

April 18, 1986

Mike McCann
US Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

RE: FJW License application, control # 80859

Dear Mike:

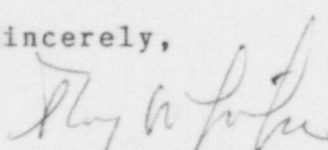
The additional information you requested at our meeting on March 31 and in our conversation on April 7 is attached.

You have stated that unless FJW commits itself to limiting transfers of licensed material to licensees whom FJW has determined have obtained a custom device review, you will add a condition of license permitting the transfer of material only to the US Army Armament Material Readiness Command. This proposed restriction would prohibit transfers to persons who are licensed by the NRC or an agreement state to receive the material unless they can demonstrate to FJW that they have received a custom device review.

This restriction would place an unnecessary burden on FJW by requiring us, as a licensee, to determine how our transferees obtained their licenses and is beyond the requirements in 10CFR 30.41(c). It also would have an adverse financial effect upon our commercial activities by denying us the ability to transfer sources, subassemblies or completed devices to other licensees, including other manufacturers, subcontractors, persons who redistribute to Department of Defense facilities, foreign governments or testing facilities.

We therefore request that you not add any conditions to FJW's license that would prevent transfers of licensed material to persons licensed to receive the material.

Sincerely,


Terry W. Liaboe

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1. Possession Limit and Source Use

A possession limit of 10,000 Curies (1000 sources) of Hydrogen-3 in the form of a radioluminous lamp, model 10556135 will satisfy our production needs. On the average, when assembling the M1A1 units we expect to ship approximately 250 units per month. Source use will be for the Model M1A1 Infinity Aiming Reference Collimator and M1A1 Mod Kit for distribution to persons authorized to receive the licensed materials pursuant to the terms and conditions of a specific license issued by the NRC or an agreement state. Enclosed is the registry information for the radioluminous lamp. Brandhurst Company, Ltd., PO Box 70, Wellington Road, High Wycombe, Buckinghamshire HP12-3PS is another supplier of this source.

2. Army Contract Information

Assembly of the M1A1 units for the Army is being performed under contract number DAAA09-84-C-0189. Units ready for shipment must be wipe tested IAW SQAP 10556136. The reticle assembly, itself, is to be wiped, and the following steps are to be taken:

- A. When a lot of 100 is ready, QAR representative will randomly select units for testing IAW STD 105, Level 11, Table 11-A, Code Letter F. AQL 0.65.
- B. QC will perform the wipe and submit the wipes to an independent lab, licensed by NRC to analyze wipe tests. QC will note by serial no. on M1A1 MOD Kit, those units actually being tested, along with test results from the lab.
- C. When test results are received from the lab, Marketing will forward the results to Rock Island. When approval is received from Rock Island that results are acceptable, the lot from which samples were tested can be shipped.

The M1A1 Manuals have previously been shipped to the Army at the Rock Island Arsenal.

3. Inventory Control Program

In order to maintain adequate accounting of sources possessed by FJW, the Radiation Safety Officer or his delegate will conduct a monthly inventory of all sources. Records of these inventories will be maintained by the Radiation Safety Officer.

4. M1A1 Unit Flow and Assembly

M1A1 Mod Kit

- A. Packaged sources received at dock.
- B. Packaged sources transported to "hot lab" room (see enclosed drawing).
- C. Package(s) with sources opened, inspected for damage, and placed in "hot lab" storage cabinet.
- D. Source(s) removed from storage cabinet and brought to "hot lab" hood.
- E. Source potted into reticle assembly. The source is now enclosed in the assembly.
- F. Reticle assembly transported to packaging and final assembly room.
- G. Reticle assembly wipe tested.
- H. After approval of wipe tests, reticle assembly is packaged and sent out by shipping/receiving.

M1A1 Infinity Aiming Collimator

- A. Packaged sources received at dock.
- B. Packaged sources transported to "hot lab" room.
- C. Package(s) with sources opened, inspected for damage, and placed in "hot lab" storage cabinet.
- D. Source(s) removed from "hot lab" storage cabinet and transported to "hot lab" hood.
- E. Source potted into reticle assembly. The source is now enclosed.
- F. Reticle assembly transported to final assembly area.
- G. Reticle assembly wipe tested.
- H. After approval of wipe test, reticle assembly is joined to collimator.
- I. Collimator is inspected.
- J. Collimator is transported to shipping for packaging and shipment out.

5. Source Breakage and Bioassay Action Levels

The luminous property of the H-3 sources and the appearance of the glass envelope makes source breakage easy to detect. A rapid loss of light intensity or a broken glass envelope is an immediate indication that a source has been broken. These readily apparent indications were the basis for our emergency procedures. In the past, ADE, FJW's predecessor, had less than one breakage per year. In the event of a source breaking all emergency procedures, as stated in our license application, will be followed.

The hot lab hood has a minimum flow rate of 8.5 cubic meters/minute (300 cubic feet/minute) which is approximately 0.25 air changes per minute. In the event of a source breaking, with total loss of material and immediate dispersion throughout the room (an unlikely occurrence since sources are stored in a closed cabinet or handled in the hood itself), the tritium concentration for unrestricted areas in the hot lab would be reached in about 57 minutes. In this case, where a volume of air is contaminated, but where further generation of the contaminant has ceased, the rate of decrease of concentration over time is calculated using the following formula:

$$\ln[C2/C1] = [-Q/V][T2-T1]$$

Where:

C2 = Final concentration
C1 = Initial concentration
Q = Ventilation rate
V = Room volume
T2-T1 = Total time

Any reentrainment of the diluted tritium over unrestricted area concentrations from the supply units on the roof would also be very unlikely. However, in the event of an accidental release, an evaluation of the release point and possible reentry points will be made.

Bioassays, if needed, will be performed by Radiation Safety Services, Inc. or any other company authorized by the NRC or an agreement state to perform them.

Two action levels will be used for our bioassay results:

Action Level I: If urinary excretion rates exceed 5 uCi/l, but not 50 uCi/l, an assessment shall be made to determine if further work might result in the individual receiving a dose commitment in excess of the limits established in 10CFR20.101. If necessary, work procedures shall be modified. Bioassays shall be repeated weekly until levels are below 5 uCi/l.

Action Level II: If urinary excretion rates exceed 50 uCi/l, the individual will be referred to medical and health physics consultation for recommendations regarding therapeutic procedures to accelerate removal of H-3 from the body and minimize dose.

6. Calibration Procedures for Johnston H-3 Monitor

Calibration procedures for the Johnston H-3 monitor will be performed according to manufacturers instructions. A copy of the calibration manual is included.

7. Worker Training and Core Authorized Users

A typical 6 hour training session will include 1 hour devoted to USNRC rules and regulations of 10 CFR19 & 20, FJW rules and regulations, normal working practices and emergency procedures. The remaining 5 hours will be devoted to principles and practices of radiation protection, mathematics and calculations basic to the use and measurement of radionuclides and the biological effects of radiation. These topics are covered within the context of the Health Physics Society's slide show, plus the other topics covered as shown in the included copy of the speaker's guide.

New personnel will have as a minimum, the above training course and 1 week on the job training under the supervision of an authorized user. A list of core users that are presently authorized to handle sources is included below. Records of training will be kept and maintained by the Radiation Safety Officer.

FJW Core Authorized Users

Mike Filus
Bharat S. Verma
Carol Schmelzer
Lorraine Hoffman
Carole Hoffman
Pat Mazzi
Zelma Smith
Lottie Skalon
Barbara Johnson

8. Contact Person

We are naming Mike Filus as the contact person at FJW when the Radiation Safety Officer is not present.