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NUCLEAR REGULATORY COMMISSION

10 CFR Part 55

Training and Qualifications of Civilian Nuclear Power Plant Personnel and Operators' Licenses

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission is proposing to amend its regulations to conform their literal language to the long-standing agency practice of treating the satisfactory completion of an NRC-approved program for training reactor operators as the equivalent of actual operating experience at a reactor.

DATE: Comment period expires 30 days from the publication of this notice in the Federal Register. Comments received after that date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before September 7, 1984.

ADDRESSES: Send comments to Secretary, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. ATTN:

Docketing and Service Branch. Hand deliver comments to: Room 1121, 1717 H Street, N.W., Washington, D.C. between 8:15 a.m. and 5:00 p.m.

FOR FURTHER INFORMATION CONTACT: D. Beckham, Chief, Operator Licensing Branch, Office of Nuclear Reactor Regulation, telephone (301) 492-4868, or N. Jensen, Office of General Counsel, telephone (202) 634-3224, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

SUPPLEMENTARY INFORMATION:

Section 107 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2137), requires the Nuclear Regulatory Commission to prescribe uniform conditions for licensing individuals as operators of production and utilization facilities and to determine the qualifications of these individuals and to issue licenses to such individuals. The regulations implementing these requirements are set out in Part 55 of Chapter 1, Title 10 of the Code of Federal Regulations. To assist licensees and others, the Commission has also issued regulatory guides and generic letters which provide guidance on acceptable methods of meeting these regulatory requirements.

The Commission has become increasingly aware of the need to update its operator licensing regulations and related regulatory guides to clarify the important role

which simulators play in the training and testing of reactor operators. The Commission's effort to update the regulations received additional impetus in 1983 from the enactment by Congress of the Nuclear Waste Policy Act of 1982, P.L. 97-425. Section 306 of that statute (42 U.S.C. 10226, 96 Stat. 2201 at 2262-2263), directed the Commission, inter alia, "to promulgate regulations, or other appropriate Commission regulatory guidance, for the training and qualifications of civilian power plant operators, supervisors, technicians and other appropriate operating personnel [which shall] establish simulator training requirements for applicants for civilian nuclear power plant operator licenses...; [and] requirements for operating tests at civilian nuclear power plant simulators, [etc.]."

Section 55.25 of the Commission's regulations, issued in 1963 (28 FR 3197), provides that the Commission may administer a simulated operating test to an applicant for a license to operate a reactor, prior to initial criticality, if certain conditions are met, including the requirement that the applicant "has had extensive actual operating experience at a comparable reactor" (10 CFR § 55.25(b)). Beginning in 1967, the Atomic Energy Commission and Nuclear Regulatory Commission staffs have taken the position that training on a reactor simulator can constitute "actual operating experience" for purposes of satisfying that requirement. This has long been a matter of public record,

memorialized in Regulatory Guides and ANSI standards. (See, for example, NUREG-0094, "NRC Operator Licensing Guide, A Guide for the Licensing of Facility Operators, Including Senior Operators," published July, 1976, at p. 13.)[1]

During that long period, the language of the regulation in question has never been updated to reflect the increasing use of simulator training. This was an omission, in part attributable to the absence of any controversy over the desirability of simulator training for reactor operators as a means of assuring the safety of reactor operations.

It has recently been brought to the Commission's attention that the apparent inconsistency between the plain language of 10 CFR § 55.25(b) and the agency's long-standing application of that regulation has created the potential for uncertainty about licenses issued in accordance with that agency practice. The Commission believes that clarity would be served by a rule change. The proposed rule would state explicitly that in accordance with long-standing agency practice, completion of an NRC-approved "cold license" (i.e., a license issued prior to initial criticality of the facility) training program utilizing simulator training satisfies the applicable requirements of 10 CFR § 55.25(b).

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[1]NUREG-series documents and Regulatory Guides are available for viewing, or copying for a fee, at the NRC Public Document Room, 1717 H Street, N.W., Washington, D.C.

Conforming changes in 10 CFR §§ 55.11(b) and 55.23 would make clear that simulated operating tests, as well as actual operating tests, satisfy the regulatory requirements in question.

It should be noted that before the NRC staff approves any cold license training program, it prepares a detailed Safety Evaluation Report, reviewing the individual program to assure the adequacy not only of its simulator training component, but also of those parts of the program which involve operation of a research reactor by applicants with no previous nuclear experience, and their participatory observation of the day-to-day operation of a nuclear power plant.

In conforming the letter of the Commission's regulations to well-established and well-publicized practice going back some 17 years, the Commission is in no sense altering the standards it applies in evaluating applicants for operator licenses. Accordingly, the proposed rule change would effect no diminution in the protection of public health and safety. Moreover, the long-standing practice of relying on simulator training is amply supported by available literature on the use of simulators in military and civilian applications.[2] From all these standpoints, the

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[2]See, for example: J. Orlansky and J. String: Cost

[Footnote Continued]

Commission believes that its proposed rule is fully consistent with the Commission's obligation, under the Atomic Energy Act of 1954, to assure adequate protection of public health and safety.

The Commission wishes to stress that the proposed rule changes are limited in their scope, being confined to conforming the letter of the regulations to the practice of utilizing NRC-approved training programs in lieu of actual operating experience at nuclear reactors, and of conducting operator examinations on simulators. The proposed rule changes do not constitute the across-the-board reexamination which Section 306 of the Nuclear Waste Policy Act of 1982 mandated in the area of operator training and the use of simulators. That effort is presently underway as a matter of high priority, and is expected to be completed in the near future.

[Footnote Continued]

Effectiveness of Flight Simulation for Military Training, Institute for Defense Analysis, Report P1275 (1977), Alexandria, VA; 14 CFR 121 and 14 CFR 61 (FAA Regulations); W. Bickley: Formulation and Evaluation of a Method for Predicting Hands-On Training Following Simulator Training, 7th DOD Symposium on Psychology in the Military (1980), U.S. Air Force Academy, CO; E. Hinchley, et al., The Candu Man-Machine Interface and Simulator Training, Report IAEA-CN-42/146 (1982), Chalk River, Ontario; Simulators for Mariner Training and Licensing, Technical Report CG-D-7-83 (1982), United States Coast Guard, Washington, DC; and Federal Register Vol. 48, No. 153, pp. 35920-35964, Proposed Rules Department of Transportation - Coast Guard 46 CFR Parts 10, 35, 157, 175, 185, 186 and 187.

In light of the foregoing, the Commission has directed that operator licenses already issued in reliance on the staff practice described above shall remain valid. The Commission has further directed that the staff shall, during the pendency of this rulemaking, grant exemptions from the requirements of 10 CFR § 55.25(b) to those individual applicants for operator licenses who have completed an NRC-approved cold license training program but have not yet received licenses. Applicants need not file requests for such exemptions.

To be approved by the NRC, a cold license training program must include training in nuclear fundamentals, including ten startups of a nuclear reactor; training as a participatory observer on shift at an operating reactor comparable to that at which the applicant will be employed; simulator training; and training on the actual system design of the plant at which the operator will be employed. Where an applicant has completed a cold license training program which did not include all elements required for an NRC-approved cold license program, an exemption must be requested specifically. Such requests will be evaluated on a case-by-case basis.

ENVIRONMENTAL IMPACT: CATEGORICAL EXCLUSION

The NRC has determined that this proposed regulation is the type of action described in categorical exclusion 10 CFR 51.22(c)(1). Therefore neither an environmental impact statement nor an environmental assessment has been prepared for this proposed regulation.

PAPERWORK REDUCTION ACT STATEMENT

This proposed rule contains no information collection requirements and therefore is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

REGULATORY FLEXIBILITY CERTIFICATION

In accordance with the Regulatory Flexibility Act of 1980, (5 U.S.C. 605(b)), the Commission certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. This proposed rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the

Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121.

LIST OF SUBJECTS IN 10 CFR PART 55

Manpower training programs, Nuclear power plants and reactors, Penalty, Reporting and recordkeeping requirements.

For the reasons set forth above, and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Nuclear Waste Policy Act of 1982, and 5 U.S.C. § 553, the NRC is proposing to adopt the following amendments to 10 CFR Part 55.

PART 55 - OPERATORS' LICENSES

1. The authority citation for Part 55 is revised to read as follows:

* * * *

AUTHORITY: Secs. 107, 161, 182 (Sec. 55.31(b), 234, 68 Stat. 939, 948, as amended, 83 Stat. 444, as amended (42 U.S.C. 2137, 2201, 2282); secs. 201, 202, 88 Stat. 1242, as amended, 1244 (42 U.S.C. 5841, 5842).

Section 55.61 also issued under secs. 186, 187, 68 Stat. 955 (42 U.S.C. 2236, 2237). Sections 55.59, 55.81 and 55.83 also issued under sec. 306, Pub.L. 97-425, 96 Stat. 2262 (42 U.S.C. 10226)

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273) §§ 55.3, 55.21, 55.49, 55.53 and 55.71(d) are issued under sec. 1611, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 55.23, 55.25 and 55.53(f) are issued under sec. 161o, 88 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In § 55.11, paragraph (b) is revised to read as follows:

§ 55.11 Requirements for the approval of application.

* * * *

(b) The applicant has passed a written examination and operating test or simulated operating test as may be prescribed by the Commission to determine that the applicant has learned to operate and, in the case of a senior operator, to operate and to direct the licensed activities of licensed operators in a competent and safe manner.

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3. In § 55.23, the introductory text is revised to read as follows:

§ 55.23 Scope of operator and senior operator operating tests.

The operating tests or simulated operating tests administered to applicants for operator and senior operator licenses are generally similar in scope. The test, to the extent applicable to the facility, requires the applicant to demonstrate an understanding of:

* * * *

4. In § 55.25, paragraph (b) is revised to read as follows:

§ 55.25 Administration of operating test prior to initial criticality.

* * * *

(b) The applicant has had extensive actual operating experience at a comparable reactor or has satisfactorily completed an NRC-approved license training program which includes simulator training.

SEPARATE VIEWS OF FORMER COMMISSIONER GILINSKY ON PROPOSED AMENDMENTS TO 10 CFR PART 55

The Commission is being more than a little disingenuous in implying that its principal concern is "to update its operator licensing regulations and related regulatory guides to clarify the increasingly important role which simulators play in the training and testing of reactor operators." Moreover, it is preposterous for the Commission to claim

that the Congress and the public have long been aware that the staff's licensing practice -- in ignoring experience requirements for operators of new plants -- is at odds with the regulations.[3*] The fact of the matter is that the Commission itself did not know this until a few weeks ago. Even the senior staff was unaware of it.

Unfortunately, in its scramble to patch up its operator licensing system, the Commission is throwing the baby out with the bath water. The healthy effect of the existing rule is to require that the operating crew that brings a new reactor into operation have a certain amount of actual operating experience. This is especially important for the shift supervisors. Once the plant has been successfully operated, and procedures verified, the rule's experience requirement no longer applies, and additional new operators can be qualified on simulators. Had that regulation been observed, the Commission would not now be in the awkward position of having to decide on the licensing of plants --

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[3]The regulations provide that the "Commission may administer a simulated operating test to an applicant for a license to operate a reactor prior to its initial criticality if . . .," among other things, the ". . . applicant has had extensive actual operating experience at a comparable reactor." 10 CFR 55.25(b).

*This comment pertains to a version of this rule change which was revised after Commissioner Gilinsky left the Commission.

such as Diablo Canyon, Grand Gulf, and Shoreham -- none of whose operators have any actual experience operating comparable reactors at full power. I do not believe any other country with a major nuclear program would have allowed this situation to arise.

Faced with possible delays in reactor startups if it complied with the regulation, the Commission is rationalizing its disregard for the operator experience requirement on the grounds that simulator training (as little as 80 hours) is so effective that it is no longer essential for a new crew to have actual operating experience. This is simply wrong. While they are an extremely valuable training device, simulators do not provide the equivalent of acutal operating experience. And while simulators have become more sophisticated over the years, so have plants; they are now more complex and more demanding. (In the case of the above-named plants, the operators were not even trained and qualified on a simulator built to model the plant they would operate.) Moreover, reactor simulators can simulate only a fraction of the nuclear plant operations that need to be performed. Even normal startups and shutdowns can only be partially simulated. It is worth pointing out that aircraft simulators are far more faithful than reactor simulators but that many hours of actual flight time are still needed to

qualify for a pilot's license. No one would dream of allowing an aircraft to take off with a new crew that had only had simulator training.

It needs to be understood also that power plant simulators are designed primarily to provide training for the reactor operator whose job is to manipulate controls. The shift supervisor, by contrast, is responsible for managing the entire plant, not just the control room. Managing an entire plant's startup, operation, and shutdown cannot be learned by practicing only on a simulator. Unlike the reactor operator, the shift supervisor also has the authority to change accident recovery procedures or to disable safety equipment if he judges this necessary. The experience needed to make these important judgements is not developed on a simulator. Nor do simulators provide experience on performing critical safety reviews of maintenance and testing to assure that operating limits are adhered to and transients are avoided. Improper maintenance and testing are the most frequent cause of plant accidents. Thus, in waiving the experience requirement for the entire operating crew the Commission has overlooked the special importance of experience for shift supervisors.

Contrary to what the Commission claims, the sense of the rule has largely been complied with until the last few

years -- in that, as long as a fair number of operators at a plant had acutal operating experience, the purpose of the rule was satisfied. It is only recently that the Commission has allowed completely green crews to start up plants without requiring adequate compensatory measure, in violation not only of the literal wording of the regulation but also of good safety practices.

Instead of expunging the requirement for experience from its rules in an overeager attempt to accommodate the small number of power reactors scheduled for licensing in the near future, the Commission should have taken an approach that would have ensured that future reactors start up with an adequate number of experienced operators. For power reactors which are about to go into operation, the sensible and responsible course is not to grant a blanket exemption for the regulation's requirement for experience for the entire operating crew, but to ensure that there is at least one supervisor on each shift who has had actual operating experience.

In sum, the existing rule should not be changed without ensuring that adequate provision is made for operator experience on every shift.

Dated at Washington, D.C. this 3rd day of August, 1984.

For the Nuclear Regulatory Commission.

Samuel J. Chilk
Secretary of the Commission.