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Minogue
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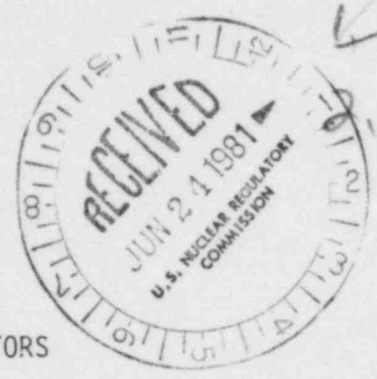
Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

June 8, 1981



Mr. J. M. Hendrie, Acting Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Hendrie:

Subject: QUALIFICATION OF REACTOR OPERATORS

In my letter to you of March 31, 1981 (copy attached), I expressed my concerns regarding the NRC Staff's proposed rulemaking on reactor operator qualification (SECY-81-84).

We have a continuing commitment to improved operator qualification and capabilities. In view of our interest in enhanced on-shift operator development and training programs, we believe it might be helpful now to outline our approach and to provide comments on Commissioner Gilinsky's proposed modifications to the rulemaking.

Our basic approach to enhancing operator capabilities is to first identify the knowledge and skills these personnel should have to perform safely and effectively in normal, abnormal, and emergency situations and then to cover the respective topics by an appropriate blend of both education and training. We believe that a significant portion of the education can be provided within the framework of a largely technical core curriculum which is a part of an accredited, university-level, technology-oriented Bachelor's Degree program. We see such a program as an effective means of both upgrading current and future operators who do not need a degree and providing the basis for further individual effort on the part of those individuals desiring a degree so that they may advance into nuclear management positions requiring same. We have reason to believe that such a program will attract quality people. Continuing evaluation, linked with appropriate follow-through, is an integral part of both the education and training as well as actual performance on the job. We firmly believe that a technology program is far more specific to the needs of those personnel who will operate, test and maintain nuclear power plants than is an engineering program which is directed toward other objectives.

I previously expressed objections regarding both the content and approach of SECY-81-84.

I am pleased and encouraged by the deletion of the degree requirement for on-shift operating personnel. As expressed in my previous letter, this action avoids a situation detrimental to safe operation of nuclear power plants. The latest proposal has other positive aspects in that it retains some of the important provisions of the SECY-81-84 version. One of these is the proposed amendment of 10 CFR 55.20 such that NRC examinations will test the applicant's understanding of the theory of operation of the plant as well as of its design and his/her familiarity with the controls and operating procedures. Another big improvement which should enhance the credibility of both the NRC and the industry is the change in 10 CFR 55, Appendix A, Paragraph 4.a, such that the primary objective of the annual requalification examination will be to determine that licensed personnel have sufficient knowledge and expertise to continue licensed duties. Overall there has been noteworthy improvement in the content of the proposed rule. However, given that Commissioner Gilinsky's proposal was made without full benefit of NRC Staff resources and for the purpose of discussion, it is believed that the detailed comments on Commissioner Gilinsky's proposal (which are contained in Attachment 1) require further NRC consideration. In particular, it is strongly believed (as described in Comment #10) that the college-level education and other training should not be specified independent of each other. There needs to be an integrated program. Without this, our concern about the consequences of a potential loss of currently qualified operators from the industry will remain as before.

Relative to the NRC's approach to upgrading operator qualifications, Commissioner Gilinsky's proposals appear to be little, if any, improvement over that in SECY-81-84. The approach still appears to be indicative of over-regulation through incorporation of excessively detailed and prescriptive requirements into federal law. I believe that the following two specifics support this position. One is the number and nature of our detailed comments appearing in Attachment 1. The other is that, after over a year of extensive study by a considerable number of diverse organizations, it still has not been possible to reach a broad, general consensus as to the appropriate statement of educational requirements. As I stated before, I believe that it would be more desirable to issue a document, not as a rule change, providing guidance in the form of a proposed regulatory guide or a consensus national standard. The INPO Training Guidelines For Non-Licensed and Licensed Operators, recently issued in official form, could form the basis for a regulatory guide. The INPO guidelines specify a significant amount of study comparable to courses offered in technology-oriented, four-year, Bachelor's Degree programs by a number of colleges. There are various ways (Comment #10.b mentions one) by which college credit could be gained for this study if such credit were deemed necessary or desirable. A rule, if one were adopted, should address only the very general requirements.

Your continuous efforts toward resolution of this important issue are very much appreciated by us and other nuclear utilities.

Very truly yours,

R. L. FERGUSON
Managing Director

Attachments: 1) Comments
2) Letter dated March 31, 1981

cc: Dr. Steven H. Hanauer, Director
Human Factors & Safety Division
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue, Room P-518
Bethesda, MD 20014

Mr. E. P. Wilkinson, President
Institute for Nuclear Power Operation

DETAILED COMMENTS

QUALIFICATION OF REACTOR OPERATORS AS PROPOSED BY NRC COMMISSIONER V. GILINSKY, MAY 1981

REFERENCES

These comments are referenced to the following documents:

1. Memo from V. Gilinsky to Chairman Hendrie, Commissioners Ahearne and Bradford, dated May 27, 1981, "Operator Qualifications and Licensing Proposed Rule (SECY 81-84)," with attachments as follows:

   a. NRC 10CFR Parts 50 and 55, "Operator Qualifications and Licensing," draft dated May 22, 1981; and

   b. Memo from V. Gilinsky to Chairman Ahearne, Commissioners Kennedy, Hendrie, Bradford, dated December 13, 1979, "Qualifications of Reactor Operators."

2. Memo from V. Gilinsky to Chairman Hendrie, Commissioners Bradford and Ahearne, dated May 27, 1981, "SECY 79-330A," with attachment as follows:

   a. NRC Staff Information Report SECY 79-330A, dated May 29, 1979, "A Statistical Profile of Licensed Operators and Senior Operators and a Statistical Profile of Commercial Airline Pilots, and Merchant Marine Engineering Personnel."

COMMENTS ON NRC 10CFR PARTS 50 AND 55, DATED MAY 22, 1981

1. Page 1, Summary, Line 4, "Initial" - The draft has a number of inconsistencies throughout as to whether the proposed changes are "the" changes or only the "initial" improvements with more to come. The industry -- and the NRC -- need to settle the question soon so adequate planning can be done.

   The other inconsistencies will not be specifically noted.

2. Page 4, Paragraph re: 10CFR55.3c - This is the first mention in the proposed rule change of the licensing of Shift Supervisors. It appears that the proposed rule change does not require any NRC examination for the Shift Supervisor license. It thus appears that the intent of having an NRC Shift Supervisor license could be more than adequately met by providing the NRC with a copy of the corporate certification made in accordance with Appendix B, Section II.D. This approach would be administratively easier for both the NRC, the utility, and the individual.

3. Page 6, last paragraph re: 10CFR55.20 - This is a long overdue change. The NRC should also take steps to see that their examinations are effective for their intended purposes. NUREG CR-1750 (page 2-182) noted that NRC examinations have in the past not had sufficient content validity.

4. Page 7, first paragraph re: 10CFR55.21 and .22 - Same comment as for Item No. 3 above. This change makes the examination process and requirements easier to understand which should lead to overall performance improvement.

5. Page 8, lines 4-8, re: Degraded Core Training - It would be desirable for the reasons noted in Item No. 4 above to consolidate all the training requirements into Sections 55.21 and .22, even at the expense of increasing the total length of the rules.

6. Page 8, paragraph re: Section 55.23 - For utilities not having their own plant specific simulators, the use of a simulator which allows adequate training and demonstration of an understanding of important operational and emergency concepts should be allowed even though there may be significant differences between the simulator and plant systems and panel layouts. Minimizing these differences is desirable but, up to a point, is not essential.

7. Page 8, paragraph re: Section 55.31(e) - Some licensed personnel will, incident to their normal duties, have sufficient contact with facility operation and administration even though they do not function as an operator or senior operator. Recommend that Line 2 of (e)(1) be revised to read ". . . of an operator or senior operator, or comparable duties, for a period of four months or longer."

   Line 4 of (e)(1) requires that the demonstration be to the Commission. This is neither necessary nor administratively practical. The words "to the Commission" should be deleted. A limited recertification should be allowed, if appropriate, in lieu of a full recertification.

   In lieu of Section (e)(2), it is believed that the following would meet regulatory needs --

   > "(e)(2) The Commission should be notified of recertifications for this purpose."

8. Page 8, last paragraph re: Section 55.31(f) - 10CFR55, Appendix A, referenced by Section 55.31(f) appears to indicate, but does not state explicitly, that "participation in a requalification program" includes taking the annual examination and, <u>if necessary</u>, participation in additional lectures or other types of training <u>where there is a need</u> to upgrade the level of knowledge.

It is further believed that the essential requirement of a requalification program is a reexamination of the material studied. The NRC should not specify how the knowledge should be gained. Individual study, with guidance and/or supervision, may be the most appropriate way to upgrade knowledge in some circumstances. Much of the academic community recognizes this fact by allowing students to challenge courses by taking examinations, even when there has been no prior formal course work. Questions missed on examinations should be reviewed, at least informally, by a knowledgeable person with the examinee.

9. Page 12, first paragraph, re: Paragraph 4.a of 10CFR55, Appendix A - Changing the primary purpose of the annual examinations to one of verifying that the operator can perform his duties is a long overdue step.

   The proposed approach of having Commission or contracted staff give the annual examination is unrealistic as the normal practice given the chronic shortage of NRC staff. The requirement should be written to have the examination given by the facility staff unless the NRC gives prior notice that it will do so. If done as proposed, late notification by the NRC that it would not give the exam might put the facility in the position of not being able to prepare an adequate exam in the limited time available.

10. Page 14, first paragraph - Indicates that training and the college level courses have been specified independently and indicates that if the required training program were sufficiently rigorous and especially if accredited by a recognized educational body, the NRC may allow substitution of elements of the training program for the proposed college level course requirements. Public comment is sought.

    These words lead to several comments:

    a. They point out the pitfalls where a process (i.e., education plus training) is specified rather than an end result (i.e., knowledge, ability, and skill). The NRC and the industry should be concentrating on identifying and having operators acquire the knowledge, abilities, and skills needed.

       The regulation should be written to allow whatever college-level academic credit that can be gained from the operator training programs to be applied against the required college credits.

    b. There is at least one process already in place for obtaining academic accreditation of operational training programs; that of the New York Regent's PONSI (Program on Non-Collegiate Sponsored Instruction). PONSI, in December 1980, educated the Consolidated Edison/Indian Point operator training program and recommended it to receive 21 semester credits toward an engineering technology degree and 3 credits toward an engineering degree.

c. It is believed that the accreditation process for training programs should be controlled by a body knowledgeable of the real needs of nuclear plants rather than by an educational institution which may have little feel as to what the legitimate needs are. Academic accreditation will also be needed for the purpose of personnel attaining the degrees which are necessary for meeting the education requirements for higher nuclear management positions (e.g., Operation Supervisor, Plant Manager).

11. Page 15, first full paragraph - See last sentence in Item No. 10.c above. ANSI/ANS 3.1 requires a number of positions, including Plant Manager and Operation Supervisor, to be filled by persons with Bachelor's Degrees.

12. Page 15, last paragraph - Plants already in operation may also have need to use personnel who have acquired much of their experience at other facilities. Disallowing experience acquired at other facilities may also serve to discriminate against individuals who might have to relocate for health (their own or their families), family (e.g., aged parents), or other valid, non-job related reason.

13. Page 16, last paragraph - Extensive study of the degree requirements previously proposed by the NRC has led to the strong conviction that a program of study oriented toward technology rather than engineering is most appropriate for the bulk of the operations personnel advancing to the SRO and Shift Supervisor positions. This is best shown by the following position/function/education relationships:

Position	Function	Education (Typical)
Scientist	Research	Advanced degree; typically Doctor level
Engineer	Design and build (e.g., nuclear plants)	Traditional B.S. Degree in engineering discipline (frequently 5-year B.S. followed by one year M.S.)
Technologist (e.g., nuclear plants)	Overall operation test and maintenance or nuclear power plant	Four-year technology oriented degree (e.g., Bach. technology or B.S. in engineering technology)
Technician	Test, maintenance and repair of specific complex equipment or system	Two-year Associate of Science Degree
Craftsman	Maintenance and repair of less complex devices and systems	Vocational school and on-the-job training

Technology programs appropriate for nuclear plant operators should cover plant behavior from an operational perspective which differs from the scientific and engineering perspectives which are also necessary, but mostly prior to plant commercial operation.

14. Page 17, first paragraph, last sentence - It is believed that a B.S. degree should not suffice for shift supervisors or SRO's unless all those technical subjects required of shift supervisors and SRO's in Appendix B have been appropriately covered.

15. Page 18, last paragraph - The number of years of prior experience stated in the proposed rule is either confusing or misleading. This is best indicated by the following tabulation:

Position Providing Experience	Amount of Experience Required to Advance	Cumulative Experience
Non-Licensed	Three years power plant including at least one year at licensed facility, with at least six months as non-licensed operator plus three months shift training with no concurrent duties.	3
Operator(RO)	Two years at NPP including one year as NPP licensed operator and one year as NPP L.O. or NPP staff engineer plus three months shift training with no concurrent duties.	5.25
Senior Operator	Five years at NPP including two years as SRO - including at least one year of control room experience as SRO at the plant plus three months shift training with no concurrent duties.	7.50
Shift Supervisor	_____	

16. Page 19, top paragraph, line 5 - Appendix B proposes at least one year of experience as a senior operator on the unit for which the license is sought. Where two or more units at a plant are substantially identical, the experience acquired at any of the units should be counted toward the experience required for each of the units. The license would still be issued for specific units at the plant. This should be equally true for each level of NRC license (i.e., Shift Supervisor - if established, Senior Operator, Operator).

17. Page 23, top paragraph (c) - For plants having similar units at a plant, the license application form should provide for simultaneously applying for a license for each unit. This will reduce the administrative effort for the NRC, the utility, and the individual.

18. Page 35, top paragraph (2) - It is not clear whether the Examination Administrator must personally administer all these tests or is responsible for their administration. The latter is the practical approach and is recommended.

19. Page 38, paragraph C.3.b - The supervisory skills listed would specifically include "how personnel react in situations of extreme and minimal stress." There is some evidence to support the belief that these two extremes play an important role in nuclear safety.

20. No specific reference in proposed rule change. For those utilities which might desire to retain Shift Technical Advisors in lieu of Shift Supervisors meeting the Appendix B educational requirements, this option should be allowed on a continuing basis until all STA's are phased out subject to the STA meeting the Shift Supervisor qualification requirements for both education and training.

21. Pages 36 - 46, Appendix B, Experience Requirements - Appendix B references experience in two different respects, that which is required to meet the experience qualification requirements and that which is allowed to equate to college level credit. The increasing use of experience and amount required, makes it necessary to have a definitive description of what counts as experience. In particular, for plants under construction, the pre-fuel load activities for which experience can be accumulated should be specified. It is recommended that these include the following:

    a. Control room and plant operations in support of the pre-operational test program;

    b. Preparation and review of plant operating, abnormal, and emergency procedures and surveillance test procedures; and

    c. Education and training leading to NRC licenses and qualification as a non-licensed operator.

    In addition, there needs to be an NRC staff administrative process whereby plants can obtain, at the time a person enters training, an NRC staff resolution as to whether certain non-specified prior experience could be counted. An unfavorable NRC decision at time of license application may create an unnecessary and difficult staffing problem for the utility.

    It is not clear whether experience acquired at another plant can count toward up to 60% of the total college credit requirement at a new plant. It should not matter where the experience is required for this purpose.

22. Pages 35 - 46, Appendix B, Education - Allowing experience to count for college credit at the rate of six semester hours per year of experience is a good approach, on an aggregate basis, for meeting the required education. It does not address the problem as to which of the technical education subject areas (math, reactor physics, chemistry, materials, thermodynamics, fluid mechanics, heat transfer, electrical theory, reactor control theory) the experience substitutes for.

    A possible solution to this problem is to recognize and state that the minimal level needed in each of these areas is covered in the operator training programs.

23. Pages 36 - 46, Appendix B, Education - Reference Comment #10A. The INPO Training Guidelines for licensed and non-licensed operators, especially with further refinements, will provide a good statement as to what reactor operations personnel should receive in both education and training. This, in turn, would provide a much more realistic basis for determining the semester hours of credit needed, both overall and in specific areas.

24. Page 4, first full paragraph, last sentence - Can an individual who was previously a licensed SRO Shift Supervisor at another plant and who is now designated as a shift supervisor at a plant under construction be considered as being a "currently designated" shift supervisor? It is believed that a significant number of individuals fall into this category and should be considered as current.

25. Pages 36 - 46, Appendix B, Experience - Provision must be made for the special circumstances faced by plants under construction relative to meeting individual experience requirements.