August 14, 2000

Mr. David A. Lochbaum
Nuclear Safety Engineer
Union of Concerned Scientists
1616 P St. NW
Washington, DC 20036-1495

Dear Mr. Lochbaum:

On behalf of the General Counsel, I am responding to your letter of May 19, 2000, requesting, pursuant to 10 CFR § 50.3, that the General Counsel provide the Union of Concerned Scientists (UCS) with interpretations of Paragraphs II.C.5 and III.H of 10 CFR Part 50, Appendix R, with respect to fire brigade training and response. The General Counsel exercises the authority under Section 50.3 to provide formal interpretations of the Commissions regulations (codified at 10 CFR Part 8) very sparingly and only in instances involving major policy or legal questions. After reviewing the three areas for which UCS requests a formal interpretation, we believe that they raise issues primarily of a technical nature. Accordingly, we do not believe it is necessary or appropriate to provide a formal interpretation of Paragraphs II.C.5 and III.H to 10 CFR Part 50, Appendix R.

We have forwarded your letter to the NRC Staff in the Office of Nuclear Reactor Regulation, and they have provided the enclosed response regarding how they assess compliance with the three provisions about which you have inquired. If you wish to discuss the Staff's response in greater detail, please call Mr. Edward A. Connell in the Office of Nuclear Reactor Regulation at 301-415-2838.

Sincerely,

/RA/

Joseph R. Gray
Associate General Counsel
for Licensing and Regulation

Enclosure: As stated

ATTACHMENT

RESPONSE TO
UCS QUESTIONS ON FIRE BRIGADES AT NUCLEAR POWER PLANTS

This is a response to three issues raised by the Union of Concerned Scientists (UCS) on the requirements of Paragraphs II.C.5 and III.H of 10 CFR Part 50, Appendix R, with respect to fire brigade training and response.

It should be noted that Paragraphs II.C and III.H constitute binding requirements only for those nuclear power plants licensed to operate prior to January 1, 1979, whose fire brigade program had not been reviewed and accepted by the NRC staff as satisfying the provisions of Appendix A to Branch Technical Position APCSB 9.5-1 ("BTP 9.5-1"), which was published in August 1976. See 10 CFR 50.48(b). Since most nuclear power plants received their operating licenses before January 1, 1979, and were reviewed against BTP 9.5-1, and found to have adequate fire brigade programs, the provisions of 10 CFR Part 50, Appendix R, cited in UCS' letter are not directly applicable to most nuclear power plants. Appendix A to BTP 9.5-1 provided guidelines acceptable to the NRC for implementing General Design Criterion (GDC) 3, Fire Protection, of Appendix A to 10 CFR Part 50, for those plants to which it was applicable. Appendix R to 10 CFR Part 50 established certain fire protection features required to satisfy certain generic issues related to compliance with GDC 3 for plants licensed prior to January 1, 1979. The guidance in Appendix A to BTP 9.5-1 differs to some extent from the criteria specified in 10 CFR Part 50, Appendix R[1]. For nuclear power plants licensed after January 1, 1979, the provisions of Appendix R to 10 CFR Part 50 also do not apply unless the provisions of their licenses make Appendix R applicable. These plants are required to comply with GDC 3, and complete the fire protection modifications necessary to satisfy GDC 3 in accordance with the provisions of their licenses as specified in 10 CFR 50.48 (e). See 10 CFR 50.48(b), and (e).

UCS Question 1:

> **Paragraph II.C.5 of Appendix R requires that "A site fire brigade shall be established, trained, and equipped and shall be on site at all times." The phrase 'on site' implies a readiness to respond in a timely manner, however some plant sites encompass facilities several miles apart. Also, Fire Brigade members have other duties that may require entry into reactor containment at power, dressing in anti-contamination clothing or going into other difficult to access areas. In these cases, the Fire Brigade members are on site but not able to respond in a timely manner. Please provide an interpretation as to the maximum time period from when the Fire Brigade is notified until the Fire Brigade assembles at a staging area.**

[1]For example, with respect to fire brigade staffing, Branch Technical Position APCSB 9.5-1 (BTP 9.5-1) does not specify a minimum number of fire brigade members nor does it specify that each member receive an annual physical examination. By comparison, Paragraph III.H of 10 CFR Part 50, Appendix R, specifies that the minimum number of fire brigade members on each shift is five, and that each member receive an annual physical examination.

Response:

Neither 10 CFR § 50.48 nor 10 CFR Part 50, Appendix R establish specific time limits for a fire brigade's response to a fire. The words in Paragraph II.C.5 of Appendix R which state that the fire brigade "shall be on site at all times," was not in the proposed rule[2] but was added without explanation in the final rule. The statements of consideration (SOCs) for the proposed and final Fire Protection Rule (45 FR 36082, May 29, 1980; 45 FR 76602, November 19, 1980, respectively) do not disclose any specific Commission guidance on response times.

The NRC staff has not established specific guidance for the maximum allowable time period from when the fire brigade is notified until the fire brigade assembles at a staging area. NRC staff guidance related to fire brigade response (Reference 5) states that the fire brigade leader and all brigade members should immediately respond to the fire area. The NRC staff also concluded that it would be reasonable to allow a limited amount of sharing of plant personnel in satisfying the requirements of plant operation, security, and fire protection (Reference 4). However, NRC staff guidance (Reference 3) also states that the responsibilities of fire brigade members under normal plant conditions should not conflict with their responsibilities during a fire emergency. In short, Paragraph IIC.5 implies that a Fire Brigade should be available for a timely response, but the actual time for a response has not been specified in either NRC regulations or NRC staff guidance.

The NRC staff believes that the response of the fire brigade has been and continues to be included in the NRC's reactor oversight program. Fire brigade response is typically evaluated by the NRC during an on-site inspection, via an unannounced drill, in a plant area important to safety, that contains significant fire hazards. The NRC inspector evaluates the timeliness of the brigade response, and the capability of the brigade personnel to initiate an effective fire attack upon their arrival. Specific guidance for NRC inspectors to assess the fire brigade performance is provided in the NRC Inspection Manual. Specific findings related to fire brigade performance identified during the pilot fire protection functional inspection program were provided to the Commission in SECY-98-187, "Interim Status Report - Fire Protection Functional Inspection Program," dated August 3, 1998.

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[2]Paragraph II.A.2.d. of the proposed rule provided:

> A site fire brigade shall be established, trained and equipped.

45 FR 36082 (May 29, 1980).

UCS Question 2:

> **Paragraph III.H of Appendix R requires that "The brigade leader shall be competent to assess the potential safety consequences of a fire and advise control room personnel. Such competence by the brigade leader may be evidenced by possession of an operator's license or equivalent knowledge of plant safety-related systems." For those plants not using any licensed operators on the Fire Brigade, please provide an interpretation of "equivalent knowledge of plant safety-related systems."**

Response:

Neither Section 50.48 nor 10 CFR Part 50, Appendix R, contain specific criteria for evaluating whether a fire brigade leader has knowledge of plant safety-related systems equivalent to that of a person possessing an operator's license under Paragraph III.H of Appendix R. The SOC for the proposed rule simply repeated the proposed regulatory requirement that the brigade leader be "competent to assess potential safety consequences of a fire and advise control room personnel. 45 FR at 36085, first column. The final rule did not address this subject specifically (although it did discuss the general subject of training, see response to UCS Question 3 below). We note that Paragraph III.H does *not* specifically require possession of either an operator's license or equivalent knowledge of the plant's safety-related systems. Rather, the regulation establishes a performance-oriented requirement that the brigade leader be "competent to assess the potential safety consequences of a fire...." Thus, the regulation permits a licensee to demonstrate the competency of a brigade leader in ways other than possession of an operators license or equivalent knowledge.[3]

The NRC staff has not established specific criteria defining "equivalent knowledge of plant safety-related systems." NRC staff guidance addressing the qualification and training of fire brigade personnel recommends that the training include a detailed review of plant fire fighting procedures (Reference 3). The guidance addressing plant fire fighting procedures specifies that strategies be developed for all safety related areas and areas presenting a fire hazard to safety related equipment. These strategies include the designation of plant systems that should be managed to reduce the damage potential during a fire, designation of vital heat sensitive system components that should be kept cool while fighting a fire, and operations requiring control room and shift engineer coordination or authorization.

The NRC staff believes that the fire brigade leader's competency is also included in NRC's reactor oversight program. In assessing the performance of the fire brigade (which includes the performance of the fire brigade leader) during a drill, the NRC staff evaluates the

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[3]By expressing the regulatory requirement in performance-oriented language, but also specifying a specific approach (*i.e.*, possession of an operators license) that is deemed to satisfy the performance-oriented requirement, Paragraph III.H provides licensees with regulatory flexibility as well as regulatory certainty for those licensees who do not wish to develop plant-specific approaches to demonstrating fire brigade leader competency.

implementation of these elements of the licensee's program by reviewing the plant's fire brigade training program and selected individual training records to assess the qualifications of the brigade members, such as the fire brigade leader. As noted in the previous answer, specific guidance related to this attribute is provided to inspectors in the NRC Inspection Manual. Based on recent inspections, the NRC staff has generally found licensee performance in this area to be acceptable.

UCS Question 3:

> **Paragraph III.H of Appendix R requires that "The brigade leader and at least two brigade members shall have sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown capability." Please provide an interpretation of "sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown capability."**

Response:

Neither Section 50.48 nor 10 CFR Part 50, Appendix R, establish specific criteria for determining what is "sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown capability" under Paragraph III.H of Appendix R. However, detailed requirements with respect to the content and frequency of training are contained in Paragraph III.I, "Fire Brigade Training." Subparagraph III.I.1, "Instruction," states that the initial classroom instruction shall include:

> (2) Identification of the type and location of fire hazards and associated types of fire hazards that could occur in the plant.
>
> (3) The toxic and corrosive characteristics of expected products of combustion.
>
> * * *
>
> (5) The proper use of available fire fighting equipment and the correct method of fighting each type of fire. The types of fires covered should include fires in energized electrical equipment, fires in cables and cable trays, hydrogen fires, fires involving flammable and combustible liquids or hazardous process chemicals, fires resulting from construction or modification (welding), and record file fires.
>
> * * *
>
> (7) The proper method for fighting fires inside buildings and confined spaces.
>
> * * *
>
> (10) Review of the latest plant modifications and corresponding changes in fire fighting plans.

Furthermore, at the end of the list of training subjects, Paragraph III.I states:

> Note: Items (9) and (10) may deleted from the training of no more than two of the non-operations personnel who may be assigned to the fire brigade.

Because Section III.H requires a minimum of five individuals in a fire brigade and refers to training of the fire brigade leader and "at least two brigade members,"coupled with the note in Paragraph III.I indicating that the topics for training listed in that paragraph may be deleted for "no more than two of the non-operations personnel" on the fire brigade, the training requirements in Paragraph III.I are viewed as necessary and sufficient to satisfy the Paragraph III.H requirements for training of the fire brigade leader and at least two other members.[4]

In addition to the NRC staff guidance referenced in the response to Question 2 above concerning fire brigade personnel knowledge of plant systems, NRC staff guidance in Reference 3 states that fire brigade training and plant fire fighting procedures should include the proper use of available fire fighting equipment and the correct method of fighting each type of fire, and which fire extinguishing agents are best suited for controlling the fires associated with the combustible loadings present in the plant.

The NRC staff typically evaluates this aspect of the fire brigade program during a drill and through the review of the licensee's training program as discussed above. In addition, the NRC inspectors typically interview selected fire brigade personnel during an inspection to assess their knowledge on the use of the fire fighting equipment and suppression agents available at the plant. This guidance is also included in the NRC Inspection Manual. As noted above based on recent NRC inspections, licensee performance in this area has generally been found to be acceptable.

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[4]This is not inconsistent with the Commission's discussion of this requirement in the SOC for the proposed rule:

> I. Fire Brigade Training.
>
> This item requires training be provided for each individual brigade member and each shift brigade as a team in order to ensure the necessary high degree of proficiency required of a fire brigade during emergency response to an actual fire. The type and frequency of such training (classroom instruction, hands on practice sessions, and simulated drills) is specified.

45 FR at 36065 (first column). The SOC for the final rule responded to comments submitted by the public that the requirements in this regard were too detailed and prescriptive. 45 FR at 76606-76607.

Nuclear Regulatory Commission Guidance Documents Related to the Establishment of a Fire Brigade at Commercial Nuclear Power Plants

1. Branch Technical Position APCSB 9.5-1 “Guidelines for Fire Protection for Nuclear Power Plants,” dated May 1, 1976.

2. Appendix A to Branch Technical Position APCSB 9.5-1 “Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976,” dated February 24, 1977.

3. Generic Letter 77-002, “Fire Protection Functional Responsibilities,” dated August 8, 1977.

4. Letter from Stello, V., NRR to Bixel, D., Consumers Power, “Manpower Requirements for Operating Reactors,” dated June 8, 1978.

5. Letter from Eisenhut, D., NRR to Bixel, D., Consumers Power, “Minimum Fire Brigade Shift Size,” dated September 7, 1979.

6. Branch Technical Position CMEB 9.5.1 “Guidelines for Fire Protection for Nuclear Power Plants,” dated July 1981.

7. Information Notice 91-77, “Shift Staffing at Nuclear Power Plants,” dated November 26, 1991.

8. Information Notice 95-48, “Results of Shift Staffing Study,” dated October 10, 1995.

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Joseph Gray
Associate General Counsel
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Enclosure: As stated

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