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June 30, 1981

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555
Attention: Leader, Radiation Protection Section

Subject: South Carolina Electric and Gas, Co.'s Comments on Draft NUREG 0761

Dear Sir:

South Carolina Electric and Gas Company provides comments on Draft NUREG 0761 "Radiation Protection Plans for Nuclear Power Reactor Licensees." These comments, shown on the attached sheets, are an endorsement of comments submitted earlier by the Edison Electric Institute Health Physics Committee.

If you have any questions, please let us know.

Ronald B. Clary
Manager, Nuclear Licensing

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Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Leader, Radiation Protection Section

Re: Draft NUREG 0761, "Radiation Protection Plans for Nuclear Power Reactor Licensees"

These comments are submitted on behalf of the Edison Electric Institute Health Physics Committee.* The committee is comprised of health physicists from over 40 nuclear utility companies across the United States. The committee is very concerned with the effectiveness of radiation protection programs and ensuring a safe working environment in nuclear power plants. The committee is also very interested in all regulations and guidance which may impact on the effectiveness of these programs. It is for these reasons we welcome the opportunity to comment on the document referenced above.

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*The comments were prepared by a special Task Force of the Health Physics Committee. The Task Force Members are:

W. R. Hoey, Boston Edison Co., Chairman
Paul Lavely, Detroit Edison Co.
Mike Nichols, Kansas Gas and Electric Co.
Sandy Perle, Florida Power and Light Co.
Pat Hughes, Florida Power and Light Co.
Joe Perrotta, Power Authority, State of New York
Bruce Eldredge, Boston Edison Co.
Desta Bird, Sacrement Municipal Utility District
Gene Jarvela, Houston Lighting and Power Co.
Dr. Roger Zavadoski, Institute of Nuclear Power Operations
A. R. Trudeau, Boston Edison Company

For the most part, the guidance and goals presented in NUREG 0761 (hereafter, referred to as the Document) form the basis for a very effective radiation protection program. Many points presented in the Document are currently practiced. in the industry. However, there is a definite distinction between criteria that should be presented as guidance and criteria that should be incorporated as regulatory requirements. We acknowledge that the effectiveness of radiation protection programs vary throughout the industry, and that the NRC Health Physics Appraisal Program and INPO Evaluation Program identified weaknesses in each of these programs, many of these generic in nature. It appears the NRC has made the assumption that these weaknesses can be eliminated through increased regulation and imposing additional requirements on nuclear utilities. Contrary to this assumption, we feel that industry response to the Appraisal teams' findings and surveillance and assistance of INPO will achieve the desired upgrade in radiation protection programs and must be given a chance. We recognize that the information contained in the Document is intended as guidance due to the legal definition of a NUREG. However, we submit that, based on past history (e.g. NUREG-0041, NUREG-0654, NUREG-0737), if the document is published in final form it will have the impact of a regulation and will be enforced as such. This is further reinforced by the proposed Technical Specification modification. Recognizing industry efforts already in progress, we therefore submit that regulating radiation protection programs in such a prescriptive, cookbook fashion is unnecessary and would serve as a detrement to existing efforts to upgrade

radiation protection programs. Final publication of the Document must be carefully reviewed by NRC.

It also must be pointed out that the radiation protection plan contents, acceptance criteria and procedural details, bear a strong resemblance, and some sections are almost verbatim from the regulations governing the U. S. Navy Nuclear Program (NAVSHIPS 389-0288 and NAVSHIPS 389-0153). However, there are major fundamental differences between the Naval program and the nuclear power industry. The Naval program deals with program-wide standardized design control, limited isotopes, higher occupancy factors, smaller systems, and operates on a non-profit basis. The nuclear power industry involves 62 different utilities, 5 nuclear steam suppliers and more than 10 architecture engineers. Attempting to apply the Navy's regulations without giving consideration to these fundamental differences is inappropriate. Because of the diverse activities that are required to support a nuclear power plant, management and operational flexibility must be maintained. The requirements imposed by the Document many times make the assumption that there is only one correct method to develop, implement, and operate a radiation protection program. The Naval philosophy is that operations should be standardized throughout their program. The Document is an attempt to standardize the radiation protection programs of over 40 different utility companies currently operating nuclear power plants as well as the other utility companies that have plants scheduled to start-up in the future. These utility companies are located

throughout the country and each operate in their own unique environment. Standarizing the radiation protection programs of these utilities will have a detremental impact on their overall effectiveness by denying utilities the flexibility to adapt to their own specific situations. Good Health Physics and ALARA work practices cannot be legislated.

Consistent with our position that the Document detracts from utility management flexibility, we submit that the requirements of the Document represent the NRC creating regulations via the NUREG method which is legally inappropriate. For example, requiring that utilities maintain a well-trained proficient radiation protection staff is appropriate, but determining the percent of time an individual spends in training and the contents of training courses is a perrogative and responsbility of a utility. It is the purpose of NRC to determine if the utility efforts are adequate. If judged inadequate, it is the purpose of NRC to determine if the corrective action and implementation schedules are adequate Obviously, regulations must contain some specifics that are the end points to be met, e.g., individual exposures maintained less than 3 rem/quarter. It is the right and responsibility of the utility companies to develop and implement an administrative dose control system that will ensure compliance with the regulation. Many of the Document's requirements are far too prescriptive and infringe upon the perrogatives and responsibilies of utility compnaies.

The goal of the Documents' requirements is obviously to increase

the effectiveness of radiation protection programs which would result in greater protection to health and safety of nuclear power plant workers. However, attempting to increase worker safety by additional regulations is contrary to the findings of the Kenemeny Commission as given below:

"We note a preoccupation with regulations. It is, of course, the responsibility of the Nuclear Regulatory Commission to issue regulations to assure the safety of nuclear power plants. However, we are convinced that regulations alone cannot assure safety. Indeed, once regulations become as voluminous and complex as those regulations now in place, they can serve as a negative factor in nuclear safety. The regulations are so complex that immense efforts are required by the utility, by its suppliers, and by the NRC to assure that regulations are complied with. The satisfaction of regulatory requirements is equated with safety. This Commission believes that it is an absorbing concern with safety that will bring about safety -- not just the meeting of narrowly prescribed and complex regulations."[1]

It must be recognized that implementing the requirements of the Document will result in a tremendous administrative burden on each utility. As stated earlier, many of the elements of the Document are already industry practices. Additionally, all radiation protection programs have been significantly modified and upgraded as a result of both the INPO evaluation program and NRC Health Physics Appraisal Program. Mandating good work practices by regulations gives each utility a horrendous administrative task to establish and maintain adminstrative controls systems to ensure compliance with each and every requirement. Initial preparation of a Radiation Protection Plan and implementing procedures will require more than 5 man-years by professional level

1. Report of the President's Commission on the Accident of Three Mile Island, Page 9.

personnel for each station. Implementing, maintaining, and ensuring compliance will require at least 10-20 additional personnel at each plant. In an industry already burdened with critical manpower shortages, it must be questioned whether these manpower efforts could be better directed to upgrading radiation protection programs rather than maintaining unproductive administrative programs.

We also will make comments on the requirements of specific sections of the Document. Because of the voluminous subject areas addressed in the Document, we have chosen to comment only on those areas of most significant concern to us.

Introduction

Contrary to the statements in the introduction, the proposed modification to the Technical Specifications in essence makes the entire document a regulatory requirement and license condition and subjects each and every line item in the document to enforcement actions. We find this to be excessive regulation having the same impact as a rulemaking. However, no rulemaking proceedings have been followed. We strongly oppose any modification to the Technical Specifications. We also oppose the requirement that all implementing procedures be approved by the Plant Operations Review Committee. Requiring all procedures to be reviewed would be an unproductive, administrative burden.

ORGANIZATION AND FUNCTIONS

Ratios

The requirement to identify minimum ratios of H.P. supervisors to H.P. technicians and a minimum ratio of H.P. technicans to controlled area workers is unrealistic and idealistic. This makes the invalid assumption that a linear relationship always exists between these two categories (supervisors to technicians and technicians to workers). Experience has demonstrated that this is far from the actual and real world case. It is a function and responsiblity of the facility's management and Radiation Protection Manager (RPM) to ensure an adequate radiation protection staff is always present. The number of H.P. supervisors and H.P. technicians required at any given time is dependent on many dynamic factors such as types of tasks being performed, number and radiological condition of work areas. It is far more complex an issue than can be simplisticly addressed by the establishment of minimum ratios.

RPM Qualifications

Although specific qualifications are not addressed other than referencing Reg. Guide 1.8, it must be ensured that the qualifications required for an RPM provide for a degree equivalency. Failure to do so would result in many individuals with many years of Health Physics experience unable to perform as RPMs which would be contrary to the goal of increased effectiveness of radiation protection programs. Also the qualification requirements of a back-up RPM should be less than that of the primary RPM. The back-up RPM is by definition

only functioning as the RPM for short periods of time. Therefore, the scope of the job is significantly less which dictates less stringent qualification requirements. We support the qualification requirements given in ANSI 3.1 for the back-up RPM.

Corporate and Contractor Functions

The requirement to define the functions assigned to both Corporate and Contractor groups is unrealistic. The sole function of these groups is to support the facility radiation protection effort. Assignment of functions assumes that assignment responsibilities are static which is just not the case. The RPM and utility management constatnly review, evaluate, and change functional responsiblities as situations dictate.

TRAINING AND QUALIFICATIONS

General Employee Training

We support radiation worker training for all individuals having unescorted access within the radiation controlled area at a nuclear power plant. However, the requirement for retraining on an annual basis is excessive. Many nuclear power plants have performed retraining every two years for all workers or selected workers such as utility nuclear organization personnel. Requiring all personnel to be retrained on an annual basis would result in an unnecessary increase in training staff and excess non-productive time for workers with no significant benefit for the workers or the utility. It is

the option of a utility to conduct this training more frequently than every two years.

Requiring training for visitors is totally unnecessary. Experience has demonstrated that the current industry practice of escorting untrained individuals is more than adequate to ensure visitors' safety.

Health Physics Supervisor and Technician Training

We support the continued use of ANSI N-18.1 to determine qualifications of H.P. technicians. ANSI N-18.1 gives the greatest emphasis to experience in determining qualifications. As H.P. supervisors and technicians must implement the radiation protection program in the field, operational health physics experience is a more important factor than technical knowledge.

We strongly support training for all radiation protection personnel. However, maintaining qualifications to perform one's job should not be dependent on completing a training course by a certain date. Instead, experience dictates that the current industry practice of constant supervisory review and on-the job performance evaluation should be continued. Along with the RPM's responsibility to ensure he has adequate radiation protection personnel in the workplace, he is also responsible to ensure these personnel are competent to perform their job.

The definite implication that an individuals qualifications would be revoked following a certain date if re-training requalifications were not performed, has several negative

aspects. First, power plant scheduling considerations could impact (or be impacted) by the training effort. Second, the constant possibility of loss of qualification to perform one's job could have a demoralizing effect on radiation protection personnel and adversely effect labor relations. Finally, this could lead to inadequate training just to ensure the requirements are met.

It should be noted that we do support specific plant initial qualifications for all radiation protection personnel prior to being allowed to function independently in a given nuclear power plant. The degree of training should be commensurate with an individual's duties, responsibilities, and background. We also support a continued education and training effort that enhances individuals qualifications and proficiency. However, due to its many negative aspects, we do not support a prescriptive, regulated formal requalification program.

DOSE CONTROL

ALARA

We wholly support the ALARA concept. The increasing manpower and financial commitments to implement ALARA programs and experience record of the industry are witness to the strong ALARA commitment of the industry. Current regulations and guidance adequately address the ALARA issue. Establishment of numerical limits by the NRC or by NRC's requiring utilities to establish such limits will do little, if anything, to enhance the effectiveness of these programs. Instead, 10CFR20 provides individual dose limits. It is the responsibility of

each utility to establish administrative programs to ensure all exposures are maintained below these limits and, one step further, to ensure individual exposures are maintained ALARA. An effective program to control individual exposures ALARA and minimizes the number of personnel exposed will achieve an overall reduction in total man-rem and achieve better results than trying to estalish total man-rem limits. While we support establishment of man-rem goals in some cases, we are very concened that the use and application of these goals does not overshadow the end result to be obtained from an effective ALARA program which is maximum productivity for minimum total exposure balanced against individual exposures.

Pocket Dosimeter/TLD Comparison

We do support the concept that some provision exist to compare pocket dosimeter totals to TLD readings. However, the criteria for such a comparison is the responsiblity of each nuclear power plant to develop based on the specifics of its dose control program and exposure situations.

Control of Access to Spent Fuel Transfer Tube Areas

This seciton requires that all accessible portions of the spent fuel transfer tube be shielded to less than 100 rads per hour. This requirement is unacceptable as it precludes the use of positive access control measures over such areas where the dose rate may be greater than 100 rads per hour such as expansion joints.

Radiation Work Permit (RWP)

We are very concerned about the use of RWP's and establishment of radiation protection controls as described in the Document. Work activities are governed by proceudre, however, attempting to use these procedures to provide the primary means of establishing radiation controls would be contrary to a sound radiation protection philosophy. The radiation controls for any given job may vary with time, i.e., radiological conditions in the work area, system status, and other factors are subject to change. Ensuring radiation controls are properly implemented for a job is best accomplished by issuing a specific RWP for the current conditions have been evaluated. Use of RWP's in this manner also provides the necessary flexibility to increase or decrease radiation controls as conditions change. Therefore, contrary to the guidance that is provided in the Document, we support the position that the RWP shall continue to be the primary source of radiation control for a job.

Beta Dose

The Document states that the beta dose due to skin contamination should be calculated based on the dose to the highest 1 cm^2. It is our position that this technique is impractical. We do support the position that the skin dose should be calculated based on the area of highest contamination, however, this will be determined using an area as determined by the probe area of the instrument used.

RADIOACTIVE MATERIALS (RAM) CONTROL

The program as described in the Document for the RAM control is unrealistic and impractical for implementation in presently designed nuclear power plants. The primary reason for this position is the definition provided for RAM to include all contaminated tools, equipment, components, etc.

We agree that provisions must exist for control of RAM in radiologically uncontrolled areas. In controlled areas, we also agree that RAM should be properly surveyed, labeled and storage areas posted. An area where contaminated tools, components, etc. are temporarily stored need not necessarily be posted as a RAM storage area. These precautions are currently part of all radiation protection programs. In addition, General Employee Training (GET) courses provide instruction in the proper precautions and procedures necessary for an individual to safely handle contaminated equipment and tools and experience has demonstrated that existing procedures have proven effective.

We have serious concerns about the intent of provisions for "positive control of RAM" (p.30, 6.b.1.a.ii.), "movement and storage of RAM" (p.30, 6.b.1.a.iii.), and "personnel authorized to handle radioactive materials" (p.31, 6.c.g.). The implications are that RAM storage areas would have to be such that unauthorized personnel entry is prevented by personnel stationed at each entry point or locked doors at entry points, similar to positive control over entry to high radiation areas. Implied is that accurate inventories must be maintained and that strict controls would be placed

over the movement and storage of RAM and only certain qualified individuals would be permitted to transfer RAM. The results of such a program will be a tremendous administrative burden (ability to demonstrate compliance must be ensured) and a severe impedance to plant operations. To administatively maintain such a program each plant would require at least ten additional personnel during normal operations. (These additional personnel are not included in the increased manpower estimates made earlier in these comments.) This number would at least quadruple during outage conditions.

We do agree that RAM must be controlled. However, the degreee of control required is determined by several factors, particularly the potential hazard. The program described in the Document coupled with the definition provided for RAM, however, results in a ultra-conservative, unrealistic approach to RAM control. The increased worker protection to be realized from such a program is at best minimal and cannot be justified by either the effort to implement such a program or the hinderance to operations and maintenance of a nuclear power plant.

We also submit the following changes are required in this section.

6.a. Describe in a, differences between RAM control inside and outside of controlled areas. Delete requirement for accountability, inventory, and movement control for RAM inside controlled areas.

6.b.1.a. Change ii and iii to:

ii storage of RAM

iii procedures to prevent RAM from being removed from radiologically controlled areas in an uncontrolled manner.

6.c.(c),ii Delete requirement for control of movement and transfer of RAM inside controlled area

6.c.(d), Delete inventory of RAM inside controlled area

6.c.(g), Specify that these are all persons passing General Employee Training

6.c.(i).i Change to sealed sources rather than standard and check sources

6.c.(j), Delete requirements covering lifting and rigging to handle RAM

6.c.(l). Delete-adequately addressed in ALARA programs of RG 8.8 and 8.10

SURVEILLANCE

Survey Frequencies

In general, it must be stated that any attempt to predetermine minimum survey frequencies in a wide variety of circumstances can be counterproductive to the entire radiation protection and ALARA effort.

The requirement to survey all areas where conditions may change once per shift is an example of this counterproductive effort. Also, trying to interpret areas where conditions may change" could lead to significant implementation and enforcement problems. While we agree that there are times when these frequent surveys are required, and at some times even more frequent, a strict requirement to do so would be contrary to the ALARA concept. Following a full evaluation

of each situation, it is the responsibility of health physics personnel to determine survey frequencies.

Due to the nature of work in a nuclear power plant, the requirement to survey all exit points from contamination controlled areas following use daily and shiftly during frequent use would be counterproductive. To ensure compliance, each exit point, of which a typical power plant has 75-100, would have to be surveyed at least daily. These surveys will result in a large amount of non-productive H.P. technician time (8 hours/day) and tie-up counting room equipment which could be needed for much more pressing duties. As these exit points are almost always in radiation areas, ALARA considerations make such a survey requirement prohibitive.

While do support minimum survey requirements, we submit they cannot be put in the form of regulatory requirements to be most effective. Instead, survey frequencies must be continuously reviewed and changed as necessary based on current evaluations. This will enable H.P. technician time and survey instrumentation to be best utilized while not increasing personnel exposures due to performing surveys to only satisfy administrative requirements.

Protective Clothing Limits

The requirement that clean protective clothing not exceed 0.1 mrem/hr. is unnecessarily restrictive and unrealistic when compared to the dose rates normally encountered in the work environment. The effect of such a limit would not be cost effective as well as well as significantly increasing

rad waste burial volume.

We propose the following limits for protective clothing:

1. 2.5 mrem/hr. averaged over the entire garment for routine use.
2. 10 mrem/hr. averaged over the entire garment for clothing to be used in areas >100 K dpm/100cm^2 and/or > 100 mrem/hr.

Clean Waste Dumps

The requirement for surveys of clean waste dumps and landfills, slavage areas, plant warehouses, tool storage areas, etc. must be resticted to on-site facilities.

Personnel Frisking

We are confused on the minimum detection level for personnel friskers as presented in the Document. Page 36 of the Document states they should be capable of detecting "at least 5000 dpm/100 cm^2 (330 dpm per 15cm^2 probe area)...". However, 5000 dpm/100cm^2 corresponds to 750 dpm per 15 cm^2 probe area. These comments will be based on the assumption that the intent was to achieve the 5000 dpm/100 cm^2 limit and not the 330 dpm/15 cm^2.

The requirement to be able to detect 5000 dpm/100 cm^2 during personnel frisking is right at the lower limit of sensitivity of current state-of-the-art personnel frisking instruments. Imposition of a limit should be based on what is realistically achievable the majority of the time. Again, one of the problems stemming from a 5000 dpm/100 cm^2 limit is ensuring compliance.

The effort required to ensuring all personnel frisking equipment and locations are maintained in optimum conditions could be better directed to other areas of the radiation protection program.

As an alternative, we propose a personnel frisking limit of 10000 dpm/100cm^2 (1500 dpm per 15 cm^2 probe area). This would provide a realistic and achievable personnel frisking program without compromising worker protection. This limit would apply at exit points from controlled areas.

The requirement that personnel frisking procedures specify the probe be held 1/2" from the body, moved at 2 inches per second and the whole body be surveyed is unrealistic and overconservative. We agree that under some circumstances, this type of frisk may be required. These circumstances usually involve work in highly contaminated areas or other instances of a high potential for personnel contamination. As in all activities, the degree of precaution must be justified by the degree of risk or potential for risk. Therefore, requiring all individuals to perform a 3-5 minute frisk (estimated based on 2" per second, whole body) when exiting a controlled area would cause unnecessary delays and cannot be justified. Adequate frisking techniques are covered in existing training programs.

Air Flows

Verification of proper pressure gradients must be restricted to ensure proper air flows to and from major work areas. The wording used to present this requirement (p. 37) in the

Document is very unclear in its meaning.

INSTRUMENTATION

Minimum Inventories

With the exception of instruments designated for emergency use, we submit that the establishment of minimum inventories is not useful and completely unnecessary. The ability to satisfy procedural survey requirements already automatically dictates any restrictions in operations.

Calibrating Frequency

The requirement to calibrate all portable instruments quarterly is excessive. A semi-annual calibration frequency is adequate unless the calibration history dictates that is be performed more often. The use a semi-annual calibration frequency is particularly adequate when the sources and/or calibration equipment is traceable, either directly or indirectly to NBS. Also some instrumentation may require calibration on an even less frequent basis depending on instrument stability and use frequency.

Whole Body Counters

The requirement that the whole body counters to able to detect a 10 percent of the body burden resulting from a 40-MPC-hour exposure is unnecessary and surpasses the state-of-the-art. We propose a more realistic limit that whole body counters be able to detect 10 percent of the maximum permissible body burden for commonly encountered isotopes in a nuclear power plant.

REVIEW AND AUDIT

We support the concept of each utility performing its own audits of its radiation protection program. However, since organizations differ greatly throughout utilities, specifying the type (onsite, off-site, QA, corporate, contract, etc.) is inappropriate. It is a perrogative of each utility company to determine the methods for reviewing each aspect of its operations, including the radiation protection program, and the specifics do not belong in these requirements.

The requirement that an individual on the on-site QA staff have radiation protection training or experience is unclear. We agree that audits should be performed by individuals familiar with radiation protection. Our concern is that this could be interpreted as an ANSI N-18.1, or even RPM, qualified individual which is unnecessary. This point should be clarified.

INCIDENT ANALYSIS

We support investigation and analysis of the cause of incidents. These investigations serve as a valuable learning tool. Our main concern is that the term incident be kept in its proper perspective, therefore, we submit that the term incident be changed to radioligical occurence. For example, listing all cases of personnel contamination is misuse of the term incident. We agree that cases of significant personnel contamination should be analysed, but a dimirimus concept must be applied before a full investigation and analysis are required.

APPENDIX A

We agree with the standards for radiation work training and submit they are currently utilized in the industry. However, it must be ensured that the depth of training must correspond to both what workers can be expected to understand and comprehend and to level necessary to ensure they perform their job safely.

Requiring that tests utilize essay questions makes the invalid assumption that other testing techniques are not accurate indicators. Also, requiring unannounced re-examinations is impractical from a manpower scheduling and planning point of view, and will cause morale and labor difficulties.

APPENDIX B

We support Appendix B as a good outline for presenting a radiation work training course as long as the level of training is restricted to that required for the individuals to work safely. We do submit that practical demonstration by all individuals on spill response is unnecessary.

APPENDIX C

We find Appendix C acceptable.

APPENDIX D

We support the standards as guidelines and goals, not requirements for qualification. For example, 5% of each H.P. technician's time in training is a nice goal, however

as is not proper to incorporated as a requirement of a utility or individual.

APPENDIX E

We support the outline presented in Appendix E. However, much of the material presented is of a technical nature, full knowledge of which is not required for a Health Physics technician to satisfactorily perform his job. Requiring that the information in Appendix E be part of the training program for every health physics technician is inappropriate.

APPENDIX F

We support the concepts presented in Appendix F, but are concerned by the numerical values used in the examples carry over as industry requirements. ALARA is a concept that cannot be simplified into numerical values.

APPENDIX G

The definition of radioactive material is far too broad and encompassing. In addition, many of the definitions are in conflict with the Code of Federal Regulations and are not consistent with present industry nomenclature.

Once again, we are grateful for this opportunity to submit these comments for consideration.