



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

*File
Std Tech Specs.*

July 3, 1979

MEMORANDUM FOR: J. T. Collins
FROM: D. R. Neely
SUBJECT: TMI RADIATION PROTECTION PLAN (Attached)
References: (1) T. D. Murphy memo dtd June 1, 1979
(2) Ltr to Nuclear Support Services from L. J. Cunningham, dtd November 3, 1979

I have reviewed the proposed Radiation Protection Plan, reference (1) above, and have the following comments:

1. Organization

Since the licensee did not forward a copy of the Waste Management organizational chart, the acceptability of this area cannot be determined. I concur with Tom Murphy's comments in this area.

2. Qualifications

The qualifications of "Radiation Protection Foreman" should be met under ANSI 18.1 - 1971, Section 4.3.2 "Supervisors not Requiring AEC Licenses."

The qualifications of "Radiation Protection Technicians" should be met by ANSI 18.1 - 1971, Section 4.5.2.

As a means of qualifying technicians, the possibility of using overtime hours should be considered. NRC Region I and IE:HQ is issuing a memorandum stating that as an NRC policy the equivalency of one year experience could be met by the accumulation of 2000 or more working hours during a total period of not less than 40 weeks at assignments to nuclear power plants (reference 2 above). My understanding is that Tom Murphy had input to this letter. This criteria should not be used to qualify foreman or supervisors in accordance with ANSI 18.1-1971.

3. Training

Detailed training requirements must be established either in this plan or special procedures. The training requirements should include the following:

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- a listing of all applicable radiation protection procedures pertinent to the individual's job function.
- applicable Unit 2 Technical Specifications.
- radiation monitoring instruments familiarization.
- all technicians in responsible positions and supervisors should be trained in the Unit 2 special rad waste systems.

Each procedure should be signed off by all supervisors and technicians acknowledging the fact that they have been trained in the procedure and understand. The same applies to the pertinent Technical Specifications. Also, a list should be made showing the various types of instruments the individuals are qualified to use or have been trained to use.

5. ALARA Commitment

I concur with Tom Murphy that the implementation of an ALARA Program need be included in the plan. We should incorporate applicable sections of Reg Guide 8.8, Rev. 3 into the Radiation Protection Plan.

6. Radiation Protection Procedures

A statement should be included in the plan which documents the facts that all station radiation protection procedures currently in place and applicable special procedures be fully implemented at such time the Radiation Protection Plan is issued.

7. Geographic Areas of Responsibility

A section should be included which describes specifically the geographic areas of responsibility of the Rad Waste Organization. Buildings, outside areas and etc. used should be listed and shown on specific diagrams .

8. High Radiation Area Control

Based on recent inspections in the Unit 2 Aux Building and reviews of radiation surveys, I recommend that we do not change the requirements for entry into high radiation areas as we had previously planned. Due to the radiation levels existing in the Aux Building, the requirements of the existing Unit 2 Technical Specifications should be applied. It is not necessary to consider a relaxation for Technical Specification 6.12 at this time.

9. Whole Body Counting and Bioassay Program

It is not clear where the responsibility for this segment of the program is assigned. (Unit 1 or 2). This needs to be addressed. Also, who will be responsible for doing radiological dose assessments? Will this be done on an individual Unit basis?

10. Implementation of an Internal Audit Program

The need for auditing the contractor health physics personnel performance must be considered. An audit plan should be formalized and implemented. The audit should be performed by someone other than the Waste Management organization. The audit should be done on a specified frequency and records of the audits forwarded to at least the level of Vice-President Nuclear Generation, Met-Ed.

Donald R. Neely
Donald R. Neely
Lead Radiation Specialist
Resident Office, TMI

cc: G. Smith
E. McCabe
H. Kister
T. Murphy

SUBJECT: TMI UNIT II RECOVERY RADIATION PROTECTION PLAN

1. This plan, when approved, sets forth the organization, qualification and responsibilities of personnel assigned duties in connection with radiation protection aspects of TMI Unit II recovery operations. Additionally, it provides a medium for special restrictions and relaxations from technical specifications and other regulatory requirements which can be approved locally through established circuits to provide for the more timely response required by the conditions existing in Unit II and its support systems.

Submitted:

D. F. Limroth
Supt.-Admin, Tech. Support

Approved:

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SECTION I

FUNCTIONAL ORGANIZATION

1000 General

Within the Waste Management Activity, a special group chartered with the waste removal from TMI Unit II, there shall be a section responsible for all matters of chemistry and radiological controls/health physics directly associated with TMI-2 recovery operations. This special procedure details those functions associated with the radiological controls/health physics aspects of that effort.

The organization of the Waste Management Activity is shown in Figure I-1 and that of the Health Physics Section in Figure I-2.

The general areas of responsibility within the Radiological Controls/Health Physics organization shall include, but not be limited to:

- a. The conduct of all surveys, radiation and contamination (both surface and airborne) required to support operations, maintenance and modifications of Unit II including all areas in direct support of Unit II operations, maintenance or modification, including the maintenance of records and recoverability of all data so generated.
- b. The physical maintenance of posting, barricading and/or locking of radiation/contamination areas as required by 10 CFR 20, technical specifications or other directives issued by competent authority including those instances where special restrictions or relaxations have been granted, including the establishing and manning of control points as required in order to control access thereto.

- c. The processing and control of all Radiation Work Permits (RWPs) necessary for the operation, maintenance, modification and decontamination of Unit II including those areas in direct support of Unit II recovery.
- d. The routine and special monitoring of all releases or potential releases from Unit II including those areas in direct support of Unit II recovery.
- e. The preparation and/or review of special procedures of a radiological control/health physics nature dealing directly with operation, maintenance, modification and/or decontamination of Unit II including those areas in direct support of Unit II recovery.
- f. The preparation of requisite release permits for release of radioactive liquids either directly from Unit II systems or from those special systems recently installed for the processing of radioactive liquid waste. Authority for approval of release permits remains with the duly authorized representative of the licensee.
- g. The logistic support above those normal requirements of Unit II operations. (This does not imply a separate procurement function for Unit II but entails the institution of revised inventory low level resupply action points for commonly used materials and the initiation of procurement action for special or unique materials for Unit II.)

1001 EXCEPTIONS

Certain functions which are either station or Unit I functions remain without the domain of responsibility of the Radiological Controls/Health Physics section within the Waste Management Activity.

Specifically:

- Personnel* a. Photodosimetry remains a station function. This encompasses the normal issue and processing of TLDs, the central pocket dosimeter record facility (when instituted) and production of normal reports. (Special dose assessments to support projected manpower requirements for Unit II operation, maintenance, modification and decontamination is a function within the Unit II/Waste Management Activity.)
- b. The extension of allowable doses per HP procedure is a function of the personnel normally assigned to the positions of
- (1) Supervisor - Radiation Protection
 - (2) Supervisor - Radiation Protection and Chemistry
 - (3) Superintendent - Administration/Technical Support
- c. The training for RWP or HP designation remains a station function as does training and certification for respiratory protection.
- d. Normal technical specification and other regulatory required environmental monitoring remain station functions.
- e. The maintenance and calibration of portable instruments remains a station function. Instruments required for surveys within Unit II or support areas will be furnished from a common facility. The responsibility for ensuring that instruments in use are within calibration dates and the accountability for instruments in Unit II remains a function of Unit II/Waste Management Activity.

1100 SUPERVISOR - RADIATION PROTECTION AND CHEMISTRY - WASTE MANAGEMENT

The person filling this position shall be directly responsible to the senior TMI licensed person in the Waste Management Activity for the overall management of the Radiological Control/Health Physics and Chemistry/Radiochemistry functions associated with TMI Unit II recovery operations. The incumbent shall be qualified in accordance with paragraph 4.2.4 of ANSI N18.1-1971.

1101 RADIATION PROTECTION ADVISOR

The person filling this position is responsible for advising the Supervisor - Radiation Protection and Chemistry - Waste Management in matters affecting radiation protection, for making timely reports on items of actual or possible non-compliance with station operating procedures (including special or emergency procedures) and for recommendations on improved procedures for ensuring the highest standards of radiation protection/health physics. (This responsibility is not to be construed to include the authority to bypass the normal station administrative process of procedure changes.)

While no specific prerequisites per ANSI N18.1-1971 are prescribed for this position, qualification per paragraph 4.4.4 is desirable.

This position is not a line function and the responsibilities associated therewith do not include either the direct or indirect supervision of technicians, foremen or supervisors.

The filling of this position is optional.

1200 SUPERVISOR - RADIATION PROTECTION - WASTE MANAGEMENT

The person assigned to this position shall be responsible to the Supervisor - Radiation Protection and Chemistry - Waste Management for the overall supervision, coordination and compliance with procedures and regulations associated with radiological controls (health physics matters within the scope of the Waste Management Activity of Unit II recovery operations. Due to the unique situation with the existence of an ad hoc organization comprised of numerous non-licensee personnel, the incumbent shall also be responsible via the normal TMI organization set forth in Unit II technical specifications on all matters involving licensing and/or technical specification issues.

The person assigned to this position shall be qualified in accordance with ANSI N18.1-1971, paragraph 4.4.4 and Reg Guide 1.8.

The person assigned this position will normally be a regular employee of Metropolitan-Edison Three Mile Island staff. As such, he will be the normal point-of-contact for interface with the Nuclear Regulatory Commission. (Should other than a TMI supervisory person fill this position, interface with the NRC will occur with the next senior TMI individual in the Waste Management Activity.)

1300 RADIATION PROTECTION FOREMAN - WASTE MANAGEMENT

The persons filling this position shall report to the Supervisor - Radiation Protection - Waste Management. They shall be responsible for the first-line supervision of technicians and such other production workers that may be assigned ensuring that scheduled and emergent work is performed by personnel qualified for such duties per this plan and further, that such personnel are properly trained for the performance of such duties that may be assigned. Those persons in this position are further responsible for ensuring the completion and accuracy of all records, logs and such other data collected or generated during their shift including the review and proper filling of such data prior to being relieved.

Persons assigned to this position shall be qualified in accordance with ANSI N18.1-1971 paragraph 4.

1400 RADIATION PROTECTION TECHNICIANS

Radiation protection technicians shall be responsible for the performance of such duties as may be assigned and for which qualified and trained.

Radiation technicians shall be qualified in accordance with ANSI N18.1-1971, paragraph

In recognition that all personnel may not be qualified per ANSI N18.1-1971, such personnel may be assigned to perform such duties for which they are trained; however, such will be done under the supervision of a fireman or technician so qualified. Those persons who are not qualified per ANSI N18.1 may perform routine work including routine surveys, counting of samples, etc.; however, records, logs and reports generated by such personnel shall be countersigned by the qualified individual supervising that individual, such countersignature verifying the accuracy of data performed by the unqualified individual.

Persons not qualified per ANSI N18.1 shall not serve as escorts for persons in radiation areas where the general area field exceeds 1000 mrem/hr.

1401 OTHER TECHNICIANS AND/OR PRODUCTION WORKERS

Persons other than those normally assigned to radiation protection functions may be assigned to this section on a permanent or temporary basis for such production work that may be necessary. These personnel will have completed those phases or normal station health physics training (e.g., RWP or basic HP-II) necessary for the conduct of those duties assigned. These persons will work under the direct supervision of radiation protection foreman or qualified technicians depending upon the nature of the work being performed.

SECTION II

SHIFT ORGANIZATION

2000 GENERAL

Each shift shall be under the supervision of a Radiation Protection Foreman - Waste Management who shall be directly responsible to the Operations Shift Supervisor for the radiological aspects of all operations and/or other production work occurring in or in support of the Unit. When more than one Radiation Protection Foreman is assigned to any given shift, that foreman who is senior shall be formally designated as the lead foreman and shall be directly responsible for the performance of all personnel in the shift including those other foremen.

2100 RADIATION PROTECTION SHIFT COMPOSITION

2101 MINIMUM MANNING

The minimum number of radiation protection personnel within Unit II and its various support activities shall not be less than one foreman and two qualified technicians assigned to no other functions. This minimum composition is applicable only under the conditions when no production work is in progress or scheduled and provides only for the contingency coverage of minor emergent work, routine daily health physics surveillance and the personnel to cover unscheduled entries into radiation/contamination area.

In addition, one qualified technician will be provided for each emergency survey team in operation.

2102 MINIMUM MANNING FOR ROUTINE WORK

Manning in excess of the requirements of those specified in 2101 shall be determined by the tempo of work in progress or scheduled. The following comprises minimum manning for normal work days.

- a. One qualified technician and at least three trained technicians (these need not be qualified per ANSI N18.1-1971) at each control point that is not physically secured and locked.
- b. One trained technician at each entry into high radiation area which is not locked to ensure its security and to prevent unauthorized access.
- c. At least one qualified technician to verify the accuracy of all survey results, radiation, loose contamination and airborne.
- d. One trained technician available for survey of any material to be removed from the protected area.
- e. One qualified technician to serve as escort for each group of craft workers required to enter areas where the general radiation levels may exceed 100 mrem/hr.

- f. Trained technicians (not necessarily ANSI N18.1-1971 qualified) to support other work in progress or scheduled which need not be performed by qualified technicians. One qualified technician will be assigned to each four such technicians or fraction thereof for supervision.

2103 DURATION OF SHIFTS

Due to the possible consequences which could result from inattention on the part of radiation protection personnel due to fatigue, technicians and foreman will not normally be scheduled for work in excess of (ten) hours per day nor for more than six consecutive work days without one rest day.

SECTION III

TRAINING AND QUALIFICATION

3000 GENERAL

No person shall be assigned to any task for which he is not adequately trained. Similarly, only personnel who meet the qualifications of ANSI N18.1-1971 may be assigned to positions of responsibility directly effecting personnel radiation exposure.

3100 CERTIFICATION OF QUALIFICATION

3101 SUPERVISORS AND FOREMAN

The qualification of supervisors and foreman will be established through review of resumes and personal interview to ensure that the prescribed standards of ANSI N18.1-1971 are fulfilled and that the individual possesses the technical and administrative knowledge of such regulations and procedures to fulfill his responsibilities. Each supervisor or foreman shall be briefed on the general contents of standard health physics procedures, where they are located and the requirement for compliance therewith.

3102 TECHNICIANS

Technicians who will be assigned to positions requiring qualification of ANSI N18.1-1971 shall provide a resume which shall be reviewed and approved by the Supervisor - Radiation Protection - Waste Management. Interviews may be conducted at the discretion of this supervisor to establish the individual's level of knowledge, training and qualification.

3200 RECORDS

3201 Records shall be retained of all individuals assigned to functions within the Radiation Protection section of the Waste Management Activity. These

continue
records will continue, as a minimum, a copy of the individual's resume and any other documentation regarding training or formal schooling which is available. A summary of all interviews, when conducted, shall also be maintained. These records are permanent station records which shall be retained in accordance with normal records retention requirements. They shall be made available to the NRC or other regulatory bodies who have or established need to know.

3300 TRAINING

- 3301 All technicians shall have completed, as a minimum, the requirements of training of the advanced health physics course. The satisfactory completion of the courses requirements may be accomplished by completing a written examination with a grade of 90%. A copy of the completed examination will be retained in the individual's file of qualifications.
- 3302 On the job training by supervisors or other qualified personnel will be conducted as needed to train personnel for specific tasks.

SECTION IV

SPECIAL RESTRICTIONS/RELAXATIONS

4000 GENERAL

This section shall consist of articles, consecutively numbered, which shall be processed through the approval chain established for special procedures.

In lieu of the special cover sheet, the final sheet shall contain the signatures of personnel and/or approved bodies which have reviewed and approved the document. A copy of that document will be an integral part of each copy of this plan.

4001 HIGH RADIATION AREAS

4001.1 The following applies to high radiation areas in Unit II auxiliary and fuel handling buildings, chemical clearing building and containment only:

In lieu of the "control device" or "alarm signal" required by paragraph 20.203(c)(2) of 10 CFR 20, each high radiation area in which the intensity of radiation is 1000 mrem/hr or less shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit.

(Health Physics personnel shall be exempt from the RWP issuance requirement during the performance of their assigned radiation protection duties, provided they comply with approved radiation protection procedures for entry into high radiation areas.)

Any individual or group of individuals permitted to enter such areas shall be provided with or accompanied by one or more of the following:

- a. A radiation monitoring device which continuously indicates the radiation dose rate in the area.
- b. A radiation monitoring device which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate level in the area has been established and personnel have been made knowledgeable of them.

c. An individual qualified in radiation protection procedures who is equipped with a radiation dose rate monitoring device. This individual shall be responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance at the frequency specified by the Supervisor - Radiation Protection in the Radiation Work Permit.

4001.2 The requirements of 4001.1 above shall also apply to each high radiation area in those specified buildings in which the intensity of radiation is greater than 1000 mrem/hr; however, cubicles and rooms within the applicable buildings presently equipped with lockable doors or gates and which contain radiation areas greater than 1000 mrem/hr shall be maintained locked and posted with radiation levels. Keys shall be maintained under the administrative control of the Shift Supervisor or Shift Foreman on duty and/or the Supervisor - Radiation Protection. High radiation areas measuring greater than 1000 mrem/hr in corridors or other areas not presently lockable shall be barricaded and conspicuously posted. A plot of all such barricades shall be maintained at each point controlling entrance to that building and personnel shall be briefed on their location prior to permitting entry.

4001.3 Positive control over personnel entry and exit from these buildings shall be maintained for each individual entry and exit by qualified radiation protection technicians stationed continuously at the access point(s) except when that entrance is locked and secured.

- 4001.4 Selected low radiation areas on each end of these buildings shall be conspicuously identified for short term waiting areas to be used when not required in the areas of higher radiation.
- 4001.5 Entry into the Unit II containment is prohibited unless specifically approved in writing by the NRC.



UNITED STATES
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REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA

June 1, 1979

MEMORANDUM FOR: J. T. Collins
FROM: T. D. Murphy
SUBJECT: TMI RADIATION PROTECTION PLAN

I have reviewed the proposed Radiation Protection Plan and have the following general comments:

1. Organization

The licensee should provide an organization chart which provides traceable lines of authority and responsibility for the various functions required to support Unit 1 and Unit 2 operations and Unit 2 recovery. The organization chart must reflect the chain of command throughout the licensee organization with responsibilities for major functional areas in radiation protection and the interactions of the waste management group with the rest of the station radiation protection activities. Minimum qualifications of personnel for each major functional group should be listed. Major functional areas should include (but not necessarily be limited to) the following:

- Personnel Dosimetry - External Dose Assessment
- Personnel Dosimetry - Internal Dose Assessment
- Health Physics Operations/Monitoring
- Radiological Engineering
- Radiological Audits
- Health Physics Training
- Technical Support - Procedure Preparation
- Respiratory Protection
- Radioactive Material Control
- Radiological Surveys
- Laboratory/Counting support
- Environmental Monitoring
- Radwaste release authorization

The plan should indicate the minimum qualifications of personnel responsible for each functional area. Since the Radiation Protection organization supporting Unit 1 operations is to be separate from the total radiation protection organization, the Unit 1 Radiation Protection organization should meet the minimum technical specification requirements for the qualifications of personnel in Reg. Guide 1.8. The Unit 2 radiation protection

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recovery organization under the manager - Radwaste, should be under the direction of a person with qualifications at least as stringent as those required for a Radiation Protection manager in Reg. Guide 1.8. The lines of authority and responsibility between these two organizations should be clarified.

2. Commitment to ALARA

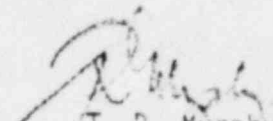
The radiation protection plan does not include any procedure for the implementation of an ALARA program. A model ALARA program to be implemented at operating reactors is appended to these comments. The intent of this model program should be included. As a minimum a review and sign off for ALARA considerations should be required by an element of the Radiation Protection organization preferably the Radiological Engineering function.

3. Applicability of Procedures

Either as a separate section or integrated into the plan, the licensee should include the applicability of existing radiation protection procedures or modifications to those procedures necessitated by the recovery organization.

4. Specific Comments

Specific comments on the plan, are enclosed on the marked-up copy.


T. D. Murphy
RAB

cc: R. Vollmer
G. Smith
D. Neely

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 MSIV 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

Mr. Joe C. Quick, President
Nuclear Support Services, Inc.
14055 Jefferson Davis Highway
Woodbridge, VA 22191

Dear Mr. Quick:

Thank you for your letters about the NSS Qualification Plan, including copies of the relevant NSS documents, TQ-7030 and QA-6030. You have obviously given a lot of thought and attention to the problems involved in meeting the intent of Regulatory Guide 1.8. The relevant ANSI standard, ANSI N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel," is about to be updated and re-issued as ANSI/ANS 3.1-1978, with the same title. A copy may be obtained from the American Nuclear Society, 555 North Kensington Avenue, La Grange Park, Illinois 60525.

In general, we must take the position that all contract health physics staff when working under contract to our licensees, meet the provisions of ANSI/ANS 3.1, as adopted by Reg. Guide 1.8. Work is currently underway to revise that Guide, adopting ANSI/ANS 3.1-1978, with certain conditions. That revision is currently scheduled to be issued for comment in the early spring of 1979.

We have compared the provisions of the two NSS documents with the guidance in our Reg. Guide and in the ANSI/ANS Standards. We conclude that your documents, TQ-7030 and QA-6030 are, for the most part, in acceptable conformance with that guidance. The only exceptions relate to the provisions at Section 4.5.2 in ANSI N18.1-1971 and in its current updating, ANSI/ANS 3.1-1978:

- (1) The current standard (ANSI 18.1) states that technicians shall have a minimum of two years of working experience in their specialty, and should have an additional year of related technical training. Assuming that the term "related technical training" includes academic training in health physics, one year of training would be equivalent to about 500 academic hours.

In your TQ-7030, Section 4.3, the first four sub-sections meet the years of working experience requirement; the fifth, 4.3.5 does not. Only the fifth meets the suggested related technical training provision.

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- (2) The revised standard (ANSI/ANS 3.1) states that technicians shall have three years of working experience, of which one year should be related technical experience.

In your TQ-7030, Section 4.3, the first three sub-sections meet the years of working experience requirement; the fourth and fifth, 4.3.4 and 4.3.5, do not. Again, only the fifth meets the suggested related technical training provision.

- (3) As noted in (a) below, we have recommended that equivalent qualification credit be given for one year of working experience and for one year of formal schooling. If this change were to be made, the first three sub-sections would meet the working experience requirement; the fourth and fifth would not, although the fifth would then meet the related technical training provision.

With regard to the specific questions raised in your letter of July 5, 1978, we have the following comments:

- a. We agree with the NSS position that an individual with an associate degree in health physics and one year of experience is likely to be as good or better than an individual with no formal schooling and three years of experience. We have recommended that Section 4.5.2 in ANSI/ANS 3.1 be adopted in Reg. Guide 1.8 such as to give equivalent qualification credit for one year of relevant experience, and one year of formal schooling. However, this change, if everyone agrees, would not take place until all comments on the Guide are in and it is issued in final form.
- b. The question of what should determine a year of experience relates to two observations about transient health physics workers:
1. They often work long shifts with no days off--thus accumulating many hours of "experience" in less than one calendar year.
 2. They are typically employed at such work for less than nine months during any given year.

We are reluctant to accept any criterion that might encourage excessive overtime hours--with the likely increase in fatigue,

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decrease in worker efficiency, and the resulting additional risks on the job. A possible guideline for equivalency of one year experience might be: 2000 or more working hours, accumulated during a total period of not less than 40 weeks at assignments to nuclear plants.

- c. ANSI/ANS 3.1, page 1, clearly defines nuclear power plant experience and the conditions under which other kinds of experience may be substituted.
- d. The licensee is responsible for the determination that a temporary health physics technician job assignment is in accordance with the relevant guidance, regardless of the position title. The NRC performs audits to assure the licensee implements the responsibility.

Sincerely yours,

L. J. Cunningham, Acting Asst. Dir.
Division of Fuel Facilities and
Materials Safety
Office of Inspection and Enforcement

bcc: T. Murphy
J. Nehemias ✓

SEE PREVIOUS YELLOW FOR CONCURRENCES

OFFICE	RAB:RSE	RAB:RSE	IE		
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DATE	10/31/78	11/01/78	/11/2/78		