

Tom Murphy TMI Site Trailer 7

ROUTING AND TRANSMITTAL SLIP

Date 5/10/79

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1. R. Vollmer/J. Collins, TMI Site		
2. cc: B. Grimes		
G. Knighton		
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REMARKS

SUBJECT: ALARA OCCUPATIONAL EXPOSURE

Attached are our plans for implementing ALARA Occupational Exposure at operating reactors, i.e., implementation of Regulatory Guide 8.8, Rev. 3. This information may be of use to you for the interim TMI technical specifications.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: *John* (Name, office symbol, Agency/Post)

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OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
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Attachment 1

A Sample Method of Pre-Planning Radiation Work to Maintain Occupational Radiation Exposures ALARA

Procedures developed for radiation exposure related activities such as normal operations, maintenance, inservice inspection, radwaste handling and refueling should be followed by workers to assure that work will be performed in a manner that will provide ALARA exposures. To accomplish this, radiation work should be pre-planned in the following manner:

- (1) The preplanning for any task* that may cause an expected collective dose-equivalent exposure of <1 man-rem need only address the instructions specified in the radiation Work Permit (RWP) which is normally required for all radiation work. For relatively minor exposure tasks, the RWP need only address general radiation protection (e.g., clothing requirements, stay time) and obvious instructions for minimizing exposures, e.g., documentation of high radiation sources (hot spots) in the work area.

- (2) The preplanning for any task that may cause an expected collective dose equivalent exposure of greater than 1 man-rem should specifically address ALARA concepts such as training, temporary shielding, use of special tools and any other techniques that are to be used to minimize exposures. The Health Physics staff should state in the RWP (or other document) what techniques should be followed to keep exposures ALARA.

* A task is defined as an identifiable work package for which a specific, general procedure or set of related procedures is prepared. For example, a task would be the inspection and repair of a steam generator, inspection or repair of BWR reactor vessel nozzles, reactor head removal, BWR turbine overhaul, reactor water cleanup system, or MSIV repairs.

- (3) The preplanning for any task that may cause an expected collective dose equivalent exposure of greater than 10 man-rem should (in addition to item (2) above) address the following: (a) Historical data, if any, and the effectiveness of any previous ALARA techniques used in similar type operations, e.g., temporary shielding, decontamination; (b) Dose reduction alternatives that were considered but rejected should be specifically documented with an explanation why these alternatives were not taken, from an ALARA basis.
- (4) The preplanning for any task that may cause an expected collective dose equivalent exposure of greater than 50 man-rem should (in addition to item (3) above) have, upon completion of the task, a written post-operation evaluation that documents the degree of success (or failure) of ALARA techniques used for future reference.

EEB Position Paper for Implementation of Regulatory Guide 8.8
at Operating Reactors

Introduction

The Commission's regulations, 10 CFR 20.1(c), state that licensees should make every reasonable effort to maintain occupational exposures as low as is reasonably achievable (ALARA). Consistent with this regulation, Regulatory Guide 8.8, Revision 3, "Information Relevant to Assuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be as Low as Reasonably Achievable" was developed to provide specific information that should be considered by nuclear power reactor applicants and licensees in their ALARA program. Regulatory Guide 8.8 recommends that reactor licensees develop, implement, and maintain a current description of a program for maintaining exposures of workers as low as is reasonably achievable at nuclear power reactors (i.e., an ALARA program). It is the staff's position that each reactor licensee's program include, as a minimum, the following features in that program to maintain radiation exposures ALARA.

Position

Licensees should establish a program to ensure that occupational radiation exposures of workers will be kept as low as is reasonably achievable (ALARA). The program should cover the guidance of this position. As appropriate, the program may encompass existing station documents such as plant Standard Operating Procedures and the Radiation Protection Manual. The ALARA program should incorporate, as a minimum, the objectives of Regulatory Guide 8.8, Section C, Regulatory Position, and the amplification of these positions as described below.

C.1 Program for Maintaining Station Personnel Radiation Doses ALARA

All items in Reg. Guide 8.8, C.1 are considered applicable to operating reactors. These items should be incorporated into the ALARA program.

C.2 Facility and Equipment Design Features

All facility and equipment design features of R. G. 8.8, C.2 are applicable for all future plant modifications, including equipment replacement and repairs and should be incorporated into the ALARA program.

Many of the features of C.2 should be considered for installation at existing facilities. Consequently, the ALARA program should include a design review of the existing facility to evaluate the effectiveness and determine if the installation of the design features listed below is warranted. No substantive design changes are necessary unless the change can prevent or substantially reduce man-rem exposures which cannot be prevented or reduced by procedural measures and is consistent with the cost-effectiveness principle of the ALARA philosophy. (See Regulatory Guide 8.8, Paragraph C.1.d.). The following features of C.2 should be considered for installation at operating reactors.

(a) (1), (2), (3)

(b) (1), (2), (5b), (7), (9)

(c) (1), (2), (3)

(d) (1), (3), (4)

(f) (1)

(i) (4), (10), (12)

C.3 Radiation Protection Program

All items of Reg. Guide 8.8, C.3 are applicable to operating reactors. These items should be incorporated into the ALARA program. In addition, the program should include the following specific commitments.

3.1 Radiation Work Pre-Planning

Section 3a states that before entering radiation areas where significant doses could be received, station personnel should have the benefit of preparations and plans to maintain exposures ALARA while performing the required services. In general, all radiation work should be pre-planned; however, the utilization of resources should be proportional to the expected benefit. Therefore, the amount of pre-planning for a certain task should be allocated based upon the amount of radiation exposure expected. For example, tasks which have low expected collective exposures, i.e., less than one man-rem, need only address the basic ALARA instructions specified in the radiation work permit (RWP), e.g., survey results (documentation of hot spots to avoid), stay times, protective clothing. For tasks with greater collective exposures, the program should require that the degree of pre-planning be keyed to the amount of expected exposure. At the lower exposure range, the licensee should at least assure that ALARA concepts such as additional training, temporary shielding and use of special tools have been considered in preparing the RWP. As expected exposures for a task increase, so should the degree of pre-planning. Pre-planning for higher exposure tasks should consider historical information, e.g.,

previous man-rem exposure, radiation data, effectiveness of exposure reduction methods. In addition, higher exposure tasks should also consider alternatives such as additional shielding, flushing, use of mock-ups and decontamination.

Effective use of historical information can be very useful in pre-planning future radiation work to maintain exposures ALARA. Experience gained with various exposure reduction techniques in previous radiation work is invaluable for pre-planning future work. Knowledge of the past experiences permits optimization of effective exposure reduction techniques and deletion or revision of ineffective ones. Consequently, documentation of the results of various methods used to reduce exposures should be performed if the information would be pertinent to future work. Like pre-planning, the degree of post operational documentation for a task should be proportional to the amount of exposure received from the task and the usefulness of that information for future work.

Special ALARA considerations should be made for routine repetitive tasks which, when considered singly, may not result in a significant exposure but when considered over the life of the facility may result in significant collective exposures.

Attachment 1 is an example of one possible acceptable method of proportionalizing the degree of pre-planning with expected collective exposures.

C.4 Radiation Protection Facilities

All items of Regulatory Guide 8.8, C.4 are applicable for operating reactors. These items should be incorporated into the ALARA program. As in C.2 above, no substantive design changes are required.

SAMPLE LETTER - BC, DOR TO LICENSEE ON IMPLEMENTATION OF REG. GUIDE 8.8

The Commission's regulations, 10 CFR 20.1(c), require that licensees should make every reasonable effort to maintain occupational exposures as low as is reasonably achievable (ALARA). Consistent with this regulation, Regulatory Guide 8.8, Revision 3, "Information Relevant to Assuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be as Low as Reasonably Achievable" was developed to provide specific information that should be considered by nuclear power reactor applicants and licensees in their ALARA program. Enclosure 1 is a copy of this guide. Although the implementation section of the guide does not specifically address operating reactors, all licensees should keep occupational radiation exposure ALARA. Consequently, the staff is requesting that all operating reactor licensees develop, implement and maintain a program for assuring that exposures to workers will be ALARA. To this end we have identified specific portions of Regulatory Guide 8.8 which we consider applicable to operating reactors ALARA program (see Enclosure 2).

Section C.1 of the Regulatory Guide specifically states that reactor licensees develop a program for maintaining exposures to workers ALARA. The program should describe how the objectives applicable to operating reactors of Regulatory Guide 8.8, Section C, Regulatory Position, will be achieved. Specific guidance is provided in Enclosure 2. Consequently, we request that you provide a written commitment within 60 days of the date of this letter to develop, implement and maintain an ALARA occupational radiation exposure program at your facility. Your ALARA program should be implemented at your facility within six

months of the date of this letter. The content and implementation of your program, as compared to Enclosure 2, will be subject to review by the regional OIE inspector at any time after six months from the date of this letter. Regional seminars to answer specific questions on this subject are planned to be held in the near future. Your regional office will contact you regarding details.

Branch Chief
DOR