



15 August 2000

Nuclear Regulatory Commission
Materials Safety Branch
11545 Rockville Pike
Building TWFN
M/S T 8F5
Rockville, MD 20852-2738

Attention: John Jankovich

Subject: Response to Dual Cell Exemption Request for Additional Information

Reference: 1. Your Fax dated 19 July 2000

Dear Dr. Jankovich,

In response to the topics in your letter per reference 1, the following information is provided.

1. Potential for aluminum Housing corrosion due to direct contact with Teflon insulation ring.

See attached Physics Services letter, item number 1.

2. Change label text to reflect maximum device activity

See attached revised label drawing . Labels used will reflect the maximum cell activity of 220 μ Ci.

3. State if multiple units were used as referred to in application Section D. "Testing of Prototypes"

Multiple units were tested as follows. In some cases more than one prototype was used.

Serial no. FAT001 - MIL-STD-2036 Storage Temperature
MIL-STD-2036 Operational Temperature
NAVMAT P-9492 Temperature Cycling
NAVMAT P-9492 Random Vibration

Serial no. FAT002 - MIL-S-901 Shock Test
MIL-STD-167-1 Type 1 Vibration
ASTM-B-117 Salt Fog
MIL-STD-810 Humidity
NAVMAT P-9492 Temperature Cycling
NAVMAT P-9492 Random Vibration

Serial no. FAT003 - Live Agent
NAVMAT P-9492 Temperature Cycling
NAVMAT P-9492 Random Vibration

Additionally, the Navy as recently completed tests on two Portable Shipboard Automatic Chemical Agent Detector and Alarm (ACADA) systems which incorporate the Dual Drift Tube as follows.

Serial no. 008 - MIL-STD-810, Method 516.4, procedure IV, Transit Drop

Serial no. 011 - Low Temperature Storage
High Temperature Storage
Low Temperature Operating

Serial no. 014 - High Temperature Operating
Rain Exposure
ASTM B 117-97 Salt Fog

Wipe test results after test were below the allowable threshold of 0.005 μ Ci after test completion.

4. Provide copy of the operators instruction manual mentioned in application Section H. "Radiological Safety Instructions".

See Enclosure (2) for information to be inserted by the Navy in the system operator manual.

5. Correct Section L. "Safety Analysis" for Roentgen/rem conflict if required.

See attached Physics Services letter, item number 4.

Please call 504-254-0383 if you require additional information.

Thank You,



Bob Jordan
Engineering Manager

Enclosures:

- 1) Physics Services Incorporated Letter
- 2) Information to be Inserted in Operators Manual
- 3) Revised Label Drawing

PHYSICS SERVICES INCORPORATED

Radiological Physicists

(504) 568-3257 or 885-1344

(504) 885-4491

5000 West Esplanade

Suite 322

Metairie, Louisiana 70006

FAX

August 8, 2000

1. The potential for aluminum housing corrosion as a result of the radiolytic formation of hydrofluoric acid (HF) and free diatomic fluorine gas (F₂) is insignificant due to the following reasons:
 - A. Due to the oblique angle of incidence (175-180°) very few alphas, betas, photons, and neutrons emanating from the source will interact.
 - B. There is an extremely small physical cross section of interaction.
 - C. There is no buildup of materials as the chamber is vented.
 - D. Detrimental radiolytic effects are generally due to extremely high dose rates. In the past, I have qualified Teflon seals for us in the valves for personnel entry into the containment of a pressurized water reactor. The Teflon was qualified to a total absorbed dose of 100,000,000 rads without degradation of equipment function.
4. The reviewer is correct in their understanding of appropriate absorbed dose criteria, however, in the practical situation of measuring the dose rate on the outside of a thick metallic housing containing a 200 uCi Americium-241 source, the only measurable radiation species are photons which have a quality factor of 1. Therefore, the units uR/hr and urem/hr are roughly interchangeable. For internal dose calculations, all species are considered in contributing to the total dose with the appropriate quality factors applied.

Please feel free to contact us if additional information is needed, and as always we look forward to hearing from you.

GREGORY D. ESPENAN, MS, CHP, ABR

TRACIE D. ESPENAN, MS, ABR

Enclosure (1)

RADIATION HAZARD: AMERICIUM-241 (Am²⁴¹)

The Dual Drift Tube Assembly in the ACADA unit contains Am²⁴¹, a source of alpha radiation (total 200 microcuries [μ Ci]). The Dual Drift Tube Assembly is potentially dangerous when opened or broken and may only be serviced by the manufacturer of the device, Powertronic Systems, Inc., or other manufacturer licensed by the Nuclear Regulatory Commission to manufacture the Dual Drift Tube for exempt distribution. If service is required, the unit must be returned to the authorized repair depot (see shipping instructions) for service by the manufacturer. If exposed to this radiation hazard, see your medical officer and report the incident to your safety officer. Figure S-1 illustrates the U.S. Nuclear Regulatory Commission's Notice to Employees.

SHIPPING INSTRUCTIONS

The ACADA and any of its component elements must be shipped to:

COMMANDER
NAVSURFWARCENDIV
CODE 805D, BLDG 3324
300 HIGHWAY 361
CRANE, IN 47522-5001



NOTICE TO EMPLOYEES

STANDARDS FOR PROTECTION AGAINST RADIATION (PART 20); NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS; INSPECTIONS (PART 19); EMPLOYEE PROTECTION

WHAT IS THE NUCLEAR REGULATORY COMMISSION?

The Nuclear Regulatory Commission is an independent Federal regulatory agency responsible for licensing and inspecting nuclear power plants and other commercial uses of radioactive materials.

WHAT DOES THE NRC DO?

The NRC's primary responsibility is to ensure that workers and the public are protected from unnecessary or excessive exposure to radiation and that nuclear facilities, including power plants, are constructed to high quality standards and operated in a safe manner. The NRC does this by establishing requirements in Title 10 of the Code of Federal Regulations (10 CFR) and in licenses issued to nuclear users.

WHAT RESPONSIBILITY DOES MY EMPLOYER HAVE?

Any company that conducts activities licensed by the NRC must comply with the NRC's requirements. If a company violates NRC requirements, it can be fined or have its license modified, suspended or revoked.

Your employer must tell you which NRC radiation requirements apply to your work and must post NRC Notices of Violation involving radiological working conditions.

WHAT IS MY RESPONSIBILITY?

For your own protection and the protection of your co-workers, you should know how NRC requirements relate to your work and should obey them. If you observe violations of the requirements or have a safety concern, you should report them.

WHAT IF I CAUSE A VIOLATION?

If you engaged in deliberate misconduct that may cause a violation of the NRC requirements, or would have caused a violation if it had not been detected, or deliberately provided inaccurate or incomplete information to either the NRC or to your employer, you may be subject to enforcement action. If you report such a violation, the NRC will consider the circumstances surrounding your reporting in determining the appropriate enforcement action, if any.

HOW DO I REPORT VIOLATIONS AND SAFETY CONCERNS?

If you believe that violations of NRC rules or the terms of the license have occurred, or if you have a safety concern, you should report them immediately to your supervisor. You may report violations or safety concerns directly to the NRC. However, the NRC encourages you to raise your concerns with the

licensee since it is the licensee who has the primary responsibility for, and is most able to ensure, safe operation of nuclear facilities. If you choose to report your concern directly to the NRC, you may report this to an NRC inspector or call or write to the NRC Regional Office serving your area. If you send your concern in writing, it will assist the NRC in protecting your identity if you clearly state in the beginning of your letter that you have a safety concern or that you are submitting an allegation. The NRC's toll-free SAFETY HOTLINE for reporting safety concerns is listed below. The addresses for the NRC Regional Offices and the toll-free telephone numbers are also listed below.

WHAT IF I WORK WITH RADIOACTIVE MATERIAL OR IN THE VICINITY OF A RADIOACTIVE SOURCE?

If you work with radioactive materials or near a radiation source, the amount of radiation exposure that you are permitted to receive may be limited by NRC regulations. The limits on your exposure are contained in sections 20.1201, 20.1207, and 20.1208 of Title 10 of the Code of Federal Regulations (10 CFR 20) depending on the part of the regulations to which your employer is subject. While these are the maximum allowable limits, your employer should also keep your radiation exposure as far below those limits as "reasonably achievable."

MAY I GET A RECORD OF MY RADIATION EXPOSURE?

Yes. Your employer is required to advise you of your dose annually if you are exposed to radiation for which monitoring was required by NRC. In addition, you may request a written report of your exposure when you leave your job.

HOW ARE VIOLATIONS OF NRC REQUIREMENTS IDENTIFIED?

NRC conducts regular inspections at licensed facilities to assure compliance with NRC requirements. In addition, your employer and site contractors conduct their own inspections to assure compliance. All inspectors are protected by Federal law. Interference with them may result in criminal prosecution for a Federal offense.

MAY I TALK WITH AN NRC INSPECTOR?

Yes. NRC inspectors want to talk to you if you are worried about radiation safety or have other safety concerns about licensed activities, such as the quality of construction or operations at your facility. Your employer may not prevent you from talking with an inspector. The NRC will make all reasonable efforts to protect your identity where appropriate and possible.

MAY I REQUEST AN INSPECTION?

Yes. If you believe that your employer has not corrected violations involving radiological working conditions, you may request an inspection. Your request

should be addressed to the nearest NRC Regional Office and must describe the alleged violation in detail. It must be signed by you or your representative.

HOW DO I CONTACT THE NRC?

Talk to an NRC inspector on-site or call or write to the nearest NRC Regional Office in your geographical area (see map below). If you call the NRC's toll-free SAFETY HOTLINE during normal business hours, your call will automatically be directed to the NRC Regional Office for your geographical area. If you call after normal business hours, your call will be directed to the NRC's Headquarters Operations Center, which is manned 24 hours a day.

CAN I BE FIRED FOR RAISING A SAFETY CONCERN?

Federal law prohibits an employer from firing or otherwise discriminating against you for bringing safety concerns to the attention of your employer or the NRC. You may not be fired or discriminated against because you:

- ask the NRC to enforce its rules against your employer;
- refuse to engage in activities which violate NRC requirements;
- provide information or are about to provide information to the NRC or your employer about violations of requirements or safety concerns;
- are about to ask for, or testify, help, or take part in an NRC, Congressional, or any Federal or State proceeding.

WHAT FORMS OF DISCRIMINATION ARE PROHIBITED?

It is unlawful for an employer to fire you or discriminate against you with respect to pay, benefits, or working conditions because you help the NRC or raise a safety issue or otherwise engage in protected activities. Violations of Section 211 of the Energy Reorganization Act (ERA) of 1974 (42 U.S.C. 5851) include actions such as harassment, blacklisting, and intimidation by employers of (i) employees who bring safety concerns directly to their employers or to the NRC; (ii) employees who have refused to engage in an unlawful practice, provided that the employee has identified the illegality to the employer; (iii) employees who have testified or are about to testify before Congress or in any Federal or State proceeding regarding any provision (or proposed provision) of the ERA or the Atomic Energy Act (AEA) of 1954; (iv) employees who have commenced or caused to be commenced a proceeding for the administration or enforcement of any requirement imposed under the ERA or AEA or who have, or are about to, testify, assist, or participate in such a proceeding.

HOW DO I FILE A DISCRIMINATION COMPLAINT?

If you believe that you have been discriminated against for bringing violations or safety concerns to the NRC or your employer, you may file a complaint with the NRC or the U.S. Department of Labor (DOL). If you desire a personal

remedy, you must file a complaint with the DOL pursuant to Section 211 of the ERA. Your complaint to the DOL must describe in detail the basis for your belief that the employer discriminated against you on the basis of your protected activity, and it must be filed in writing either in person or by mail within 180 days of the discriminatory occurrence. Additional information is available at the DOL web site at www.osha.gov. Filing an allegation, complaint, or request for action with the NRC does not extend the requirement to file a complaint with the DOL within 180 days. You must file the complaint with the DOL. To do so, you may contact the Allegation Coordinator in the appropriate NRC Region, as listed below, who will provide you with the address and telephone number of the correct OSHA Regional office to receive your complaint. You may also check your local telephone directory under the U.S. Government listings for the address and telephone number of the appropriate OSHA Regional office.

WHAT CAN THE DEPARTMENT OF LABOR DO?

If your complaint involves a violation of Section 211 of the ERA by your employer, it is the DOL, NOT THE NRC, that provides the process for obtaining a personal remedy. The DOL will notify your employer that a complaint has been filed and will investigate your complaint.

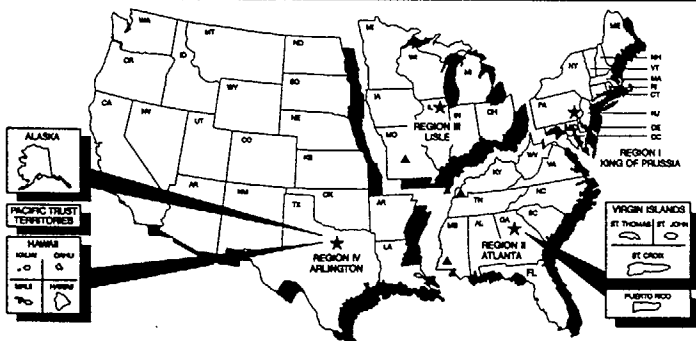
If the DOL finds that your employer has unlawfully discriminated against you, it may order that you be reinstated, receive back pay, or be compensated for any injury suffered as a result of the discrimination and be paid attorney's fees and costs.

Relief will not be awarded to employees who engage in deliberate violations of the Energy Reorganization Act or the Atomic Energy Act.

WHAT WILL THE NRC DO?

The NRC will evaluate each allegation of harassment, intimidation, or discrimination. Following this evaluation, an investigator from the NRC's Office of Investigations may interview you and review available documentation. Based on the evaluation, and, if applicable, the interview, the NRC will assign a priority and a decision will be made whether to pursue the matter further through an investigation. The assigned priority is based on the specifics of the case and its significance relative to other ongoing investigations. The NRC may not pursue an investigation to the point that a conclusion can be made whether the harassment, intimidation, or discrimination actually occurred. Even if NRC decides not to pursue an investigation, if you have filed a complaint with the DOL, the NRC will monitor the results of the DOL investigation.

If the NRC or the DOL finds that unlawful discrimination has occurred, the NRC may issue a Notice of Violation to your employer, impose a fine, or suspend, modify, or revoke your employer's NRC license.



▲ - Callaway Plant Site in Missouri and Grand Gulf Plant Site in Mississippi are under the purview of Region IV. The Paducah Gaseous Diffusion Plant in Kentucky is under the purview of Region III.

UNITED STATES NUCLEAR REGULATORY COMMISSION REGIONAL OFFICE LOCATIONS

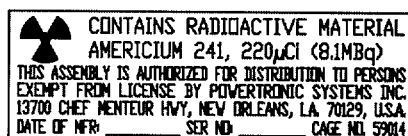
A representative of the Nuclear Regulatory Commission can be contacted by employees who wish to register complaints or concerns about radiological working conditions or other matters regarding compliance with Commission rules and regulations at the following addresses and telephone numbers.

REGIONAL OFFICES		
REGION	ADDRESS	TELEPHONE
I	U.S. Nuclear Regulatory Commission, Region I 475 Allendale Road King of Prussia, PA 19406-1415	(800) 432-1156
II	U.S. Nuclear Regulatory Commission, Region II Atlanta Federal Center 61 Forsyth Street, S.W., Suite 23T85 Atlanta, GA 30303-3415	(800) 577-8510
III	U.S. Nuclear Regulatory Commission, Region III 801 Warrenville Road Lisle, IL 60532-4351	(800) 522-3025
IV	U.S. Nuclear Regulatory Commission, Region IV 611 Ryan Plaza Drive, Suite 400 Arlington, TX 76011-8064	(800) 952-9677

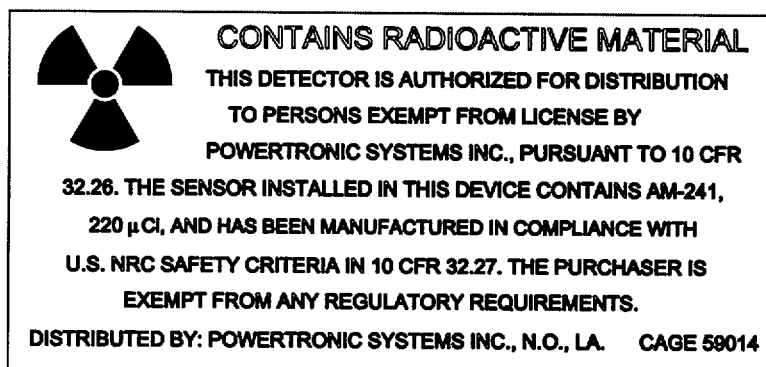
To report safety concerns or violations of NRC requirements by your employer, telephone: NRC SAFETY HOTLINE 1-800-695-7403

To report incidents involving fraud, waste, or abuse by an NRC employee or NRC contractor, telephone: OFFICE OF THE INSPECTOR GENERAL HOTLINE 1-800-233-3497

Figure S-1



DUAL DRIFT TUBE ASSEMBLY LABEL



DETECTOR UNIT AND POINT OF SALE PACKAGING LABEL