



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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MEMORANDUM FOR: Radiation Protection Section
FROM: Doug Collins, Leader RPS
SUBJECT: RADIATION PROTECTION ORGANIZATION, STAFFING
AND QUALIFICATION

RPS has made several reviews of OLs using NUREG-0731 as criteria and this memo is to provide you information on our experience with NUREG-0731 implementation.

NUREG-0731 was issued as a draft in September 1980 for interim use in evaluating near-term OLs per NUREG-0694. The salient radiation protection aspects of this NUREG and their application are listed below.

1. Radiation Protection Manager (RPM) Reporting
 - a. Criteria

Section II. A.1 of NUREG-0731 states that "The functional areas of radiation protection, quality assurance, and training should assure independence from operating pressures" and that there be "clear lines of authority to the Plant Manager." Figure 1 of NUREG-0731 shows a "representative" plant organization with the RPM reporting directly to the Plant Mgr/Asst. Plant Mgr and at the same level as the Operations Manager. In addition, Regulatory Guide 8.8, Section C.1.b.(3), states:

The Radiation Protection Manager (RPM) (onsite) has a safety function and responsibility to both employees and management that can be best fulfilled if the individual is independent of station divisions, such as operations, maintenance, or technical support, whose prime responsibility is continuity or improvement of station operability. The RPM should have direct recourse to responsible management personnel in order to resolve questions related to the conduct of the radiation protection program.

This section will be revised shortly to state that the Regulatory Guide 1.8 qualified RPM should have direct access to the Plant Manager in all radiation protection matters.

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Revision 3 of Regulatory Guide 1.33 (for Comment dated November 1980) states, with regard to "independence from operating pressures" and QA groups, that the NRC is evaluating the effectiveness of an organizational structure in which the onsite QA group reports functionally to offsite QA management rather than to the Plant Manager. This is not the same meaning of "independence from operating pressures" as applied to the RPM. Acceptable implementation for the RPM is discussed below.

b. Implementation

The two main goals with regard to the organizational structure are to give assurance that the radiation protection (RP) group is independent from operations and operational pressures and that the RPM has direct access to the Plant Manager in all RP matters. It is clearly unsatisfactory for the RPM to report to the Operations or Maintenance Superintendent since this makes him directly dependent on operational pressures. Although NUREG-0731 and Regulatory Guide 8.8 imply that the RPM should report directly to the Plant Manager, the Figure 1 is for a "representative" organization and Regulatory Guide 8.8 states that the RPM's responsibilities can be best fulfilled if he is independent of Technical Support Division. This does not say that reporting to the Technical Support Manager is unacceptable; only that it is not the best organization. We have found acceptable a system in which the RPM reports to the Technical Services Manager with a commitment in the FSAR that the RPM has direct access to the Plant Manager for RP matters or that the RPM is a member of PORC. Each review should determine if the proposed organizational structure does and will work (including access of the RPM to the Plant Manager) and if the functional organization that works is depicted by the FSAR and tech specs. In instances where the organizational structure is questionable, you should contact the Resident Inspector or assigned regional HP Inspector to get input. In addition, if necessary, you should visit the site as part of your evaluation in order to interview the RPM.

2. Radiation Protection Separate from Chemistry

a. Criteria

Section II.A.1 of NUREG-0731 states that one characteristic that forms the basis for a plant organization is that "distinct functional areas are separately supervised and/or managed." Figure 1 of NUREG-0731 shows RP separate from Chemistry.

Additionally, Standard Technical Specifications specify that radiation protection technicians meet ANSI 18.1 which requires in paragraph 4.5.2 that technicians in responsible positions shall have a minimum of two years of working experience in their speciality. Radiochemistry and Radiation Protection are listed as separate specialities in Section 4.4 of that ANSI standard.

NUREG-0654, in Table B-1 lists separately HP technicians and radiochemistry technicians.

b. Implementation

The bases for the separation of RP from Chemistry are (1) assurance that the RPM devotes sufficient attention to RP (and is not distracted from his responsibility to RP by Chemistry), and (2) assurance that technicians are not required to perform so many functions that they cannot maintain specialized competence in dedicated functions. There are acceptable methods for achieving these goals other than total separation of RP from chemistry. We found acceptable organizations in which a Supervisor of Radiation Protection and Chemistry has two discrete functions (RP and Chem) reporting to him. In order to overcome the potential problem of dilution of Chem and RP Supervisor's management of and technical input into the RP program, a Regulatory Guide 1.8 qualified individual is put in charge of the RP group. Thus, the RP function has the benefit of the full-time direction of a Regulatory Guide 1.8 qualified individual. In these cases, the Chem and RP techs have been separate groups with separate duties and qualification standards. HP Appraisals have found plants where the combination of RP and Chemistry duties have resulted in problems because of the inability of technicians to maintain competence in all areas; they have also found programs where the combination technician has worked. In plants where the groups are separate, a few very good technicians have been able to maintain qualification in both areas. It, therefore, is theoretically possible to qualify a staff of techs in both specialities, but it would require 4 years experience total per ANSI 18.1 and would require a great expenditure of effort in training and qualifying the staff in both areas. One plant has a contractor evaluating the organization for potential solutions to the dual-technician qualification problem.

3. Shift Staffing

a. Criteria

NUREG-0654, Table B-1, specifies that there be an HP technician on

each shift as a minimum. This on shift person must be a technician qualified per ANSI 18.1, not "an individual qualified in RP procedures" as specified in Tech Specs of operating reactors in the past. A footnote to the table shows that two such "individuals qualified in RP procedures" are required in addition to the technician.

Section II. A.d.(2) of NUREG-0731 states that a RP technician should be onsite at all times.

b. Implementation

Beyond this minimum, there must be sufficient staff to perform the assigned RP functions. Those functions assigned RP vary from plant to plant. Many functions, such as TLD processing, bioassay, instrument calibration, environmental monitoring, etc. can be contracted out and therefore the in-house staff to perform RP functions is variable. HP Appraisals have found that some of the better programs at one-unit stations have only 10-11 people on the entire RP staff. Other plants with substantially more personnel have had more significant findings.

4. Back-up to RPM

a. Criteria

Section II.A.2 of NUREG-0731 states that there should be in-depth experience at the Radiation Protection Manager level. Section 4.4.4 of the December 1980 draft ANSI 3.1, which will be adopted by Regulatory Guide 1.8 specifies that an individual who temporarily replaces the RPM should have a B.S. degree in science or engineering and 2 years experience, six months of which should be onsite.

b. Implementation

It is our intent that the backup to the RPM be assigned to the site, but in certain circumstances he may be assigned at corporate with close ties to the site. For example, the corporation HP of a one unit utility located near (app. 30 miles) to the site might be acceptable as a back-up to the RPM if, during the RPM's absence he is assigned to the site.

5. RPM Qualifications

a. Criteria

Standard Technical Specifications specify that the RPM should be qualified in accordance with Regulatory Guide 1.8, which

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currently states:

The Radiation Protection Manager (RPM) should be an experienced professional in applied radiation protection at nuclear facilities dealing with radiation protection problems and programs similar to those at nuclear power stations. The RPM should be familiar with the design features and operations of nuclear power stations that affect the potential for exposures of persons to radiation. The RPM should have the technical competence to establish radiation protection programs and the supervisory capability to direct the work of professionals, technicians, and journeymen required to implement the radiation protection programs.

The RPM should have a bachelor's degree or the equivalent in a science or engineering subject, including some formal training in radiation protection. The RPM should have at least five years of professional experience in applied radiation protection. (A master's degree may be considered equivalent to one year of professional experience, and a doctor's degree may be considered equivalent to two years of professional experience where course work related to radiation protection is involved.) At least three years of this professional experience should be in applied radiation protection work in a nuclear facility dealing with radiological problems similar to those encountered in nuclear power stations, preferably in an actual power station.

Equivalent, as used above for the B.S. degree, may be met by (a) 4 years of formal schooling in science or engineering, (b) 4 years of applied radiation protection experience at a nuclear facility, (c) 4 years of operational or technical experience/training in nuclear power, or (d) any combination of the above totaling 4 years. With regard to other clarifications of the R.G. 1.8 wording, see the attached EEB Branch Position dated March 2, 1978. Note that with regard to the number of refueling outages in the EEB position, the

NRC is adopting a new ANSI 3.1 which will require 6 months onsite and one refueling outage.

b. Implementation

There should be a Regulatory Guide 1.8 qualified RPM assigned at the site. In some instances the individual assigned RPM has strong management capability but does not have the radiation protection technical experience of Regulatory Guide 1.8. However, we have found it acceptable for this individual to function as RPM when he is supported by an individual in the line organization (e.g. HP Supervisor) who has the Regulatory Guide 1.8 education and technical experience. We have not found it acceptable to have a Regulatory Guide 1.8 person not in line (e.g. as a staff member of a rad engineering group).

6. Radiation Protection Technicians

a. Criteria

ANSI 18.1, Section 4.1, states that individuals must have the training and experience to do the job. Section 4.5.2 states that technicians in responsible positions shall have a minimum of two years experience in their specialty and should have one year of related technical training. In practice, the shall 2 years applies, with training as part of the 2 years.

ANSI 18.1, Section 5.1 and 5.3, specify training in general terms. Section 5.5.1 specifies retraining in more specific terms.

Proposed Regulatory Guide 1.8 (RP 807-5, Sept. 1980) on page 18 specifies a performance oriented training and qualification for technicians.

b. Implementaton

A "responsible" radiation protection technician is one who:

1. Reviews surveys performed by others;
2. Signs RWPs;
3. Issues RWPs;
4. Independently performs surveys or evaluations used to permit compliance with regulatory requirements.

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We have accepted an alternative to two years experience (the quality of which is not specified by ANSI). This alternative would consist of an NRC reviewed and approved training program with a 1 year experience requirement (the quality of which would be specified). Some licensees have contended that the retraining listed in Section 5.5.1 of ANSI 18.1 does not apply to radiation protection technicians. This retraining does apply.

Douglas M. Collins

Douglas M. Collins, Leader
Radiation Protection Section
Radiological Assessment Branch
Division of Systems Integration

cc: W. Kreger
D. Collins