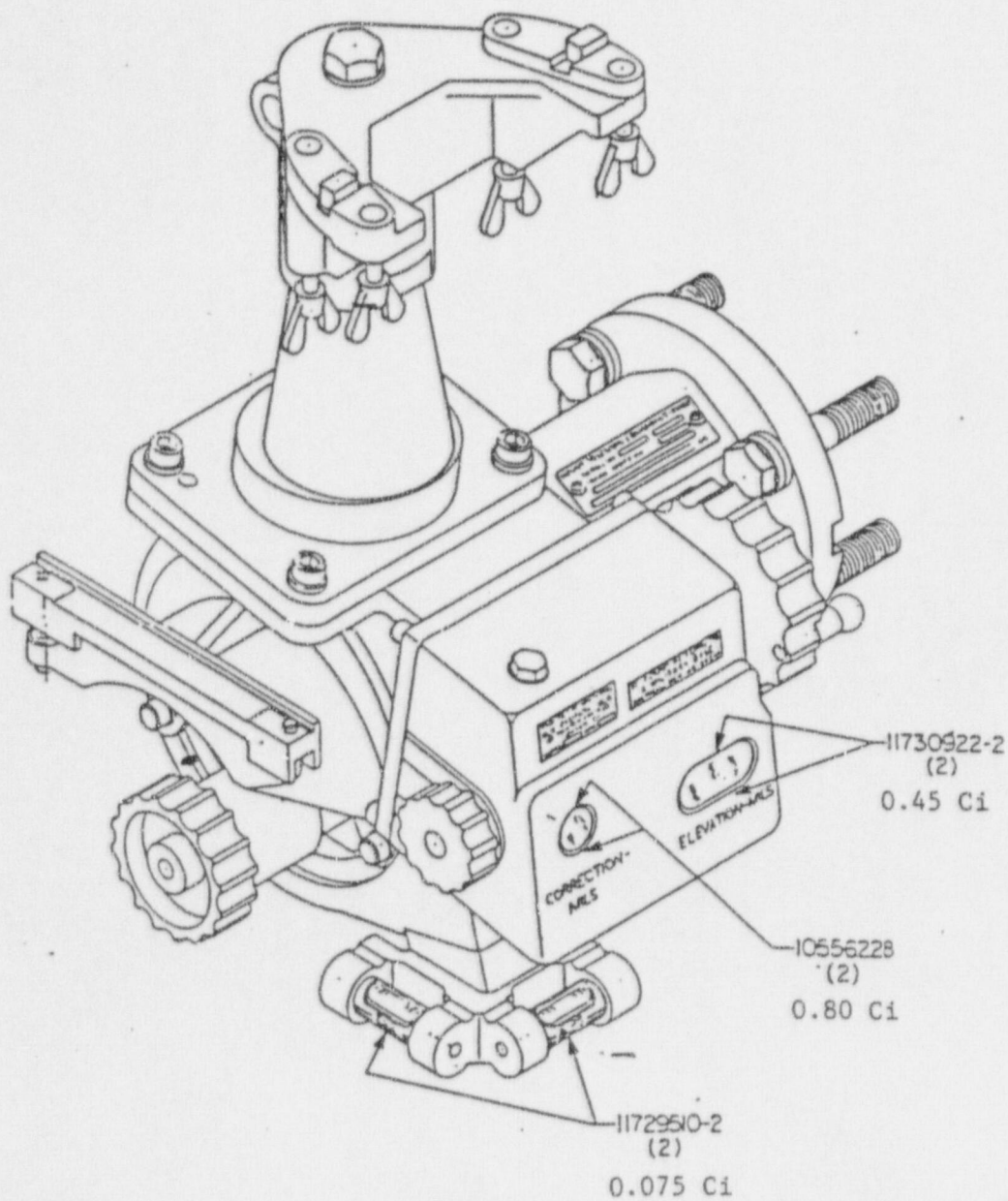
| LTR | DESCRIPTION         | DATE      | APPROVED |
|-----|---------------------|-----------|----------|
| A   | NOR 203-006-001 INC | 17 FEB 81 | AD/AS    |
| B   | NOR 203-412-004 INC | 25 JUN 84 | AD/AS    |
| C   | NOR 203-636-026 INC | 8 MAR 85  | AD/AS    |
|     |                     |           |          |
|     |                     |           |          |
|     |                     |           |          |
|     |                     |           |          |
|     |                     |           |          |
|     |                     |           |          |

## LIST OF MATERIALS

| LINE | QTY REQD | DRAWING OR PART NO. | NOMENCLATURE                        | MATERIAL       | FSCN  | SPECIFICATION | ITEM NO. |
|------|----------|---------------------|-------------------------------------|----------------|-------|---------------|----------|
| 1    | 1        | BS-15-8103          | DETECTOR CELL ASSEMBLY              |                |       |               | 1        |
| 2    |          |                     |                                     |                |       |               |          |
| 3    | 1        | BS-15-8083          | BLANK AND INSERT ASSY               |                |       |               | 2        |
| 4    | 1        | CS-15-8085          | TUBE, INLET                         |                |       |               | 3        |
| 5    | 2        | BS-15-8051          | TERMINAL, STUD                      |                |       |               | 4        |
| 6    |          |                     |                                     |                |       |               |          |
| 7    | 1        | BS-15-8101          | SCREEN AND RETAINER ASSY            |                |       |               | 5        |
| 8    | 1        | CS-15-8157          | MANIFOLD, CELL                      |                |       |               | 6        |
| 9    | 0        | BS-15-8150-1        | SPACER, CELL                        |                |       |               | 7        |
| 10   | 4        | BS-15-8150-3        | SPACER, CELL                        |                |       |               | 8        |
| 11   | 4        | BS-15-8156          | BAFFLE, CELL                        |                |       |               | 9        |
| 12   | 1        | BS-15-8158-2        | SPACER, CELL                        |                |       |               | 10       |
| 13   | 1        | BS-15-8052          | SPACER, TAPPED                      |                |       |               | 11       |
| 14   | 1        | CS-15-8156-2        | SCREEN, CELL                        |                |       |               | 12       |
| 15   | 2        | CS-15-8148-4        | WASHER, NON-METALIC                 |                |       |               | 13       |
| 16   | 1        | AS-15-8184          | TERMINAL, LUG                       | COPPER         |       |               | 14       |
| 17   | 1        | CS-15-8102-20       | TUBING ASSEMBLY, PLASTIC            |                |       |               | 15       |
| 18   | 1        | MS3248/1-073        | PACKING, PREFORMED                  |                |       | MIL-R-83248/1 | 16       |
| 19   | 1        | MS3248/1-080        | PACKING, PREFORMED                  |                |       | MIL-R-83248/1 | 17       |
| 20   | 1        | MS5185-1            | SCREW, PMW, 2-56 X 1/8 LG           | CRES           |       |               | 18       |
| 21   | 1        | MS3230-134          | WASHER, LOCK, NO. 2                 | CRES           |       |               | 19       |
| 22   |          |                     | WIRE, UNINSULATED, SOFT             | (SOLID COPPER) |       | 90 W-343      | 20       |
| 23   | AR       |                     | DRAWN AND ANNEALED, AWG 22          | TIN PLATED     |       | TYPE 3        |          |
| 24   | AR       |                     | SOLDER, SN60 PB40                   |                |       | MS-1-871      | 21       |
| 25   | AR       |                     | FAB-DWG COAT LABELS, BLACK ON CLEAR |                |       | MIL-STD-130   | 22       |
| 26   | AR       |                     | PROTECTIVE COAT                     |                |       | FED-STD-141   | 23       |
| 27   | 1        | CS-15-8421          | WASHER, SPRING TENSION              |                |       |               | 24       |
| 28   | 1        | CS-15-8422          | RING, RETAINER                      |                |       |               | 25       |
| 29   | AR       | 3M 2216             | ADHESIVE                            |                | 01963 |               | 26       |
| 30   |          |                     |                                     |                |       |               |          |

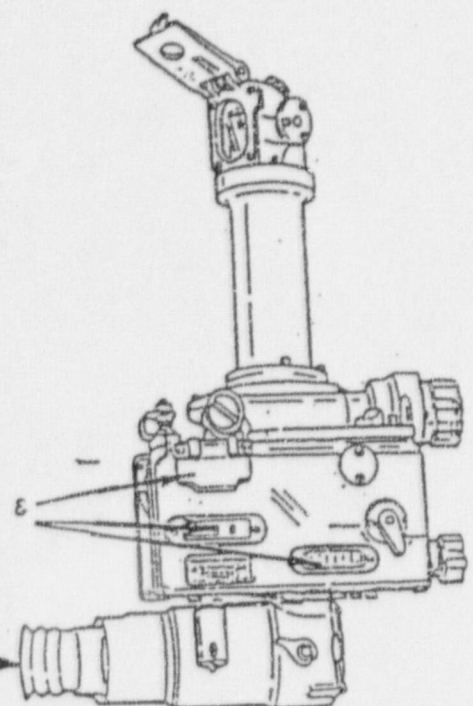
|                          |  |
|--------------------------|--|
| APPLICATION<br>NEXT ASSY | GENERAL DTL<br>80-08-15                      |
| 0545-8104                | DESIGNED BY<br>ERA WC                        |
|                          | CHECKED BY<br>[Signature]                    |
|                          | APPROVED BY<br>[Signature]                   |
| END ITEM CODE NO<br>208  | APPROVED BY (NAME OF DL)<br>A.L. [Signature] |
|                          | HONEYWELL INC<br>ST PETERSBURG, FLA          |

|  |                       |
|--|-----------------------|
| U.S. ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND<br>CHEMICAL SYSTEMS LABORATORY<br>AMMUNITION PROVING GROUND, MARYLAND, 21010 |                       |
| DETECTOR CELL<br>ASSEMBLY  |                       |
| CODE IDENT NO<br>81361   | SIZE<br>B PL5-15-8103 |
| SCALE<br>[MAX.] 78-C-COMD  |                       |



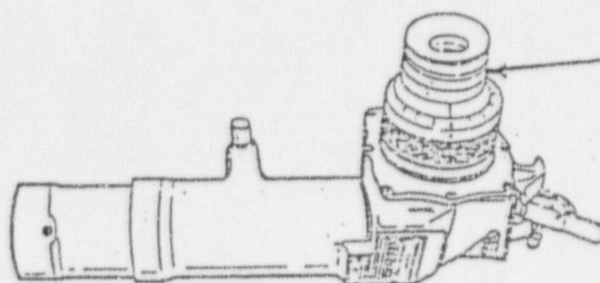
M187  
MOUNT, TELESCOPE, AND QUADRANT PN-12599166  
 Total Activity 2.65 Ci



- 
2. Azimuth, Deflection & Correction Counters  
11730922-2 (6)  
0.45 Ci

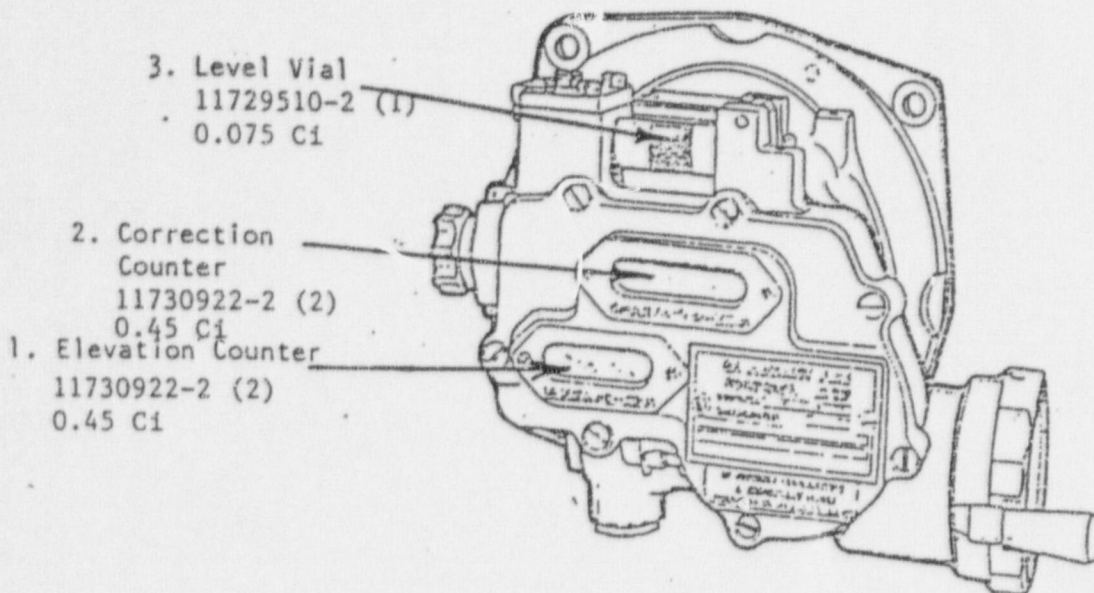
1. Reticle Pattern  
11729514 (4)  
0.6 Ci

Radioactive Components of M137 Panoramic Telescope  
Total Activity 5.1 Ci

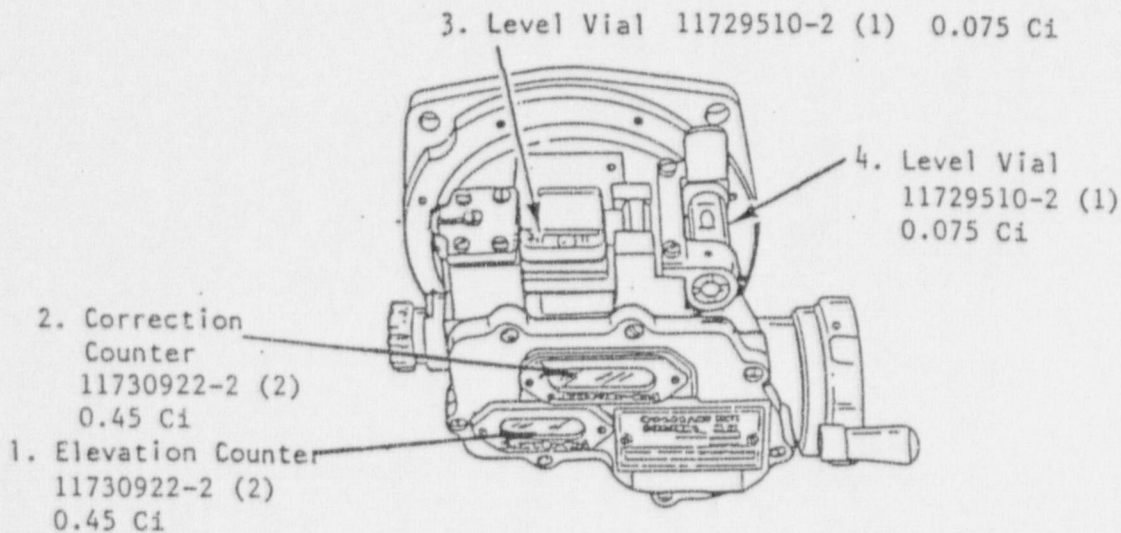


Reticle  
11748012 (2)  
2.2 Ci

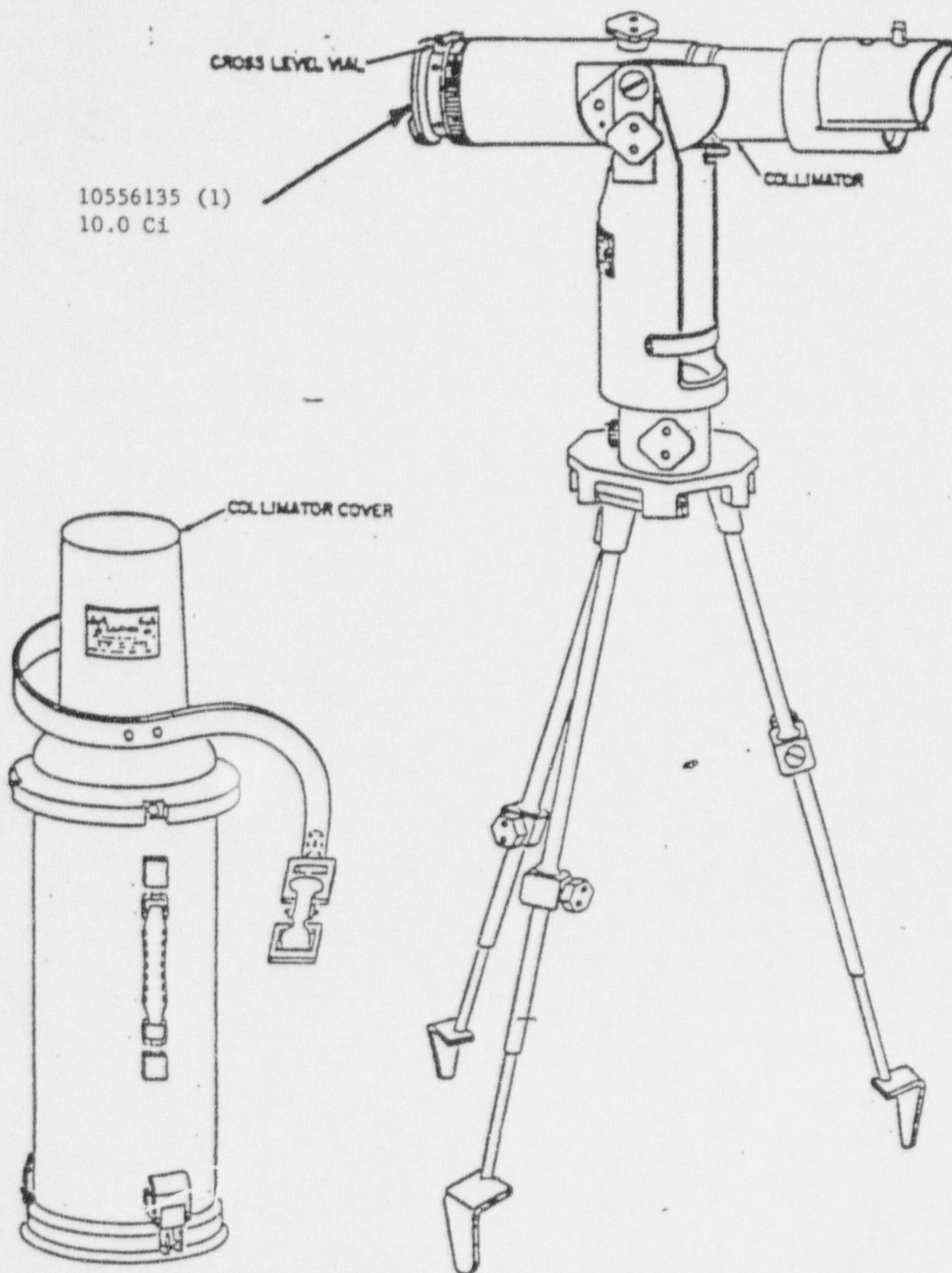
M138 Elbow Telescope with Radioactive Reticle  
Total Activity 4.4 Ci



Radioactive Elements of the M17 Fire Control Quadrant  
Total Activity 1.875 Ci

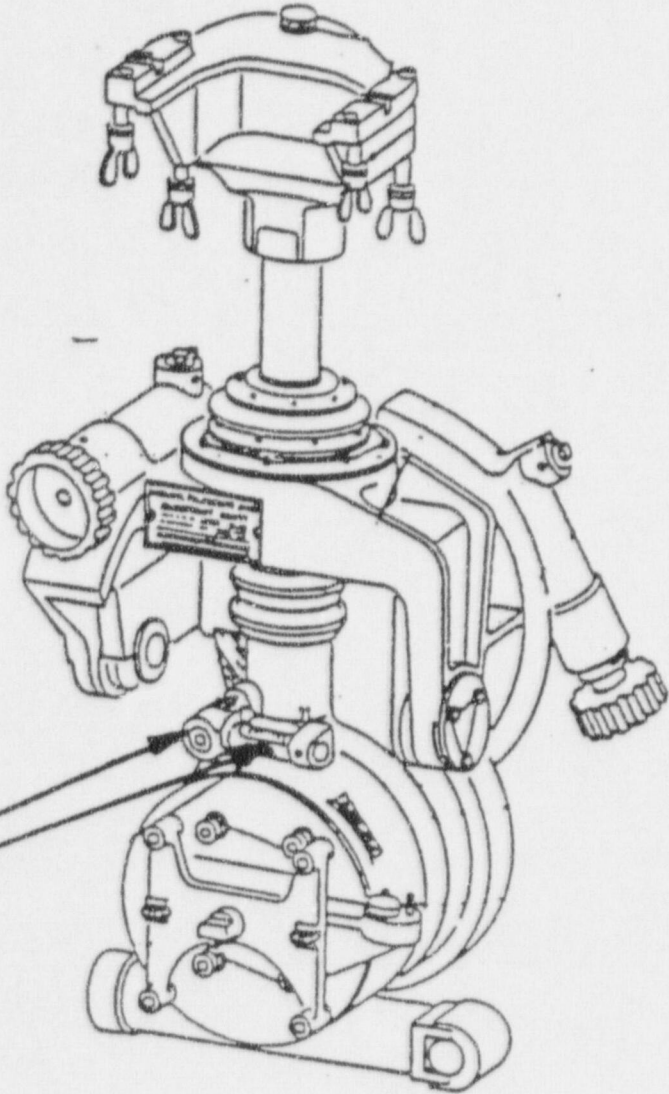


Radioactive Elements of the M18 Fire Control Quadrant  
Total Activity 1.95 Ci



M1A1 Collimator  
Total Activity 10.0 Ci

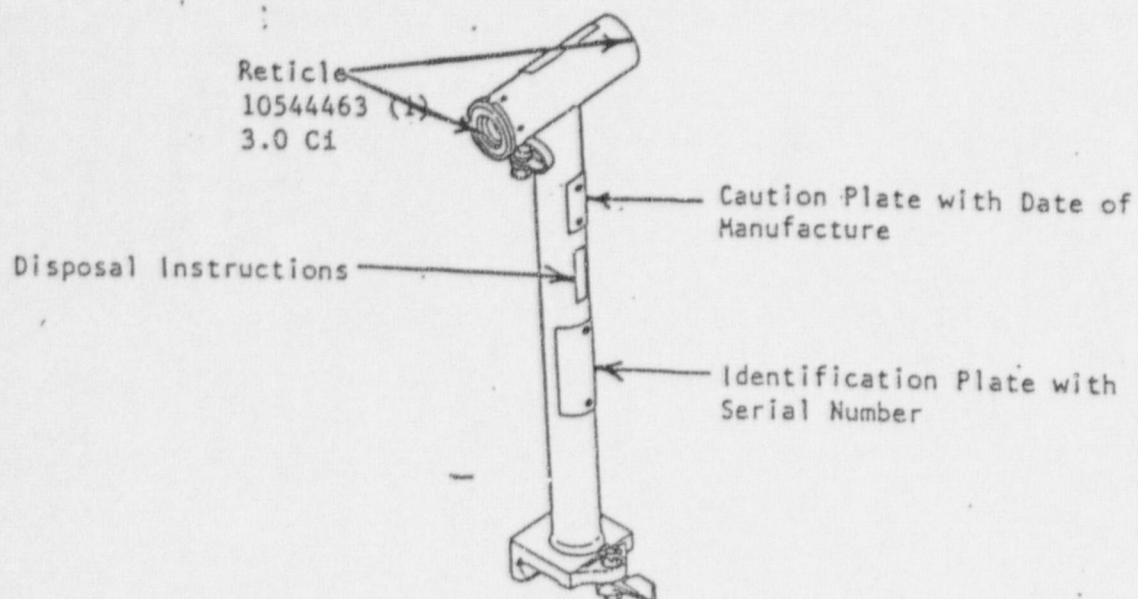




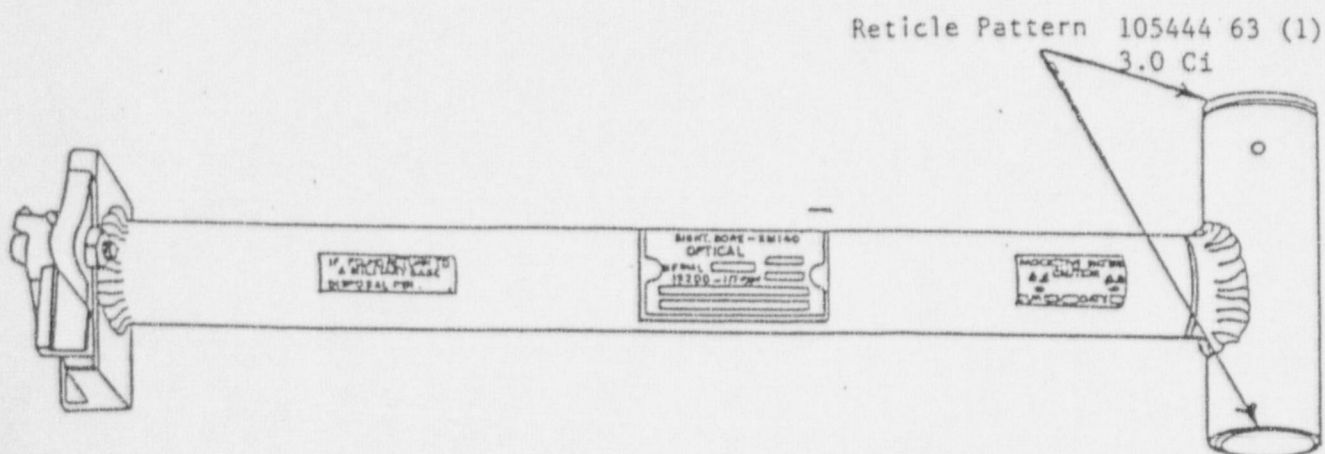
Level Vials  
11729510-2 (2)  
0.075 Ci

This is a technical exploded view diagram of an M171 Mount Telescope. The diagram shows the main telescope body at the bottom, which has a cylindrical shape with various adjustment knobs and a mounting bracket. Above the main body is a vertical shaft that connects to a horizontal assembly. This horizontal assembly includes a central component with a label that reads "Level Vials" and "11729510-2 (2)". Two lines point from this label to the vial assembly. The top of the diagram shows a separate component, likely a eyepiece or a secondary mounting, which is shown in its relative position to the main assembly. The entire diagram is rendered in a clean, black-and-white line-art style.

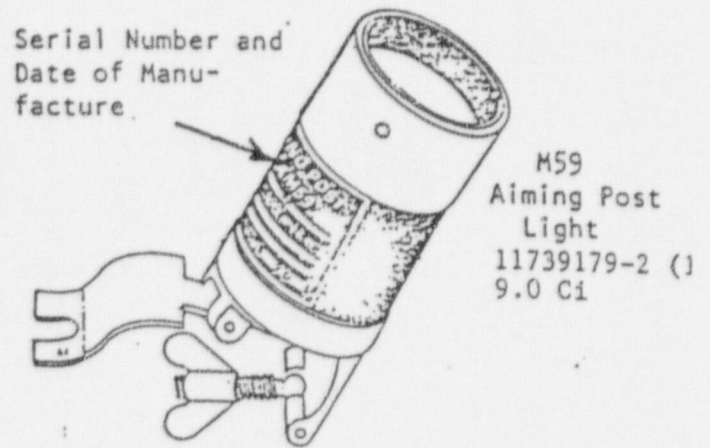
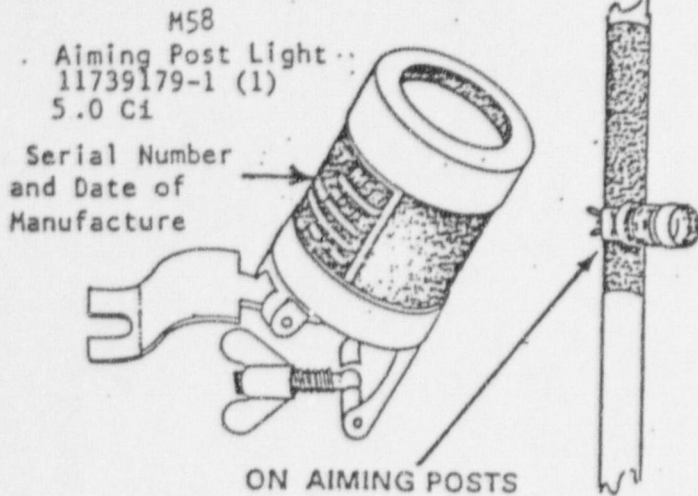
M171 Mount Telescope  
Total Activity 0.15 Ci



M139 Alignment Device with Radioactive Reticle  
Total Activity 3.0 Ci

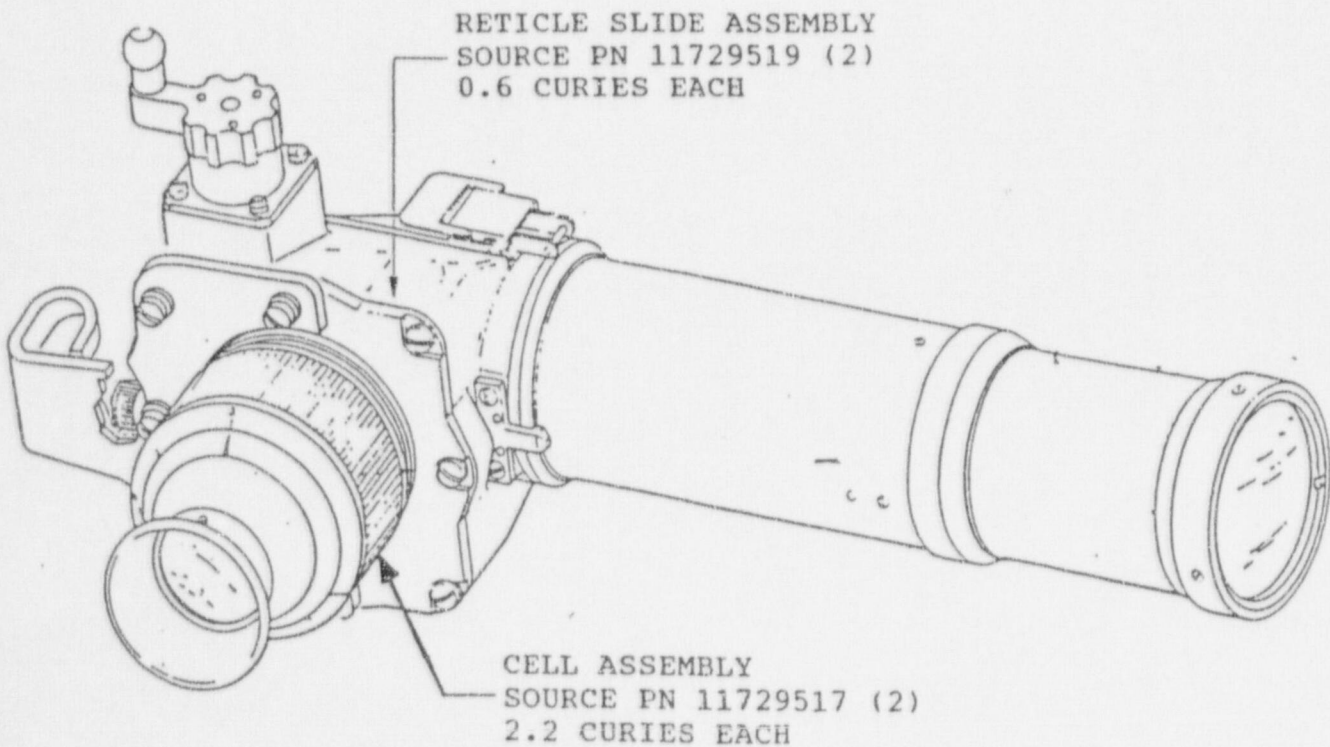


M140 Alignment Device  
Total Activity 3.0 Ci



M58 and M59 Aiming Post Lights

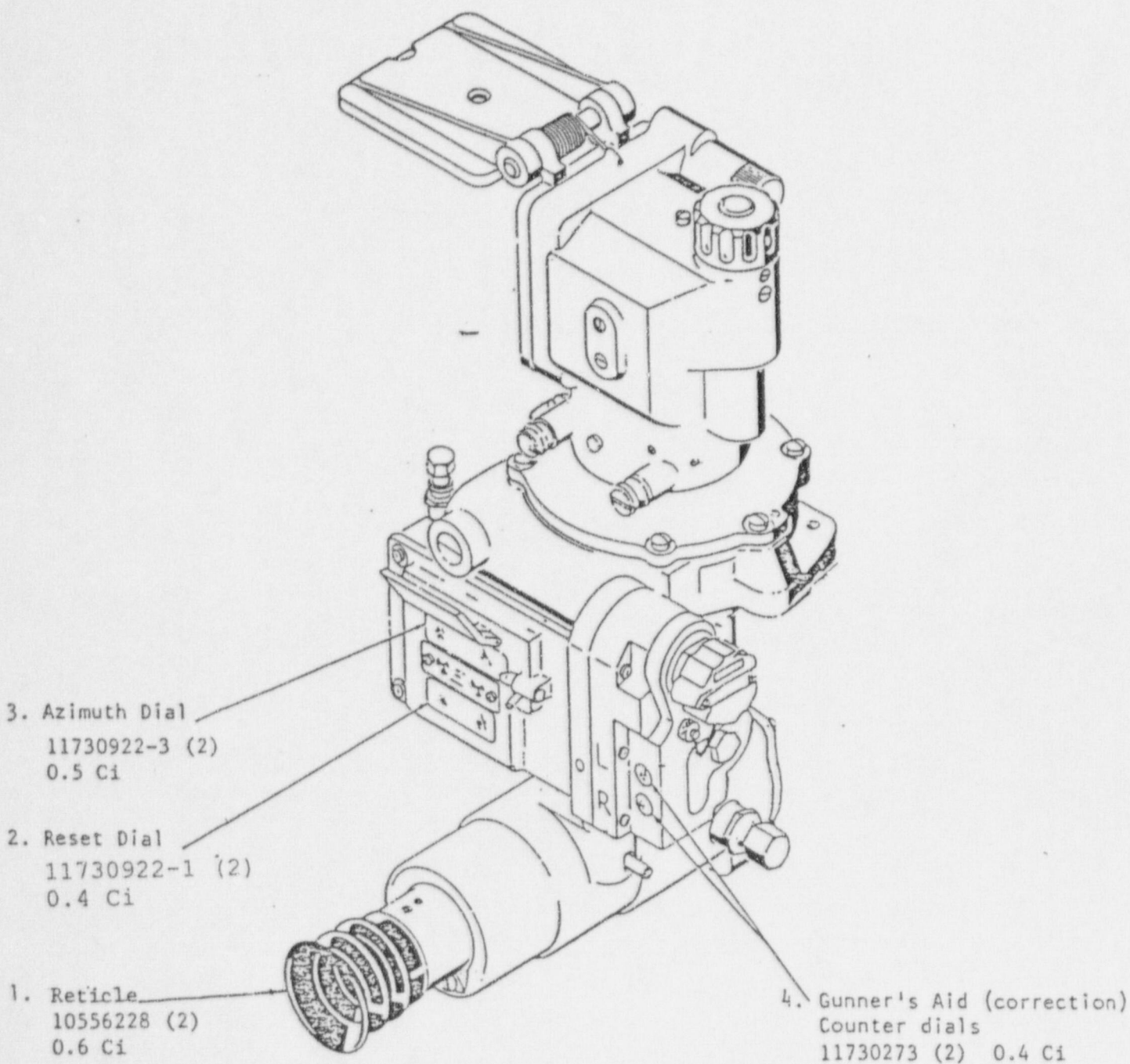
|                |     |        |
|----------------|-----|--------|
| Total Activity | M58 | 5.0 Ci |
|                | M59 | 9.0 Ci |



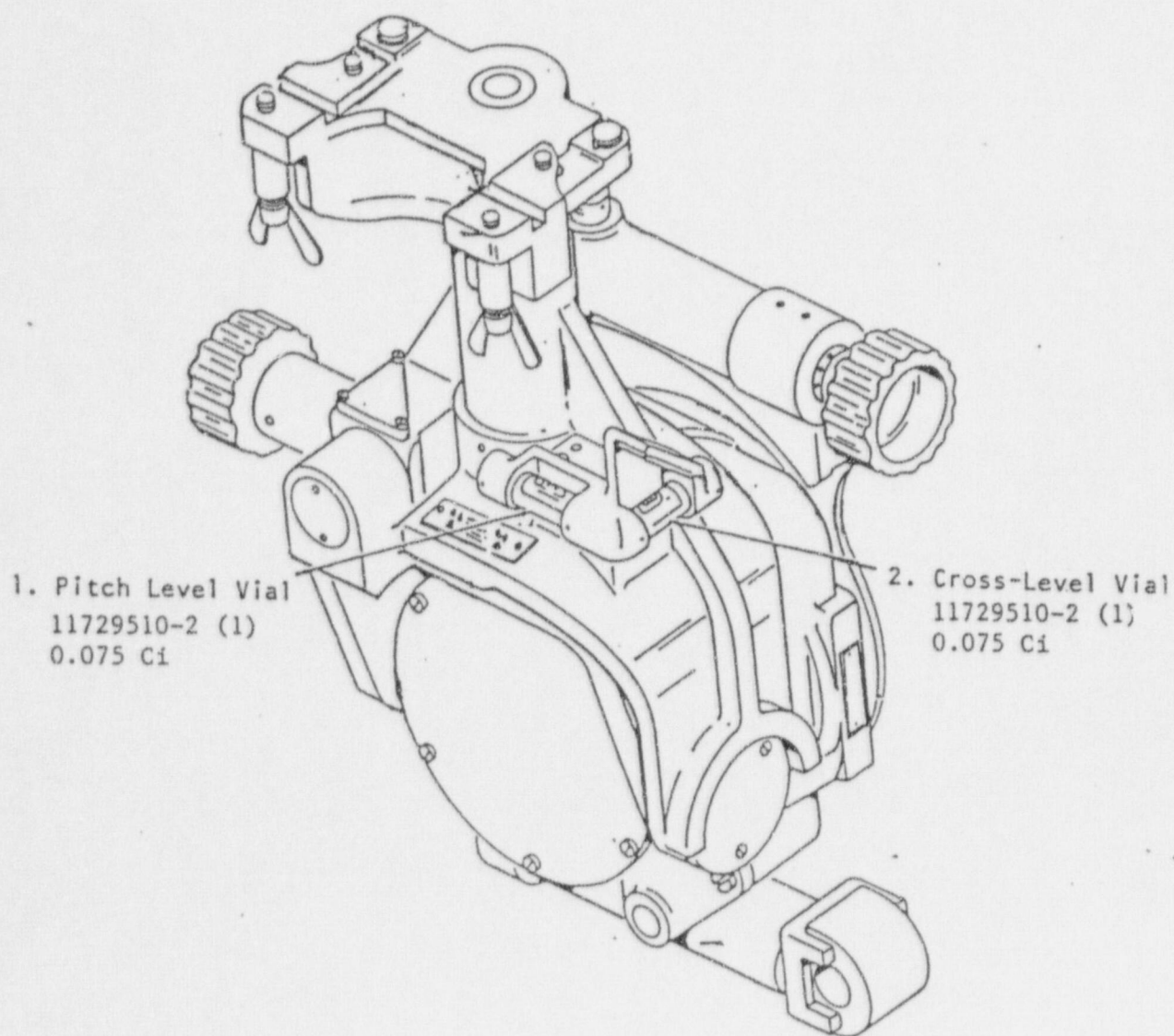
Radioactive Components of the M114A1 Elbow Telescope

|                |        |
|----------------|--------|
| Total Activity | 5.6 Ci |
|----------------|--------|

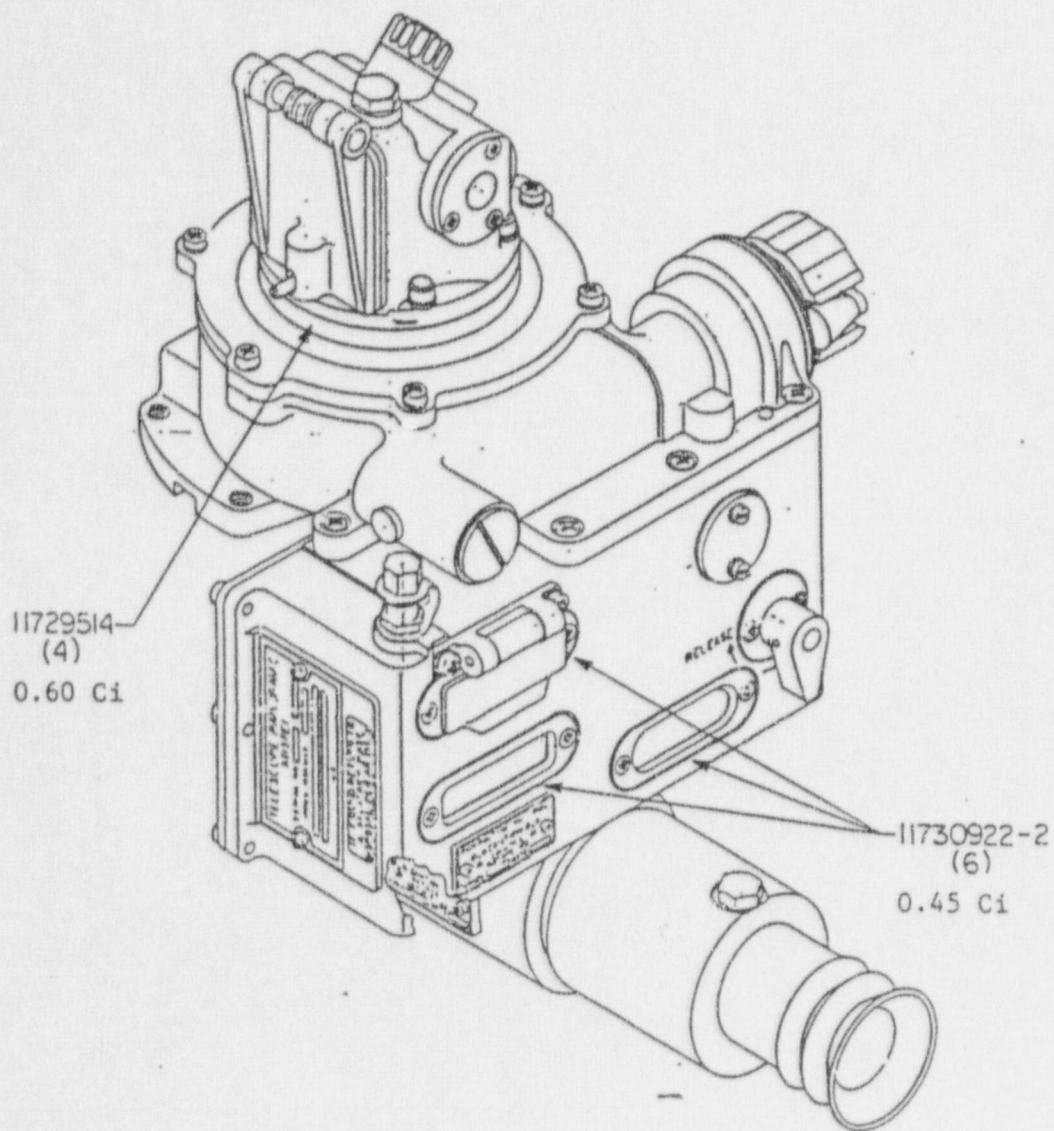




Radioactive Components of M113A1 Panoramic Telescope  
Total Activity 3.8 Ci



Radioactive Components of M134A1 Mount Telescope  
Total Activity 0.15 Ci



M137A1

TELESCOPE, PANORAMIC:PN-12599167

Total Activity 5.10 Ci



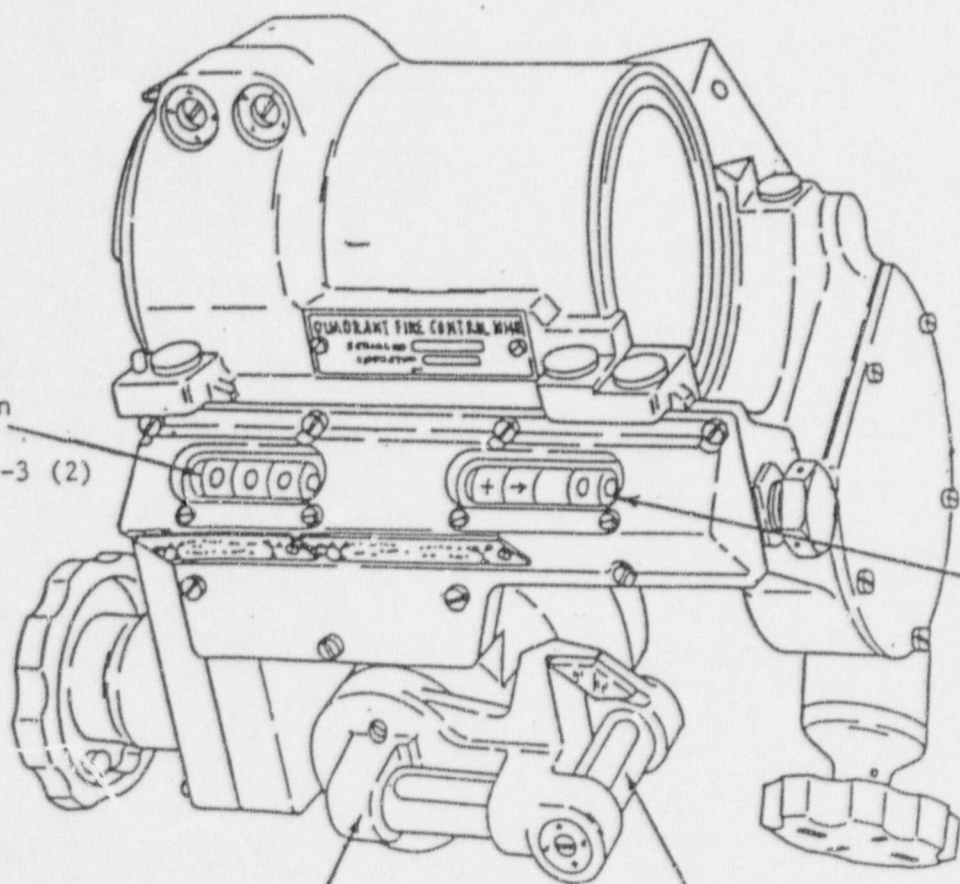
3. Elevation  
Counter  
11730922-3 (2)  
0.5 Ci

4. Correction  
Counter  
11730922-3 (1)  
0.5 Ci

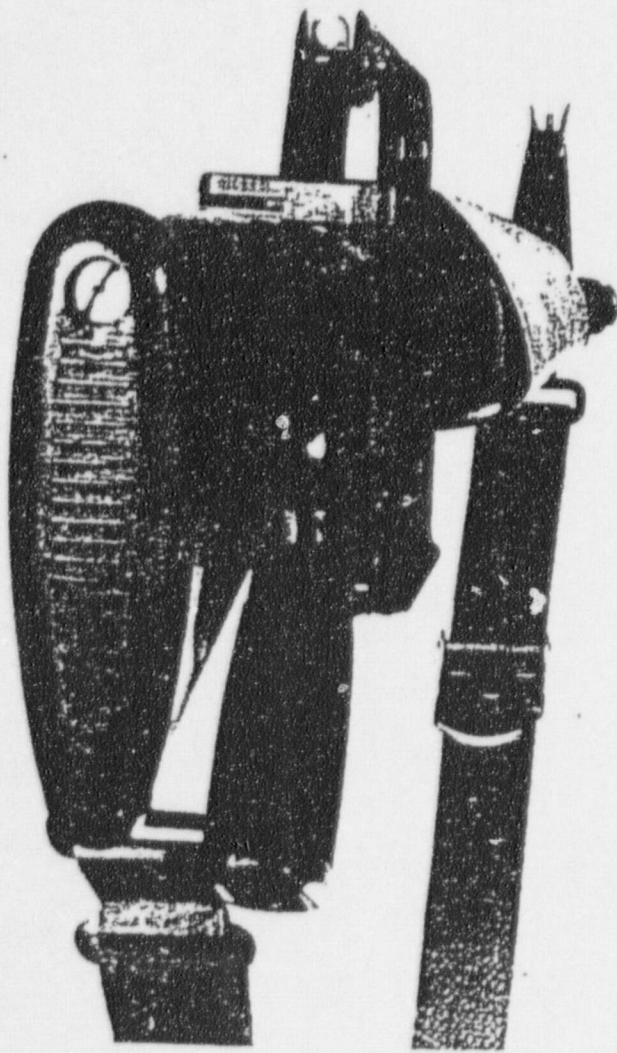
2. Level Vial  
11729510-2 (1)  
0.075 Ci

1. Level Vial  
11729510-2 (1)  
0.075 Ci

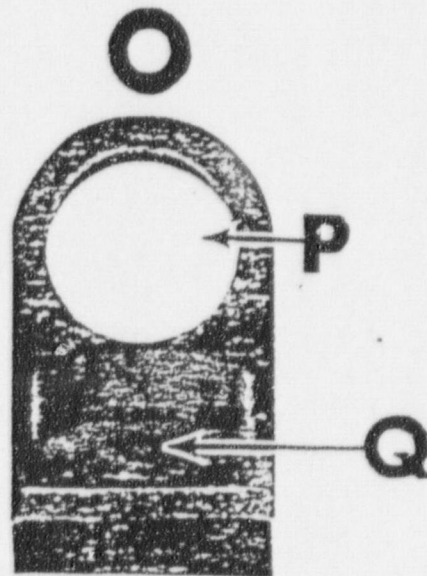
Radioactive Components of M14A1 Fire Control Quadrant  
Total Activity 2.15 Ci



MI6A1 RIFLE, 5.56 MM  
RADIOACTIVE SOURCE LOCATION

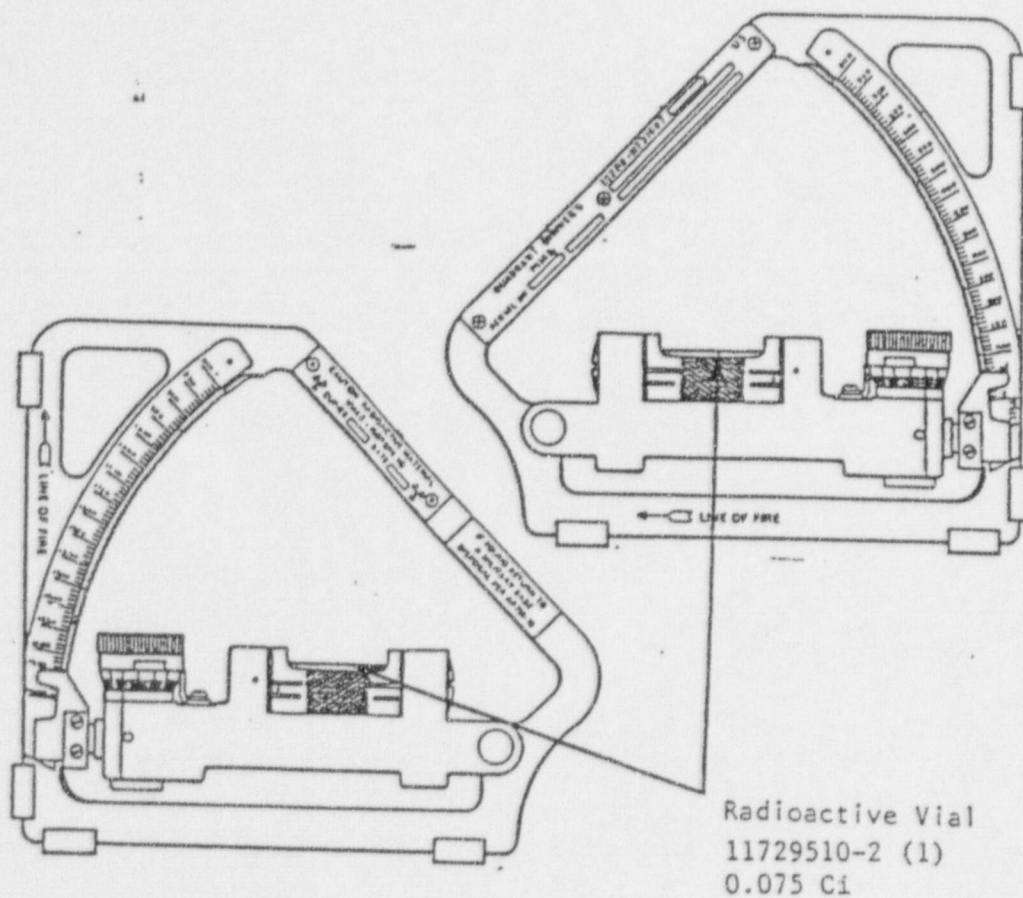


FRONT POST  
ASSEMBLY  
SOURCE PN  
12002965 (1)  
0.009 CURIE EACH



LOW LIGHT LEVEL SIGHT KIT  
M-FRONT SIGHT  
N-RADIOACTIVE ELEMENT (PM 147 OR H-3)  
O-REAR SIGHT  
P-SEVEN-MILLIMETER PEEP  
Q-THREE-MILLIMETER PEEP

TOTAL TRITIUM PER RIFLE: 0.009 CURIE

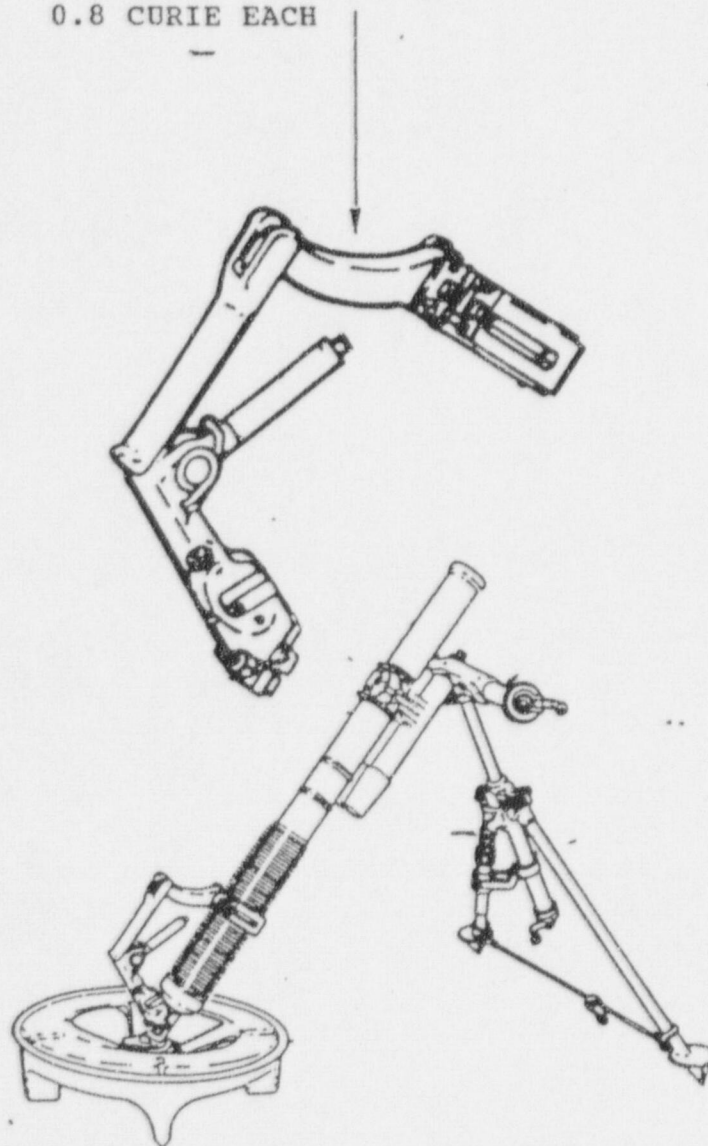


Radioactive Component of the M1A2 Gunner's Quadrant  
Total Activity 0.075 Ci



MORTAR, 60 MM, M224  
RADIOACTIVE SOURCE LOCATION

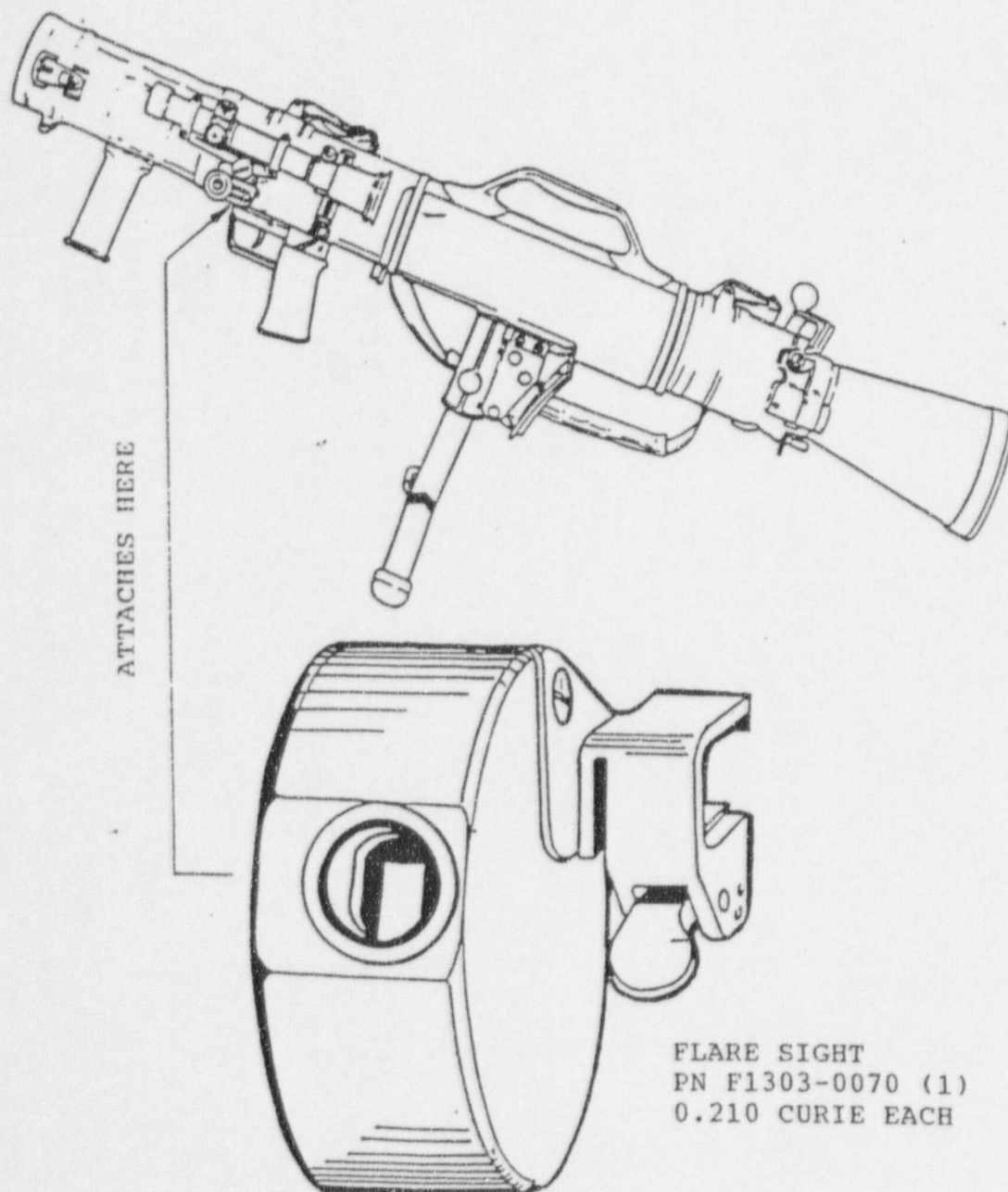
RANGE INDICATOR ASSEMBLY  
PN 9360374  
SOURCE PN 11834818 (4)  
0.8 CURIE EACH



TOTAL TRITIUM PER ASSEMBLY: 3.2 CURIE

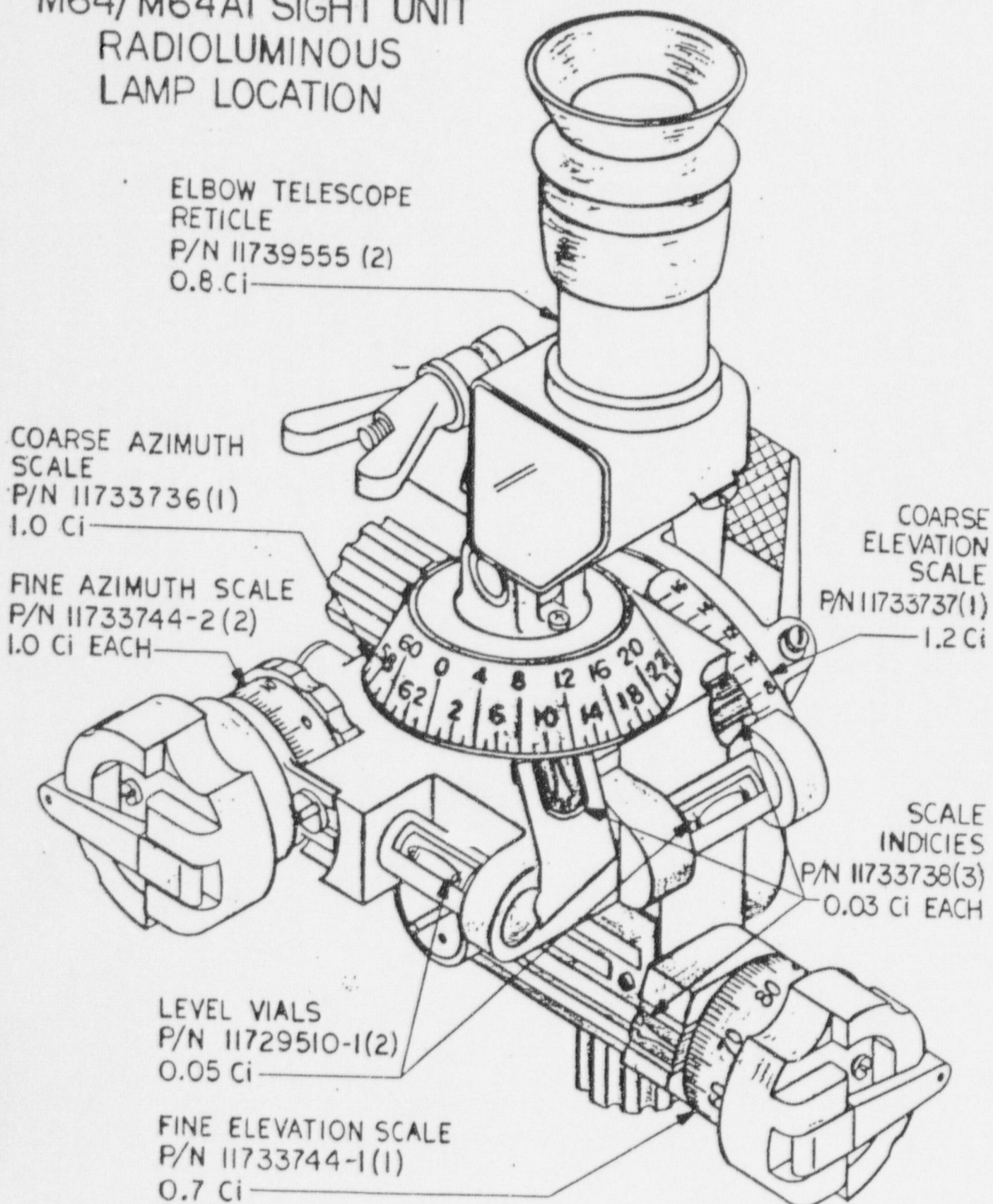
# M3 RECOILLESS RIFLE

RANGER ANTI-ARMOR ANTI-PERSONNEL WEAPON SYSTEM (RAAWS)  
RADIOACTIVE SOURCE LOCATION



TOTAL TRITIUM PER RIFLE: 0.210 CURIE

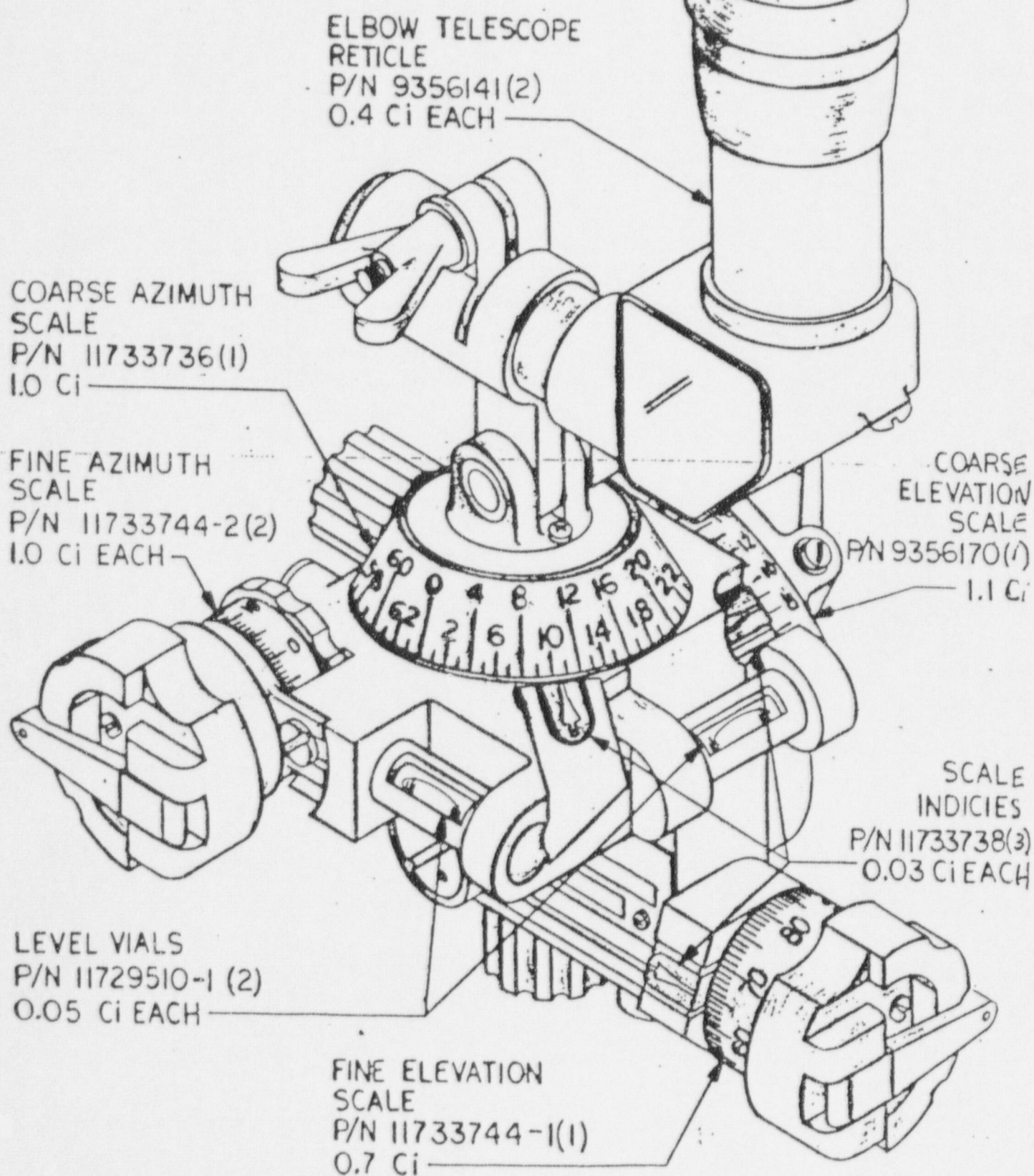
# M64/M64AI SIGHT UNIT RADIOLUMINOUS LAMP LOCATION



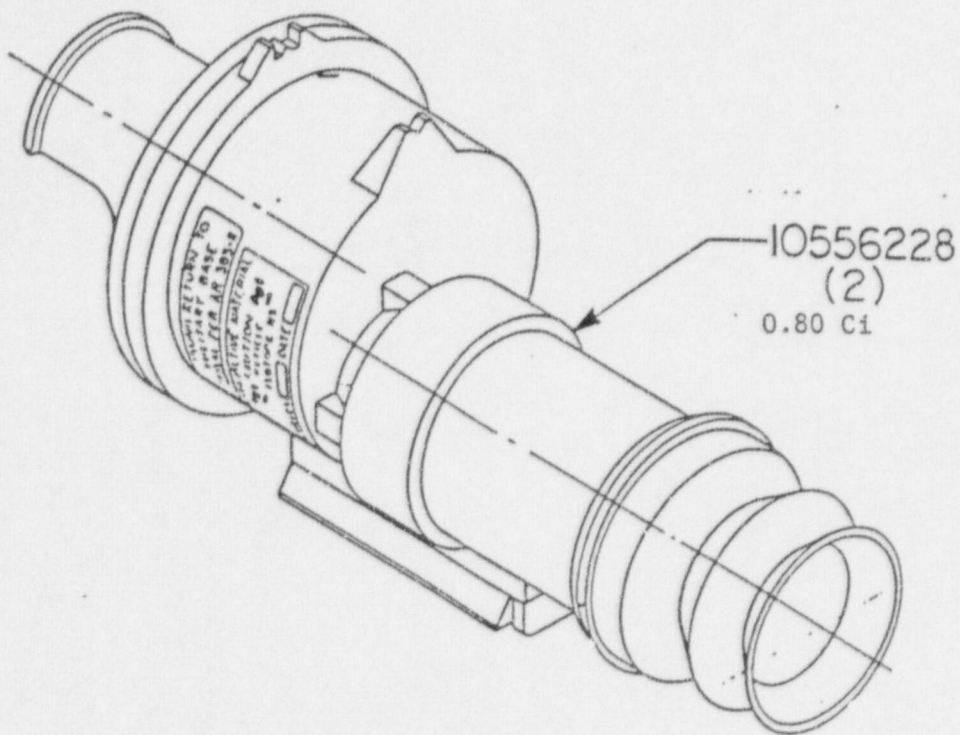
TOTAL TRITIUM PER SIGHT UNIT 6.69 CURIES



# M67 SIGHT UNIT RADIOLUMINOUS LAMP LOCATION



TOTAL TRITIUM PER SIGHT UNIT 5.79 CURIES

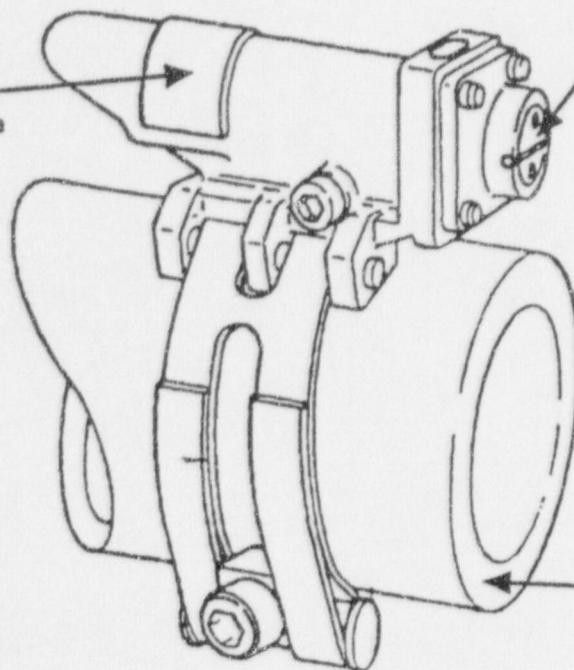


M90A2

TELESCOPE, STRAIGHT: PN 12599180

Total Activity 1.60 C1

Caution Plate with  
Part Number and Date  
of Manufacture



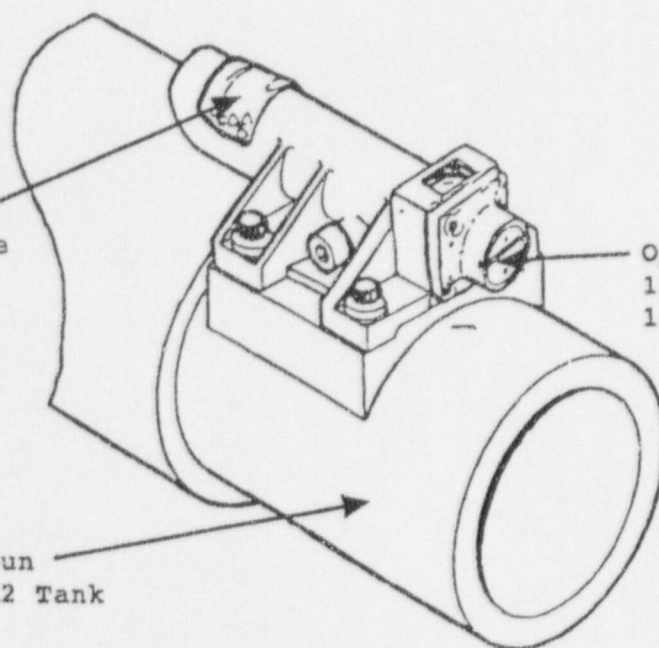
Optical Beamsplitter  
12304725-1 (1)  
10.0 Ci

SOURCE PN 12304729

105MM Main Gun  
M1 and IPM1 Tank

Infinity Collimator PN 9337194-2 and 12549839  
with Radioactive Optical Beamsplitter  
Total Activity 10.0 Ci

Caution Plate with  
Part Number and Date  
of Manufacture



Optical Beamsplitter  
12304725-1 (1)  
10.0 Ci

SOURCE PN 12304729

120MM Main Gun  
M1A1 and M1A2 Tank

Infinity Collimator PN 9338485-2, 12548821, 12932260, and 12931387  
with Radioactive Optical Beamsplitter  
Total Activity 10.0 Ci



Enclosure 3

TABLE OF REGISTERED DEVICES AND SOURCES

# TABLE OF REGISTERED DEVICES AND SOURCES

| NO.            | DEVICE TYPE                   | MODEL  | PART NO.   | CURIE   | NUCLIDE |
|----------------|-------------------------------|--------|------------|---------|---------|
| NR-155-D-118-S | Gas Detector                  | M43A1  | AMM1001    | 250.E-6 | AM241   |
| NR-155-D-119-S | Chemical Agent Monitor        | CAM    | NER-004R   | 15.E-3  | NI63    |
| NR-155-D-119-S | Chemical Agent Monitor        | ICAM   | NER-004R   | 15.E-3  | NI63    |
| NR-155-D-120-S | Self Luminous Applications    | MRS    | 12304729   | 10.E+0  | H3      |
| NR-155-D-121-S | Mortar Sight Unit             | M67    | 11729510-1 | 50.E-3  | H3      |
| NR-155-D-121-S | Mortar Sight Unit             | M67    | 11733736   | 1.E+0   | H3      |
| NR-155-D-121-S | Mortar Sight Unit             | M67    | 11733738   | 30.E-3  | H3      |
| NR-155-D-121-S | Mortar Sight Unit             | M67    | 11733744-1 | 700.E-3 | H3      |
| NR-155-D-121-S | Mortar Sight Unit             | M67    | 11733744-2 | 1.E+0   | H3      |
| NR-155-D-121-S | Mortar Sight Unit             | M67    | 9356141    | 400.E-3 | H3      |
| NR-155-D-121-S | Mortar Sight Unit             | M67    | 9356170    | 1.1E+0  | H3      |
| NR-155-D-124-S | Luminous Front Post Sight     | M16A1  | 12002965   | 9.E-3   | H3      |
| NR-155-D-125-S | Chemical Agent Detector (M22) | GID-3  | NER-004R   | 30.E-3  | NI63    |
| NR-155-S-101-S | Radioluminous Lamp            | M139   | 10544463   | 3.E+0   | H3      |
| NR-155-S-101-S | Radioluminous Lamp            | M140   | 10544463   | 3.E+0   | H3      |
| NR-155-S-102-S | Radioluminous Lamp            | M1A1   | 10556135   | 10.E+0  | H3      |
| NR-155-S-103-S | Radioluminous Lamp            | M113A1 | 10556228   | 800.E-3 | H3      |
| NR-155-S-103-S | Radioluminous Lamp            | M187   | 10556228   | 800.E-3 | H3      |
| NR-155-S-103-S | Radioluminous Lamp            | M90A2  | 10556228   | 800.E-3 | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M134A1 | 11729510-1 | 50.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M134A1 | 11729510-2 | 75.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M14A1  | 11729510-1 | 50.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M14A1  | 11729510-2 | 75.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M17    | 11729510-1 | 50.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M17    | 11729510-2 | 75.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M171   | 11729510-1 | 50.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M171   | 11729510-2 | 75.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M18    | 11729510-1 | 50.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M18    | 11729510-2 | 75.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M187   | 11729510-1 | 50.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M187   | 11729510-2 | 75.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M1A2   | 11729510-1 | 50.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M1A2   | 11729510-2 | 75.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M64    | 11729510-1 | 50.E-3  | H3      |
| NR-155-S-104-S | Radioluminous Lamp            | M64A1  | 11729510-1 | 50.E-3  | H3      |
| NR-155-S-105-S | Radioluminous Lamp            | M137   | 11729514   | 600.E-3 | H3      |
| NR-155-S-105-S | Radioluminous Lamp            | M137A1 | 11729514   | 600.E-3 | H3      |
| NR-155-S-106-S | Radioluminous Lamp            | M114A1 | 11729517   | 2.2E+0  | H3      |

|                |                    |        |            |         |    |
|----------------|--------------------|--------|------------|---------|----|
| NR-155-S-107-S | Radioluminous Lamp | M114A1 | 11729519   | 600.E-3 | H3 |
| NR-155-S-108-S | Radioluminous Lamp | M113A1 | 11730273   | 400.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M113A1 | 11730922-1 | 400.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M113A1 | 11730922-2 | 450.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M113A1 | 11730922-3 | 500.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M137   | 11730922-1 | 400.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M137   | 11730922-2 | 450.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M137   | 11730922-2 | 450.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M137A1 | 11730922-1 | 400.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M137A1 | 11730922-2 | 450.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M137A1 | 11730922-3 | 500.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M14A1  | 11730922-1 | 400.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M14A1  | 11730922-2 | 450.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M14A1  | 11730922-3 | 500.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M17    | 11730922-1 | 400.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M17    | 11730922-2 | 450.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M17    | 11730922-3 | 500.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M18    | 11730922-1 | 400.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M18    | 11730922-2 | 450.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M18    | 11730922-3 | 500.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M187   | 11730922-1 | 400.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M187   | 11730922-2 | 450.E-3 | H3 |
| NR-155-S-109-S | Radioluminous Lamp | M187   | 11730922-3 | 500.E-3 | H3 |
| NR-155-S-110-S | Radioluminous Lamp | M64    | 11733736   | 1.E+0   | H3 |
| NR-155-S-110-S | Radioluminous Lamp | M64A1  | 11733736   | 1.E+0   | H3 |
| NR-155-S-111-S | Radioluminous Lamp | M64    | 11733737   | 1.2E+0  | H3 |
| NR-155-S-111-S | Radioluminous Lamp | M64A1  | 11733737   | 1.2E+0  | H3 |
| NR-155-S-112-S | Radioluminous Lamp | M64    | 11733738   | 30.E-3  | H3 |
| NR-155-S-112-S | Radioluminous Lamp | M64A1  | 11733738   | 30.E-3  | H3 |
| NR-155-S-113-S | Radioluminous Lamp | M64    | 11733744-1 | 700.E-3 | H3 |
| NR-155-S-113-S | Radioluminous Lamp | M64    | 11733744-2 | 1.E+0   | H3 |
| NR-155-S-113-S | Radioluminous Lamp | M64A1  | 11733744-1 | 700.E-3 | H3 |
| NR-155-S-113-S | Radioluminous Lamp | M64A1  | 11733744-2 | 1.E+0   | H3 |
| NR-155-S-114-S | Radioluminous Lamp | M58    | 11739179-1 | 5.E+0   | H3 |
| NR-155-S-114-S | Radioluminous Lamp | M59    | 11739179-2 | 9.E+0   | H3 |
| NR-155-S-115-S | Radioluminous Lamp | M64    | 11739555   | 800.E-3 | H3 |
| NR-155-S-115-S | Radioluminous Lamp | M64A1  | 11739555   | 800.E-3 | H3 |
| NR-155-S-116-S | Radioluminous Lamp | M224   | 11834818   | 800.E-3 | H3 |
| NR-155-S-117-S | Radioluminous Lamp | M138   | 11748012   | 2.2E+0  | H3 |



Enclosure 4

RESUMES

RESUME OF TRAINING AND EXPERIENCE  
JEFFREY A. HAVENNER

1. **GENERAL EDUCATIONAL BACKGROUND:**

Bachelor of Science, 1973, University of Maryland,  
College Park, Md. Major: Microbiology

Master of Science, 1976, University of Maryland,  
College Park, Md. Major: Microbiology, Emphasis in Cell Physiology and Biochemistry

2. **TRAINING IN RADIATION SAFETY:**

a. 1977-1978 Laboratory Technician, Litton Bionetics Inc, Frederick Cancer Research Center. Training in radiation safety practices and procedures in handling, accounting for and proper disposal of radioisotopes used in biomolecular research projects.

b. 1979-1982 Microbiologist, U.S. Army Walter Reed Army Institute of Research, Department of Rickettsial Diseases. Training in radiation safety practices and procedures in handling, accounting for and proper disposal of radioisotopes. Training in the use of cobalt-60 cell irradiation equipment.

c. 1982 U.S. Army Radiological Safety Course (7KF3) at the U.S. Army Chemical School, Ft. McClellan AL. (Duration 3 weeks)

d. 1991 Depleted Uranium/Heavy Metals, U.S. Army Armaments Research, Development and Engineering Center, Dover N.J. Course covered manufacture, characteristics and handling of depleted uranium materials. (duration 1 week)

e. 1992 Low Level Radioactive Waste Packaging and Transportation Course, U.S. Ecology Inc, Las Vegas Nevada.

f. 1992 Site Safety Training, Department of Energy, Fernald Environmental Management Program, Fernald, OH. (Duration 2 weeks) Training in use of monitoring and survey equipment, personal protective equipment and emergency response to accidental releases of radioactive material and criticality emergencies.

g. 1997 U.S. Nuclear Regulatory Commission Inspector Training Course, US NRC Technical Training Center, Chattanooga, TN

### **3. EXPERIENCE WITH RADIO NUCLIDES:**

a. 1974-1976 Department of Microbiology, University of Maryland, College Park, MD. Research involving bacterial uptake and metabolism of carbon-14 and tritium labeled amino acid and vitamin preparations. Work involved calculation of specific activity, scintillation counting procedures, inventory procedures, safe storage, handling and disposal techniques as well as performing surveys of work areas.

b. 1977-1978 Litton Bionetics, Frederick Cancer Research Center, Division of Viral Oncology, Fort Detrick, Md. Used carbon-14, tritium and phosphorus-32 labeled nucleotide preparations in DNA and RNA sequencing and virus genome isolation procedures. Work involved calculations of specific activity, scintillation counting procedures, inventory procedures, safe storage, handling and disposal techniques as well as performing surveys of work areas.

c. 1979-1982 Walter Reed Army Institute of Research, Walter Reed Army Medical Center, Washington, D.C. Used a cobalt-60 cell irradiator to inhibit reproduction of viable cell populations for the purpose of cultivating rickettsia. Used preparations of carbon-14 and tritium labeled amino acids in vivo in mice to detect immune response to rickettsial infections and isolate labeled antisera to rickettsial strains.

d. 1983 U.S. Army, Chemical Staff Officer, 3rd Armored Division Headquarters. Participated in emergency response to and environmental clean up of one of the first tank fires involving up loaded depleted uranium ammunition.

e. 1988-1991 U.S. Army Armament Munitions and Chemical Command, Chemical Equipment Branch, Rock Island, IL. Americium-241, Weapon System Manager of the M43A1 Chemical Agent Detector fielding program and the for the Advanced Chemical Agent Detector which incorporated a nickel-63 source.

### **4. GENERAL HEALTH PHYSICS BACKGROUND:**

a) 1991-1992 U.S. Army Armament Munitions and Chemical Command, Safety Office, Rock Island, IL. Health Physicist, Worked on licensing and radiation safety issues involving the Army's war reserve depleted uranium (U-238) ammunition stock pile manufacturing, maintenance and storage.



b. 1992-1994 U.S. Army Armament Munitions and Chemical Command, Radioactive Waste Disposal Office, Rock Island, IL. Health Physicist. Developed and executed radioactive waste packaging, transportation and disposal projects including large scale remediation and decommissioning projects.

c. 1994-present U.S. Army Armament Munitions and Chemical Command, Safety Office, Rock Island, IL. Health Physicist. Radiation Safety Officer for licenses covering tritium, promethium-147, americium-241 and nickel-63 in Army commodities.

RESUME of TRAINING and EXPERIENCE  
Timothy J. Mohs

ACALA HEALTH PHYSICIST

EDUCATIONAL BACKGROUND:

Bachelor of Art, 1975: University of California, San Jose, CA.  
Molecular Biology, Minor in Chemistry

Master of Divinity, 1979: Trinity Evangelical Divinity School, Deerfield, IL.  
Masters of Divinity

RADIOLOGICAL TRAINING:

1965-66: Naval Nuclear Power School, one year intensive education in all aspects of nuclear reactor principles and operation preparatory to serving onboard Naval Nuclear Vessels. Vallejo, CA. and Idaho Falls, ID.

1966-71: Various Naval schools and informal training in radiation monitoring, exposure control, and work practices while serving onboard three Nuclear Submarine.

1971-79 Pursuit of formal education as listed above.

1979-82 Navsea 108 radiological training and practical application of fundamental radiological controls, Mare Island Naval Shipyard, Vallejo, CA.

1982 Qualified as a Radiological Control Technician at the Mare Island Naval Shipyard, Vallejo, CA.

1982-95 Informal training in monitoring and controlling radiological exposure during overhaul and repair of Naval Nuclear Submarines.

1993-94 Hazardous Material Management course, UC Davis, Davis CA. (174 hrs.).

1994 Hazardous Material Regulations course, SAIC (16 hrs).

1995-96 Radiological Protection and Tritium Devices (24 hrs.) and Radiological Material Handling (40 hrs.). Army ACALA sponsored courses.

## EXPERIENCE:

1964-71 Trained and served in Nuclear Submarines in a supervisory capacity. Worked with and operated monitoring equipment. Tracked and performed evaluations of radiological exposure and shielding requirements.

1971-79 Formal schooling as listed above.

1979-85 Interpreted and maintained sound radiological practices during submarine overhaul. Controlled personnel exposure to radiation and/or contamination during nuclear repair work. Interpreted and enforced technical requirements for radiological work practices. Operated and maintained radiological monitoring equipment. Performed and evaluated official surveys of radiation/contamination areas.

1985-90 Supervised radiological work and enforced sound radiological practices. Interpreted, and maintained technical radiological work instructions. Provided remote sight supervision and served as the radiological liaison between shops, codes, and the shipyard during complex, high risk radiological repair availabilities. Planned and implemented manhour requirements to successfully complete complex radiological work on nuclear submarines and surface craft.

1990-93 Wrote, reviewed, and approved technical documents emphasizing radiological aspects of work procedures. Interpreted government regulations and applied them to the work environment. Authored and implemented radiological control agreements between the shipyard and its customers. Provided interpretation and evaluation of radiation, contamination, shielding, and work practices to minimize personnel exposure during high risk work processes. Served as the Radiological Project Engineer for several high liability, off sight, projects.

1993-95 Provided radiological expertise for the handling and disposal of radioactive/hazardous waste. Performed curie content and isotopic analysis for radiological shipments. Wrote and implemented technical procedures for the safe processing, handling, storage, and disposal of radioactive/hazardous materials. Interpreted and implemented government regulations for the safe transportation and burial of radioactive waste. Planned, directed, and set policy for work practices related to the disposal of radioactive waste at Mare Island Naval Shipyard. Resolved technical, scientific, environmental, and engineering problems related to handling and shipping radioactive waste.

1995-to present Provide expert input to NRC Licenses held by the Army. Issue and enforce government regulations regarding the use, repair, and disposal of radioactive commodities controlled by the NRC/ACALA licenses. Provide expert advice and remediation on incidents and/or situations as they arise during operations involving radioactive commodities used by the Army and Marines. Establish and schedule training for the users of commodities containing isotopes under the NRC/ACALA license. Conduct license inspections at sites holding commodities licensed through the ACALA Office.



Resume of Training and Experience  
Gavin D. Ziegler

1. General Educational Background: Bachelor of Science in Engineering Mechanics (1986), Southern Illinois University, Carbondale, Illinois

2. Training in Radiation Safety:

a. 1982-86. Physics, Chemistry, and Mathematics. Southern Illinois University, Carbondale, Illinois.

b. 1990. Correspondence Course: Radiological Safety I - Fundamentals. U.S Army Training Support Center, Newport News, Virginia.

c. 1990. Radiological Protection Management Course. Field Safety Activity, Charlestown, Indiana (Duration: 3 days).

d. 1990. Radiological Safety Course. U.S. Army Chemical School, Fort McClellan, Alabama. (Duration: 3 weeks)

e. 1990. Radioactive Waste Guidance Course. Chem Nuclear Systems, Inc., Columbia, South Carolina. (Duration: 1 week)

f. 1992. Radiological Bioassay and Dosimetry Software Training Fort Belvoir, Virginia. (Duration: 1 week)

3. Work Experience: Health Physicist for Headquarters, U.S. Army Armament, Munitions and Chemical Command, October 1990 to October 1994. Health Physicist for U.S. Army Armament and Chemical Acquisition and Logistics Activity (ACALA), October 1994 to present. Duties included:

a. Assist in preparation of Nuclear Regulatory Commission (NRC) licenses and amendments and Department of the Army (DA) authorizations.

b. Inspect installation radiation safety programs for compliance with Code of Federal Regulations and license requirements.

c. Assist in preparation of Technical Manual warning and caution statements.

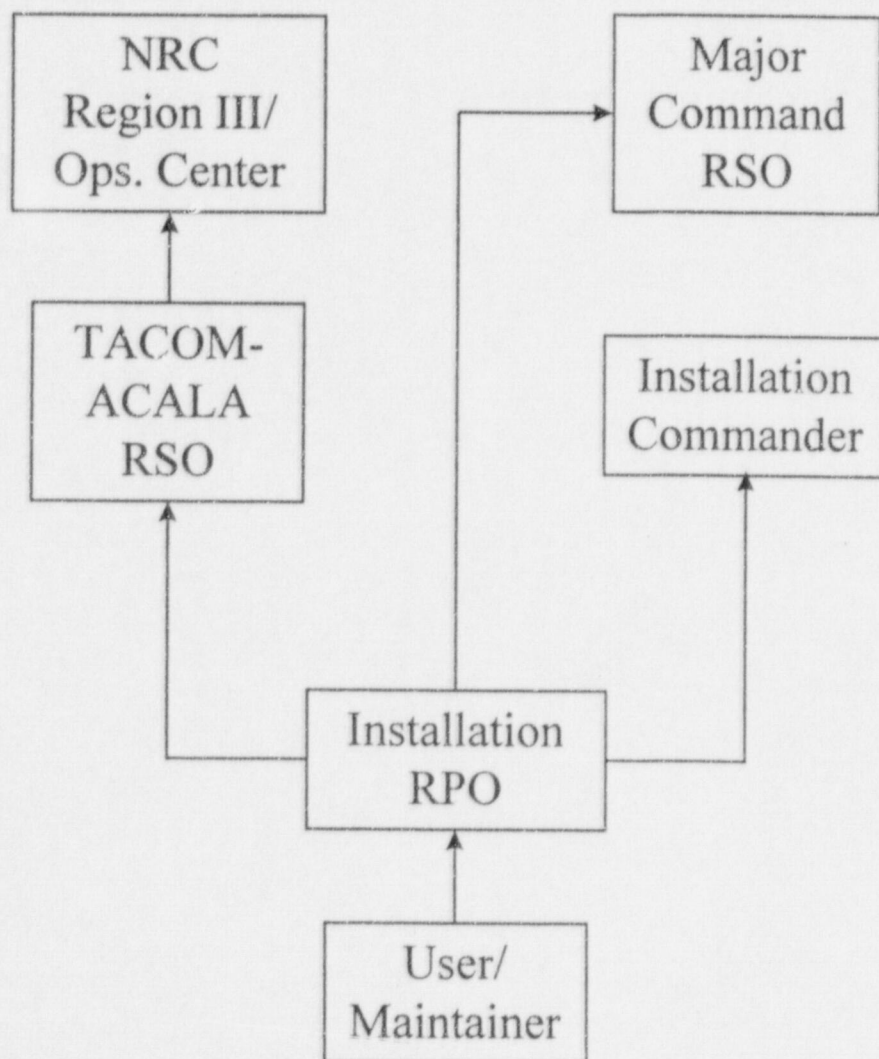
d. Provide response to special problems, and questions.

Enclosure 5

INCIDENT NOTIFICATION TREE

## Incident Notification Tree

(Example)





Enclosure 6

WIPE TEST PROCEDURES

## Wipe Test Procedure for the Chemical Agent Monitor (CAM)

1. Prepare work area/table by covering all work surfaces with paper. Obtain small paper envelopes.
2. Put on disposable gloves.
3. Remove the environmental cap at the rear of the device to view the drift tube module serial number.
4. Record serial numbers of cell module and the CAM on the envelope.
5. Replace the environmental cap.
6. Use wipe test disk to wipe the front exterior surface of the CAM and around the nozzle.
7. Screen wipe test with an appropriately calibrated survey meter. If sustained reading on lx scale is observed in excess of 200 counts per minute, notify the supervisor and the Installation radiation protection officer. Immediately double bag the CAM and tag as potentially leaking.
8. Place wipe test disk in the envelope (step 1). Ensure drift tube module and the CAM serial number is annotated on envelope. Use a separate envelope for each wipe.
9. Remove and dispose of gloves as radioactive waste. Follow safety procedures for storage, shipment, and disposal.
10. Seal envelope the with tape. Do not lick envelope to seal.
11. Place sealed, marked in large envelope and mail to:  
  
COMMANDER, ROCK ISLAND ARSENAL  
ATTN: SIORI-SEM-L  
RADIATION LEAK TEST SAMPLES  
RODMAN AVE., BLDG, 210, RM 407  
ROCK ISLAND, IL 61299-5000
12. Mark on envelope "MAILROOM - DO NOT OPEN".
13. Wash hands with liquid non abrasive soap.

## Wipe Test Procedure for the M43A1 Chemical Agent Detector

1. Prepare work area/table by covering all work surfaces with paper. Obtain small paper envelopes.
2. Put on disposable gloves.
3. Unfasten 4 catches and remove the bottom case of the M43A1 detector.
4. Record serial numbers of cell module and the M43A1 on the envelope.
5. Rotate the turnlock handle of the cell module 1/4 turn counterclockwise and pull the cell module from the chassis assembly.
6. Insert a dry disposable application through the red seal of the chassis and into the small hole (cell module outlet port connector), twisting the applicator as it is pulled out.
7. Screen wipe test with an appropriately calibrated survey meter. If sustained reading on 1x scale is observed in excess of 200 counts per minute, notify the supervisor and the Installation radiation protection officer. Immediately double bag the M43A1 and tag as potentially leaking.
8. Place applicator in the envelope (step 1). Ensure Cell Module serial number and the M43A1 serial number is annotated on envelope. Use a separate envelope for each wipe test.
9. Remove and dispose of gloves as radioactive waste.
10. Seal envelope with tape. Do not lick envelope to seal.
11. Place sealed, marked envelope mail to:  
  
COMMANDER, ROCK ISLAND ARSENAL  
ATTN: SIORI-SEM-L  
RADIATION LEAK TEST SAMPLES  
RODMAN AVE., BLDG, 210, RM 407  
ROCK ISLAND, IL 61299-5000
12. Mark on envelope "MAILROOM - DO NOT OPEN".
13. Wash hands with liquid non abrasive soap.



Wipe Test Procedure for the Automatic Chemical Agent Detector  
(GID-3 ACADA)

The wipe test procedures for this device are still being prepared for publication.

They will be similar to those already presented in this enclosure for the Chemical Agent Monitor.