

DL-041295-02

**Newport News Industrial Corporation**

700 Thimble Shoals Blvd  
Suite 113  
Newport News, Virginia 23606-2544  
804-380-7053

Subsidiary of  
Newport News Shipbuilding

A Tenneco Company



43-2539

April 12, 1995

**Nuclear Materials Licensing Section**  
U.S. Nuclear Regulatory Commission, Region II  
101 Marietta Street, Suite 2900  
Atlanta, GA 30323

**Subject: Renewal of License 45-11589-02/Control Number 252284**

**Enclosure: Application for Renewal of Byproduct Material License**

Gentlemen:

Newport News Industrial Corp. is submitting a request for renewal of Byproduct Materials License Number 45-11589-02. As required, a complete renewal application that reflects our program at this time is being submitted and includes a prepaid licensee fee of \$2100.

We are not presently engaged in handling or storing any radioactive materials under the subject license and will remain in this status until we receive approval of our license renewal. Please contact Mr. C. L. Trent, (804) 380-7594, if there are any questions concerning the renewal application.

Sincerely,

A handwritten signature in dark ink, appearing to read "Tom Bond", written in a cursive style.

Thomas E. Bond  
General Manager

TEB:clt  
CLT

256401

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 9 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 (T-8 F33) U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0120), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

# APPLICATION FOR MATERIAL LICENSE

**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:

NUCLEAR MATERIALS SAFETY SECTION  
U.S. NUCLEAR REGULATORY COMMISSION REGION III  
475 ALLIANCE BLVD. #100  
NEW BRITAIN, CT 06106-1000

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

NUCLEAR MATERIALS SAFETY SECTION  
U.S. NUCLEAR REGULATORY COMMISSION REGION III  
175 MARTIN LUTHER KING, JR. BLVD., SW  
ATLANTA, GA 30333-0009

#### 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  
801 WARRENVILLE RD.  
USLE IL 60532-4351

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION  
U.S. NUCLEAR REGULATORY COMMISSION REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TX 76011-6064

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 JURISDICTIONS.

<p>1. TYPE OF APPLICATION (Check one):</p> <p><input type="checkbox"/> A. NEW LICENSE</p> <p><input type="checkbox"/> B. RENEWAL OF LICENSE</p> <p><input type="checkbox"/> C. AMENDMENT TO LICENSE NUMBER</p> <p><input type="checkbox"/> D. GENERAL LICENSE APPLICATION</p>	<p>2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip Code)</p> <p>New World News, Inc., 10000 Old Dominion Rd., Suite 108 Newport News, VA 23606-2544</p>
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<p>3. ACQUIRE USE WHERE LICENSED MATERIAL WILL BE REQUIRED TO BE USED:</p> <p>4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION:</p>	<p>TELEPHONE NUMBER</p>
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5. MATERIAL TO BE LICENSED (Check one):

<p>6. TYPE OF MATERIAL</p>	<p>7. PURPOSE FOR WHICH LICENSED MATERIAL WILL BE USED</p>
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<p>8. TRAINING FOR NEW OR A NEW TRAINING WORKING IN RESTRICTED AREAS</p>	<p>9. RADIATION SAFETY PROGRAM</p>
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<p>10. STATE OF RESIDENCE</p>	<p>11. RELIGIOUS</p>
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12. I HEREBY CERTIFY THAT THE INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT.

13. I HEREBY CERTIFY THAT THE INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT.

14. I HEREBY CERTIFY THAT THE INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT.

15. I HEREBY CERTIFY THAT THE INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT.

**FOR NRC USE ONLY**

<p>16. LICENSE NUMBER</p>	<p>17. COMMENTS</p> <p style="font-size: 2em; text-align: center;">256101</p>
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**ITEM 5. RADIOACTIVE MATERIAL**

Any byproduct material contamination on reactor related plant components and tools or mixed radioactive corrosion products (typically Cobalt 60, Cobalt 58, Chromium 51, Manganese 56, Iron 59, Nickel 65, Tungsten 187, etc.)

**ITEM 6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.**

Repair or modify reactor plant equipment or components in a shop facility located at 4101 Washington Avenue Newport News, VA and store, assemble, or make minor modifications to reactor plant tools and equipment in support of reactor plant service work at 700 Thimble Shoals Boulevard, Suite 108 Complex, Newport News, VA.

**ITEM 7. INDIVIDUALS RESPONSIBLE FOR RADIATION SAFETY PROGRAM A. )  
THEIR TRAINING AND EXPERIENCE.**

INDIVIDUALS

George M. Smith  
C. Lee Trent

Type of Training

The individuals above have attended a formal training course devoted exclusively to the subject of Radiological Safety. The subject matter covered during the course is outlined as shown in Training Guide for Radiation Workers.

Experience with Radiation - George M. Smith

Mr. Smith was trained as a Radiation Worker to the standards established for civilian personnel engaged in the construction and maintenance of reactor plants for U.S. Navy ship propulsion.

- |                  |  |
|------------------|--|
| 1963-79          | Job assignments as machinist, inspector and foreman engaged in the testing, repair and replacement of valves, pumps, and miscellaneous components on shipboard nuclear power plants. |
| 1966-71          | Numerous field assignments on steam generator repairs to shipboard nuclear power plants.   |
| 1973-<br>Present | Various field assignments to commercial nuclear power plants for the repair of valves, pumps, primary piping, and reactor vessel nozzles.  |

**ITEM 7. INDIVIDUAL RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE (CON'T)**

Experience with Radiation - C. Lee Trent

Mr. Trent was trained as a Radiation Worker to the standards established for civilian personnel engaged in the construction and maintenance of reactor plants for U.S. Navy ship propulsion and qualified to AEC Article 107.

- |                  |  |
|------------------|--|
| 1966-75          | Job assignments as a nuclear planner and test technician responsible for identification of testing and retesting required for reactor plant systems overhaul and refueling operations for nuclear powered submarines.        |
| 1979-<br>Present | Numerous field assignments as QA/QC inspector to commercial nuclear power plants for the repair of valves, recirculation and core spray piping replacements, freeze seal installation and reactor vessel nozzle replacement. |

THOMAS E. BOND (RADIATION SAFETY OFFICER)

Relevant Experience

**General Manager**

Newport News Industrial (NNI)

Responsible for management of company including achievement of performance goals and objectives as well as direction of product centers and operational support.

**Manager of Industrial Products**

Newport News Industrial (NNI)

Responsible for product line management, coordination and resource planning to manufacture products. Responsibilities included administration and compliance with budget, schedule and quality requirements.

**Project Manager**

Newport News Industrial (NNI)

- Shearon Harris Nuclear Power Plant - Responsible for instrumentation and control (I&C) maintenance work contracted by NNI, including project management, contract administration and coordination of I&C planning for start-up, operation and outages.
- Surry Nuclear Power Plant - Responsible for mechanical maintenance contracted activities including project management and administration, planning and scheduling.
- Perry Nuclear Power Plant - Responsible for on-site construction activities including construction management, contracts, purchasing, planning and scheduling, labor relations, cost engineering, quality assurance and control, and engineering through respective department managers. Management delegate for NRC Material License #34-16805-01.

**Field Quality Manager**

Newport News Industrial (NNI)

In charge of the quality aspects of all major projects including precontractual data collection, review and approval of the quality procedures for the customer, preparation of budgets, manning schedules, and administration of regulatory quality assurance programs including radiological testing.

**Quality Assurance/Quality Control Operations Manager**

Newport News Industrial

Perry Nuclear Power Plant (PNPP)

Managed approximately one hundred NNI personnel involved with inspection, nondestructive testing and documentation for field erection of containment vessels, internal "safety-related" structures, and fuel pools.

## **Engineering Design Supervisor**

**Newport News Industrial (NNI)**

**Responsible for fabrication and field erection engineering design for nuclear components and items, including drawing preparation, procedures and instructions, materials, estimating and quality requirements.**

## **Education**

**M.B.A., Masters of Business Administration, Lake Erie College**

**B.S., Business Administration, Christopher Newport College**

**A.S., Engineering, Perkinson Junior College**

## **Certification/Training**

- **ANSI N45.2.6, Level III - Quality Assurance**
- **ANSI N45.2.23, Lead Auditor**  
**(Stat-A-Matrix Institute, Rutgers University - Nuclear QA Auditing)**
- **American Welding Society (ASW) Welding Inspector - CQ1, CWI #80050881**
- **ASNT, SNT-TC-1A, Level II Radiography (Eastman Kodak Co., Rochester, NY)**
- **Radiation Safety, Isotope Radiography (Tech/Ops Inc., Burlington, Mass)**
- **ASNT, SNT-TC-1A, Level II, Magnetic Particle/Liquid Penetrant (Magnaflux Corp., Chicago, IL)**
- **Industrial Hygiene/Occupational Environmental Health (Medical College of Virginia/Virginia Commonwealth University)**
- **Management Planning - Asbestos Abatement/Inspection (University of Illinois at Chicago)**
- **Radiation Safety (Radiation/Contamination/Decontamination Control - Newport News Shipbuilding)**

## **Affiliation**

**American Welding Society**

**Mr. Bond has over twenty years of managerial and nuclear power plant experience. The skills, knowledge and experience gained in managing the various aspects of major projects make him a valuable leader of the NNI management team.**

NAME: BOOD, Thomas E.  
DEPT. NO. Newport News Industrial Corp.  
SSN: 428-80-8405  
DATE QUALIFIED: 1-17-90

I certify that this individual has been instructed and has demonstrated the practicals and testing concerning contamination controls.

*OE Stallings*  
Qualified Instructor

"The person designated to sign for an action verifies based on personal observation and certifies by his signature that the action has been performed in accordance with the specified requirements."

## **ITEM 8      TRAINING GUIDE FOR RADIATION WORKERS**

Prior to performing any work associated with radioactivity, each worker will be given a medical examination to determine that he is physically qualified to work with radioactive materials. If found physically qualified, each worker will attend a training program of about 20 hours duration. This program will include lectures, training aids, demonstrations and a written examination. A record will be made of the training performed and the satisfactory completion thereof for each worker on the basis of both written examination and demonstrated proficiencies when applicable. Workers are requalified to these standards every two years.

Specific subjects which will be covered in the training program are outlined as follows:

1. Radiation Exposure Control
  - a. Purpose and use of thermoluminescent and self-reading pocket dosimeters.
  - b. Limits for whole body and extremity exposure on both quarterly and annual basis. Individual responsibility for awareness of his own accumulated exposure.
  - c. Meaning and use of radiation warning signs and barriers.
  - d. Techniques of time, distance, and shielding to minimize individual exposure.
  - e. Demonstrated ability to read and use the self-reading pocket dosimeter.
2. Contamination Control
  - a. Description of radioactive contamination, where it can be expected, and its effect on the working environment.
  - b. Procedures for controlling and containing radioactive contamination when working with contaminated equipment.
  - c. Monitoring procedures for detection of contamination on the individual and in the work area.
  - d. Demonstrated ability to use Anti-C clothing and proper method of entering and exiting contamination control areas.

**ITEM 8. TRAINING GUIDE FOR RADIATION WORKERS (Cont)**

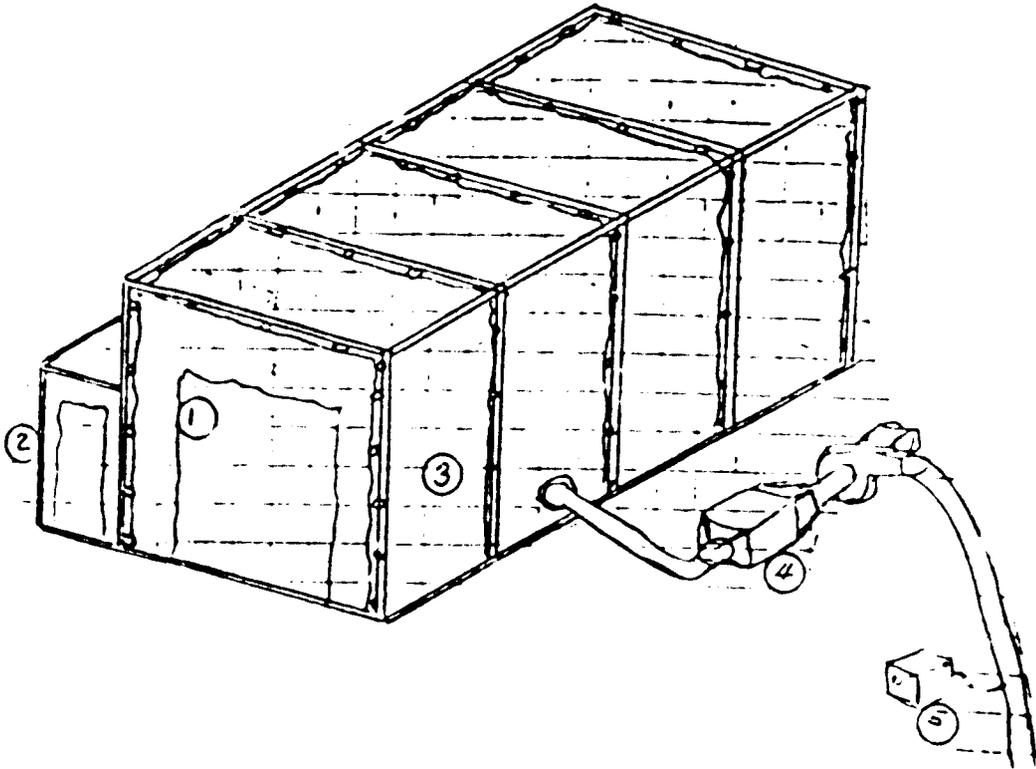
2. e. When applicable to the individual, demonstrated ability to work in glove box and tent containment areas.
3. Identification and Accountability
  - a. Use of tags and yellow plastic wrapping material for identification and control of radioactive contamination.
  - b. Control and accountability of all transfers of radioactive material.

**TRAINING PROGRAM FOR RADIATION MONITORS (RADIOLOGICAL CONTROL MONITORS)**

Radiation monitors are given a training program which consists of at least 200 hours of classroom training followed by a written examination and demonstrated proficiency in the use of radiation detection equipment. Material given to the Radiation Worker is covered in greater detail and the following additional subjects are covered.

1. Properties of ionizing radiation
2. Interaction of radiation with matter
3. Exposure standards and radiation protection regulations
4. Effects of ionizing radiation on individuals
5. Theory of detection of ionizing radiation
6. Radiation detection instrumentation
7. Personnel monitoring equipment and procedures
8. Natural radioactivity and environmental monitoring
9. Radiation monitoring procedures
10. Collection and disposition of liquid and solid radioactive wastes
11. Contamination control techniques
12. Decontamination techniques

**ITEM 9.      WORK FACILITY FOR USE WITH LICENSE 45-11589-02**



The above sketch depicts a typical indoor containment tent facility to provide contamination control while handling or working with items which are radioactively contaminated. The containment tent is fabricated from heavy duty fabric reinforced plastic material which is supported from a welded pipe frame structure. The work facility will be located within a fenced off exclusion area in a secure weather-tight warehouse building located on a site in an industrial park section of the city. Under no circumstances will radioactive material be placed in this building which would require the posting of externally visible radiation warning signs. TLD badges will be posted on all sides of the fenced enclosure and read quarterly. Occupational factors and TLD results will be used to demonstrate that exposure levels will not exceed 100 mrem in a year (20.1301).

**ITEM 9. WORK FACILITY FOR USE WITH LICENSE 45-11589-02 (Con't)**

Specific design features keyed to the numbered items on the sketch are discussed below:

- (1) Access for items of machinery and handling equipment is provided by a zippered door flap or similar entrance door.
- (2) Access for personnel is provided through an adjacent air lock structure which can also be used for a containment boundary when personnel are required to use anti-contamination clothing.
- (3) The floor area will be given special attention for the purpose of ease of decontamination if necessary and subsequent unrestricted release of the work area. A sheet metal pan with sealed seams is normally used under this type of structure, but an alternate choice would be to use a sealer coating on the concrete with either an epoxy paint finish coat or a vinyl (rubber) tile surface.
- (4) An exhaust ventilation system will be used to provide negative ventilation with respect to the surrounding area. The system will include pre-filters, high efficiency particulate activity (HEPA) filters, and downstream blowers to exhaust to the atmosphere.
- (5) A continuous air monitoring system will be provided to check for airborne particulates between the blower and the exhaust point.

**ITEM 10. RADIATION SAFETY PROGRAM**

**I. RADIOLOGICAL SAFETY OFFICER**

The Radiological Safety Officer shall be responsible for the overall radiation protection program which is established as set forth in paragraph II below, entitled Radiation Protection Procedures. These procedures are in compliance with 10 CFR Part 20, "Standards for Protection Against Radiation".

Specific duties, responsibilities, and authority are listed below:

1. Evaluate radiological problems related to proposed refurbishment work on radioactively contaminated equipment.
2. Maintain general surveillance over work in progress to assure that required surveys and monitoring is being performed.
3. Determine that radioactive work and material handling is being done in conformance with license conditions, 10 CFR Part 20, and any special conditions established for radiological safety considerations.
4. Arrange for the collection, packaging, storage and disposition of all of all radioactive waste materials.
5. Determine that all incoming and outgoing radioactive material shipments are being handled, packaged, and shipped in accordance with hazardous material shipping regulations (Code of Federal Regulations Title 10, Part 71 and 49, Parts 171 through 178).
6. Stop work on any project where unsafe conditions exist or where an imminent threat is posed to the health and safety of personnel or plant property.

**ITEM 10. RADIATION SAFETY PROGRAM (Con't)**  
**II. RADIATION PROTECTION PROCEDURES**

**A. Radioactive Material Control**

**1.0 Incoming Radioactive Material Shipments**

- 1.1 Receiving Warehouse personnel shall be responsible for notifying the Radiological Safety Officer who shall arrange for immediate contamination and radiation surveys of the shipment. If removable surface contamination in excess of 10,000 micro-microcuries per 100 square centimeters is detected, notification must be made to the shipper, final carrier, and the NRC (10 CFR 20.1906.)**
- 1.2 Special arrangements for coordinating receipt of a shipment shall be made if any package exceeds the TYPE A quantities listed in 10 CFR 20.1906. For radioactive mixed corrosion products, this TYPE A quantity limit is 3 curies.**
- 1.3 Radioactive materials shall be adequately identified with labels or tags and shall be kept in controlled access areas.**
- 1.4 A record of receipt of the shipment shall be completed to indicate pertinent information relative to the shipment as well as information on the radiological surveys performed.**

**2.0 Transfer of Radioactive Materials**

- 2.1 Radioactive materials shall not be moved to any other location within the company property until the transfer is coordinated with Radiological Control personnel.**
  - 2.2 A record shall be made of the transfer and the material shall be escorted either by a radiological control monitor or by a trained radiation worker.**
- 3.0 Outgoing Radioactive Material Shipments**
- 3.1 Radioactive material will normally be returned to the owner in the same shipping container in which it was received. However, a determination will be made that the shipment complies with the requirements of 10 CFR Part 71 and 49 CFR Parts 170 through 189.**

**ITEM 10. RADIATION SAFETY PROGRAM (Con't)**

**II. RADIATION PROTECTION PROCEDURES**

**A. 3.2 If radioactive material is not being returned to the owner, owner, the Radiological Safety Officer shall determine that the consignee is licensed to receive the material before it is released for shipment.**

**3.3 A record of the shipment shall be originated to indicate that due due consideration was given to:**

- (1) proper type of shipping container**
- (2) radiological surveys and shipping limitations**
- (3) adequate labeling and identification of item**
- (4) proper certifications on shipping papers**

**B Radiation Exposure Control**

**1.0 Radiation Areas and Limits**

**1.1 Radiation areas are identified as those areas in which exposure levels are 1 millirem per hour or more.**

**1.2 High radiation areas are those areas in which the major portion of the body could receive a dose of 100 millirem or more in an hour.**

**1.3 Personnel who routinely work in radiation areas shall be classified as Radiation Workers in accordance with the medical and technical requirements of the parent company (Newport News Shipbuilding) and Item 8 of the license.**

**1.4 Radiation areas shall be identified by standard signs, labels, and rope barriers in accordance with regulations (10 CFR Part 20.1902).**

**1.5 Entrance to High Radiation Areas must be locked or guarded by direct surveillance to prevent unauthorized entry when these areas are not attended by Radiological Control personnel.**

**1.6 Individual whole body exposure to radiation shall be limited to 3 REM in any calendar quarter and 5 REM in any calendar year. Each individual must have a completed record of occupational radiation exposure of Form NRC-4 or its equivalent.**

**ITEM 10. RADIATION SAFETY PROGRAM (Con't)**  
**II. RADIATION PROTECTION PROCEDURES**

**B. 2.0 Personnel Monitoring**

**2.1 Personnel who enter radiation areas shall be monitored by both thermoluminescent dosimeter (TLD) and a self-reading pocket dosimeter.**

**2.2 Pocket dosimeters shall be read and recorded on a daily basis for each individual who routinely works in the area.**

**2.3 Environmental TLD badges shall be posted on exterior walls of the work area and together with occupancy factors assure radiation exposure does not exceed 100 mrem per year.**

**3.0 Surveys and Records**

**3.1 Gamma radiation surveys shall be performed as specified below in order to comply with radiation exposure control requirements:**

**(1) Weekly in work areas and surrounding spaces**

**(2) Daily in areas with temporary boundaries**

**(3) Whenever levels are likely to change as a result of work performed on or movement of radioactive materials**

**(4) Incoming or outgoing radioactive material shipments**

**3.2 A record shall be made of the surveys performed as specified specified above. These records shall be retained indefinitely.**

**C. Radioactive Contamination Control**

**1.0 Contamination Limits**

**1.1 Radioactive loose surface contamination limits in unrestricted areas shall not be more than 450 picocuries per 100 square centimeters.**

ITEM 10.

RADIATION SAFETY PROGRAM (Con't)

II. RADIATION PROTECTION PROCEDURES

C. 1.2 Radioactive loose surface contamination limits in occupied contamination control areas shall not be more than 10,000 picocuries per 10 square centimeters. Decontamination shall be done as required to maintain these limits.

1.3 Tools, equipment, and materials which are found to have loose surface contamination levels in excess of 450 picocuries per 100 square centimeters must be either decontaminated to less than this limit or handled as radioactive.

1.4 The limit of 450 picocuries shall apply for externally deposited radioactivity on the clothing or skin of an individual. Decontamination to these limits is required as directed by Radiological Control or medical personnel.

1.5 The allowable limit for airborne beta gamma activity is  $1 \times 10^{-8}$  microcuries per milliliter. This limit is from Table 1 of Appendix B to 10 CFR Part 20 for 40 hours per week exposure to insoluble Cobalt 60, which is usually the most restrictive and predominant radioisotope in activated corrosion products.

If air activity exceeds the level of  $1 \times 10^{-7}$  microcuries per milliliter, personnel in the area shall wear full face respirators or air supplied hoods until such time as the airborne activity is reduced to a lower level. Since the objective of the program is to prevent any significant ingestion or inhalation or inhalation of particulate radioactivity, respiratory protection may be required as a precautionary measure if work operations have a high potential for generating airborne activity. In the event of airborne activity above the limit, immediate corrective action will be taken to eliminate the source of airborne activity or otherwise control it.

1.6 The measurement of loose radioactivity levels discussed in the section shall be done either by direct scan or assay of a patches or air patches or surface swipes with the Eberline E130 or equivalent instrument with the Eberline HP-210 probe. This instrument will indicate the presence of 450 uuc of equivalent Cobalt 60 by a response of 100 CPM above background levels.

**ITEM 10. RADIATION SAFETY PROGRAM (Con't)**  
**II. RADIATION PROTECTION PROCEDURES**

**C. 2.0 Protective Apparel and Equipment Use**

**2.1 Anticontamination apparel and equipment will be used as prescribed by Radiological Control personnel. The following equipment is available:**

**Coveralls  
Cap or Hood  
Shoe Covers  
Rubber Gloves  
Appropriate Respirator Protection Equipment**

**2.2 Training of radiation workers which is described in Section 8 of the license application shall include instruction in techniques of putting on and removal of anticontamination in clothing and equipment.**

**2.3 Anticontamination clothing and equipment is laundered, sanitized, and prepared for reuse by a licensed nuclear laundry.**

**3.0 Facilities for Contamination Control**

**3.1 Reactor plant components, tools, and related equipment which are radioactively contaminated shall be kept wrapped or packaged at all times except when work is being performed on them.**

**3.2 Work on radioactively contaminated items shall be performed in areas where ventilation is controlled at a negative pressure with respect to surrounding areas. Airborne radioactivity release to the environment is controlled by high efficiency particulate activity (HEPA) filter on the ventilation exhaust system. Locally controlled ventilation, exhaust hoods, or enclosed containment techniques may also be used when feasible to control loose radioactive particulates.**

**3.3 Additional details of contamination control techniques in the facility are shown in Item 13 of the license application.**

**ITEM 10. RADIATION SAFETY PROGRAM (Con't)**  
**II RADIATION PROTECTION PROCEDURES**  
**C. 4.0 Signs**

**4.1 Entrances to work areas where radioactive contamination may exist shall be posted with appropriate signs which alert personnel to this fact.**

**4.2 Additional signs shall prohibit smoking, eating, and drinking in contamination control areas. Requirements for anticontamination clothing and equipment will also be noted.**

**5.0 Surveys and Records**

**5.1 Loose surface contamination surveys shall be performed at least once per work shift in the vicinity of assess control points, and at least once per day in occupied surface contamination control areas.**

**5.2 Air particle surveys with portable air samplers shall be taken at least every 4 hours when radioactive work is being performed. Additional surveys shall be taken during radioactive work operations which have been known to cause air activity.**

**5.3 A continuous air sampler shall be operated downstream of the (HEPA) filter in the exhaust system to determine that the filters are effective in minimizing discharges to the environment.**

**5.4 Personnel shall be monitored when they exit a surface contamination control point to determine that there is no loose radioactivity above the limit of 450 picocuries on their skin or clothing.**

**5.5 Surveys described in this section shall be retained indefinitely.**

**D. Radiological Emergency Procedures**

**1.0 Spill or Release of Loose Radioactive Particulates**

**The steps delineated below are those which should be followed in order to control the release and reestablish proper radiological control.**

**1.1 Take actions to stop the release of material and if possible possible to contain loose radioactive material at the scene.**

**ITEM 10. RADIATION SAFETY PROGRAM (Con't)**

**II. RADIATION PROTECTION PROCEDURES**

**D. 1.2 Alert other personnel in the vicinity and request radiological control assistance.**

**1.3 Isolate the area if possible and evacuate personnel to a safe nearby location until they have been checked for loose radioactivity.**

**1.4 Assist in cleanup actions as directed by Radiological Control personnel.**

**2.0 Fire Involving Loose Radioactivity**

**Emergency response steps discussed below shall be followed.**

**2.1 Personnel shall use portable fire fighting equipment at the scene if practicable and immediately call the emergency number (0-2222) or (9911) to report the fire.**

**2.2 Fire fighting procedures should take precedence over normal radiological control procedures. Personnel at the scene should remain nearby until checked and released by Radiological Control personnel.**

**2.3 Air samples should be taken in the vicinity in an effort to determine the amount of particulate radioactivity which might be involved.**

**2.4 After the fire is extinguished, ventilation of the affected space should be done with HEPA filters if available. Surface contamination survey of the affected spaces should be performed.**

**3.0 Loss of Radioactive Material**

**3.1 Initiate a comprehensive search immediately to try to locate the missing material.**

**3.2 Estimate the possibility and extent of exposure to unmonitored individuals outside of the nuclear work areas.**

**ITEM 10. RADIATION SAFETY PROGRAM (Con't)**

**II. RADIATION PROTECTION PROCEDURES**

**D. 3.3 If the material has not been located after a reasonable time and it appears that a substantial hazard may result to individuals in unrestricted areas, the facts shall be reported by telephone to the NRC Regional Office in Atlanta, Georgia.**

**4.0 Whole Body Radiation Exposure Above Limits**

**4.1 Alternate evaluations of exposure shall be performed based on backup TLD devices, pocket dosimeter readings, or time and exposure information.**

**4.2 An investigation shall be made to determine all the facts related to the event and a report shall be prepared of the results of the investigation.**

**5.0 Inhalation or Ingestion Exposure Above Limits**

**5.1 If a significant internal exposure is suspected, a body scan with gamma spectroscopy equipment shall be performed in order to determine the presence of any internal radioisotopes. The detection limit for this equipment is .010 microcuries or less equivalent Cobalt 60.**

**5.2 An investigation shall be made to determine all the facts related to the event and a report shall be prepared of the results of the investigation.**

**6.0 Notification**

**In the event of a radiological emergency such as those described above, the individuals listed below shall be notified as soon as practicable:**

**J. H. Fagan (O) 380-2616 (H) 877-8423**

**V. S. Eason (O) 360-2239 (H) 898-4853**

**ITEM 10. RADIATION SAFETY PROGRAM (Con't)**  
**II RADIATION PROTECTION PROCEDURES**

**E. Preparation of Records and Reports**

Records and reports related to the receipt, handling, shipment, and disposition of byproduct material shall be prepared and retained indefinitely. Files will be maintained as follows:

**1.0 Job Order Number**

- 1.1 Receipt Inspection, Transfer Records, Shipping Record (10 CFR 20.1906)**
- 1.2 Surveys for Airborne Radioactivity (10 CFR 20.2103)**
- 1.3 Survey for Surface Radioactivity (10 CFR 20.2103)**
- 1.4 Survey for Work Area Radiation Levels (10 CFR 20.2103)**
- 1.5 Concentrations of Radioactive Liquid Waste**
- 1.6 Monthly Exposure Record of Individuals (10 CFR 20.2106)**
- 1.7 Daily Dosimeter Readings of Individuals**
- 1.8 Reports of Incidents (10 CFR 20.2202, 20.2203)**

**F. Instrument Calibration**

All portable radiation survey instruments will be calibrated as follows:

- 1. Cobalt 60 sources traceable to a National Institute of Standards and Technology (NIST) certification shall be used in an open air arrangement.**
- 2. Calibration shall be performed at least every six months with at least two check points on each scale for readings up to 1 REM per hour.**
- 3. Calibration shall be performed whenever an instrument has been repaired.**
- 4. Contamination detection instruments (beta-gamma) shall also be checked daily for proper response to a surface area source of about 500 picocuries of Cobalt 60.**
- 5. Each survey instrument will be response checked with a known source to a specific dose rate at least once per day.**

**ITEM 10. RADIATION SAFETY PROGRAM (Con't)**

**II. RADIATION PROTECTION PROCEDURES**

**6. Instruments are calibrated as described above by Newport News Shipbuilding under their license 45-09428-03, which performs similar calibration services for licenses 45-11589-02, 45-09428-02, and for maintenance and repair work on shipboard nuclear propulsion plants.**

**G. Personnel Monitoring Procedures**

**All personnel in radiation areas will be monitored by both a thermoluminescent dosimeter and a self-reading pocket dosimeter. Pocket dosimeters (0-200 MR) will be issued, read, and recorded on a daily basis. Thermoluminescent dosimeters will be read on a monthly basis. All personnel monitoring devices and exposure records will be furnished by Newport News Shipbuilding which provides similar services for licenses 45-09428-02, and 45-09428-03, and 45-11589-02.**

**Routine bioassays will not be performed because standard procedures are designed to provide containment of loose radioactive materials through the use of glove boxes or alternate controlled ventilation techniques. The radioactive corrosion particles encountered in the program are almost entirely insoluble and would therefore not be indicated by a routine bioassay program.**

**Respirators or fresh air hoods will be worn when a potential exists for inhalation of airborne radioactive particles. In the event of an incident involving loose radioactive of more than .001 microcuries on an individual's face or head area, a gamma scintillation body scan will be performed to determine whether there has been any detectable inhalation or ingestion of radioactive particles. The detection limit for such scans is .010 microcuries equivalent Cobalt 60.**

ITEM 11. RADIATION SAFETY PROGRAM (Con't)

II. RADIATION PROTECTION PROCEDURES

WASTE MANAGEMENT

Solid waste such as contaminated metal scrap, sheet plastic, used filters, paper and solidified liquid wastes will be packed in 55 gallon drums approved by the Department of Transportation (DOT) for this purpose, or in other DOT approved containers. These containers will be turned over to a disposal contractor who is licensed either by the Nuclear Regulatory Commission or by an Agreement State for subsequent burial in approved locations. (U.S. Ecology Co or Chem-Nuclear Systems, Inc.)

Liquid wastes containing radioactive particulates or soluble radioactivity will be solidified using diatomaceous earth or a cement mixture as an absorbent material. The resultant mixture shall not have any free water visible after it is placed in DOT approved shipping containers and packaged for shipment.

Liquid or airborne wastes containing low levels of radioactivity may be released to the environment in accordance with the provisions of 10 CFR Part 20.1302 paragraph (a). By considering Cobalt 60 to be the most restrictive radioisotope, discharge limits of  $2 \times 10^{-10}$  microcuries per milliliter in air and  $3 \times 10^{-6}$  microcuries per milliliter in water would be permitted.