QUESTION 441.1

FSAR Figure 13.2-1, Revision 1, shows that 16 people will be licensed prior to fuel loading. Provide the number of people who will be trained in your licensed operator training program. This number should not only meet Technical Specification requirements but should also allow for examination contingencies and avoidance of planned overtime during the startup phase. We recommend the training of at least 25 people.

RESPONSE:

Figure 13.2-1 shows the minimum numbers in each position. The cold license training program has been layed out to handle 45 license candidates. Training is not planned on an overtime basis.

QUESTION 441.2

What are your plans for additional training in the event that fuel loading is substantially delayed? An acceptable method of maintaining the required level of training if fuel loading is significantly delayed would be to initiate the requalification program.

RESPONSE:

Requalification training is intended to commence 4 1/2 months after the completion of the cold license training program as presently scheduled. In the event fuel loading is delayed significantly, one alternative would be to move the requalification program up to commence within 3 months of the end of the cold license training program, or reschedule a Condensed Form or Refresher Training.

QUESTION 441.3

FSAR Figure 13.2-1, Revision 1, indicates that a Pre-license Refresher Course will be conducted six months prior to fuel loading. We consider it highly desirable that license applicants participate in a short simulator course immediately prior to the examinations. Is it PP&L's intention to provide such a course?

RESPONSE:

The Refresher Course commences 5 months prior to license examinations and is composed of a 4 week session and 3 week session. The license candidates will be divided into 6 groups; the first group starts the 4 week session 5 months prior to examination with the 6th group finishing the 4 week session 2 months prior to examination. The 6 groups then rotate through the 3 week session such that the longest any group will be away from the Simulator will be 6 weeks before the examination is administered.

QUESTION 441.4

State the methods used to evaluate the training program effectiveness for Phase I, Phase II, Phase V, and Phase VI training.

RESPONSE:

The effectiveness of Phase I thru Phase V has been documented thoroughly via written exam, as well as, formal certification exams administered at the conclusion of vendor supplied courses approved by the NRC.

The performance of the license candidates in succeeding courses further attest to the effectiveness of prior training.

Phase VI training will be evaluated by both oral and written exams, as well as demonstrated on the job performance.

QUESTION 441.5

The BWR simulator course is taught at the General Electric Training Center in Morris, Illinois. Our position is that individuals seeking licenses for the Susquehanna Plant will have to participate in training programs that utilize a Nuclenet simulator, if such a simulator is operational. Provide a commitment that simulator training will be conducted at a Nuclenet simulator, if operational prior to fuel loading, and identify the simulator to be used for this training.

RESPONSE:

It is PP&L's position that training for NRC license candidates will be conducted on the Susquehanna BWR Simulator which uses computer generated graphic displays in the control room if it is available prior to fuel loading. It is expected that the Susquehanna Simulator will be ready-for-training during the Refresher Training Program and thus will provide the necessary operator familiarization.

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QUESTION 441.6

The Susquehanna Fire Safety Training program is unacceptable. Provide a detailed description of the fire protection training and retraining for the critical plant staff and replacement personnel which meets the following acceptance criteria:

A. Fire Brigade Training

(1) Instruction

(a) Instruction in all the topics listed in (d) below should be administered to individuals prior to assignment as a fire brigade member.

(b) Refresher instruction should be provided to all fire brigade members on a regularly scheduled basis of not less than four sessions a year. The sessions shall be repeated at a frequency of not more than 2 years.

(c) The instruction shall be provided by qualified individuals, knowledgeable and experienced in fighting the types of fires that could occur in the plant and in using the types of equipment available in a nuclear power plant. Members of the Fire Protection Staff and fire brigade leaders may also conduct this training.

(d) The scope of the instruction should include the following items:

(i) An identification of the fire hazards and associated types of fires that could occur in the plant, and an identification of the location of the hazards, including areas where breathing apparatus is required, regardless of the size of the fire.

(ii) Identification of the location of installed and portable fire fighting equipment in each area, and familiarization with layout of the plant including access and egress routes to each area.

(iii) The proper use of available equipment, and the correct method of fighting each type of fire. The types of fires covered should include electrical fires, fires in cables and cable trays, hydrogen fires, flammable liquids, waste/debris fires, and record file fires.

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(iv) Indoctrination in the plant fire fighting plan, with coverage of each individual's responsibilities, including changes thereto.

(v) The proper use of breathing equipment, communication, lighting and portable ventilation equipment.

(vi) A detailed review of the procedures with particular emphasis on what equipment must be used in particular areas.

(vii) A review of latest modifications, additions or changes to the facility, procedures, fire fighting equipment or fire fighting plan.

(viii) The proper method of fighting fires inside building and tunnels.

(ix) In addition, special instruction should be provided for fire brigade leaders in directing and coordinating fire fighting activities.

(2) Practice

Practice sessions should be held for fire brigade members on the proper method of fighting various type of fires. These sessions should provide brigade members with practice in extinguishing actual fires, except in the case of energized cables. Practice sessions should be conducted at facilities sufficiently remote from the nuclear power plant so as not to endanger safety-related equipment. These practice sessions should be provided at regular intervals, but not to exceed one (1) year.

Practice sessions should also be conducted that require the brigade members to don protective equipment, including emergency breathing apparatus. These practice sessions need not include fire fighting. These practice sessions should be provided at regular intervals, but not to exceed one (1) year.

(3) Drills

Fire brigade drills should be performed in the plant so that a fire brigade can practice as a team. Drills should include the following.

(a) The simulated use of equipment for the various situations and types of fires which could reasonably occur in each safety-related area.

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(b) Conformance, where possible, to the established plant fire fighting plans.

(c) Operating fire fighting equipment where practical. This would also include self-contained breathing apparatus, communication equipment and portable and/or installed ventilation equipment.

(d) The drills should be performed at regular intervals, but not to exceed three months for each fire brigade. The minimum number of fire brigade drills conducted within a period of three months shall be equal to the number of operating shifts at the station. Each individual member of the fire brigades shall participate in at least two drills per year. At least one drill per year for each operating shift shall be unannounced.

(e) Periodically (at least annually), these drills should include off-site fire department personnel. These drills should also conform with the facility plan for coordination with off-site fire departments.

(f) The drills should be preplanned to establish the training objectives of the drills. The drills should be critiqued to determine how well the training objectives have been met. At a minimum, the critique should assess:

(i) Fire alarm effectiveness, response time, selection, placement and use of equipment.

(ii) The leader's direction of the effort and each member's response.

B. Other Station Employees

(1) Instruction

(a) Instruction shall be provided for all employees. It shall be repeated on an annual basis. The instruction shall be given, as appropriate, on (i) the fire protection plan (ii) evacuation routes and (iii) procedure for reporting a fire.

(b) Instruction shall be provided for security personnel that addresses (i) entry procedures for outside fire departments (ii) crowd control for people exiting the station, and (iii) procedures for reporting potential fire hazards observed when touring the facility.

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(c) Instruction should be provided to all shift personnel that complements that provided members of the fire brigade.

(d) Instruction shall be provided to a temporary employees, so that they are familiar with (i) evacuation signals, (ii) evacuation routes and (iii) procedure for reporting fires.

(2) Drills

All employees should participate in an annual evacuation drill.

C. Fire Protection Staff

All employees should participate in an annual evacuation drill.

(1) design and maintenance of fire detection, suppression and extinguishing systems.

(2) fire prevention techniques and procedures,

(3) training and manual fire fighting techniques and procedures for plant personnel and the fire brigade.

D. Off-Site Fire Departments

Training for the off-site fire departments include courses in basic radiation principles and practices, typical radiation hazards that may be encountered when fighting fires and related procedures.

E. Construction Personnel

Training for construction personnel clearance should include instruction in reporting fires, alarm responses and evacuation routes.

RESPONSE:

The response to this question is provided in Section 1.4 of the Susquehanna SES Fire Protection Review Report.

QUESTION 441.7

Revise paragraph 13.2.2.1.3 in the FSAR to indicate the following:

(1) An individual who prepares, administers, or grades a written examination need not take the examination. a maximum of three licensed personnel may be exempted under this condition.

(2) Retraining lectures may use training aids such as video tapes and films in lieu of an instructor. However, no more than 50% of the lectures may be supplemented by use of training aids.

RESPONSE:

FSAR subsection has been revised accordingly.

QUESTION 441.8

Oral exams are acceptable for determining whether or not an individual resumes licensed duties after receiving a grade of 70% or less on an annual exam. However, the individual must remain on a Performance Review Program until a grade of 70% or better is obtained on a written examination.

RESPONSE:

A revision to FSAR subsection 13.2.2.1.4 has been made to reflect the necessity of passing an annual written examination with a grade >70% prior to being removed from the PERFORMANCE Review Program.

QUESTION 441.9

As a minimum, refresher instruction on administrative, radiation protection, emergency, and security procedures should be provided to all non-licensed personnel.

RESPONSE:

Subsection 13.2.2.2 of the FSAR has been revised to reflect the desirability of providing refresher instruction or administrative, radiation protection, emergency, and security procedures to all non-licensed personnel.

QUESTION 441.10

The Susquehanna Fire Safety Training program remains unacceptable. The PP&L response meets some, but not all of the acceptance criteria required by Question 441.6. As an example, using the numbering scheme of Question 441.6, the NRC acceptance criteria and the NRC position is as follows:

NRC Acceptance Criteria A.1.d(i)

An identification of the fire hazards and associated types of fires that could occur in the plant, and an identification of the location of the hazards, including areas where breathing apparatus is required, regardless of the size of the fire.

NRC Position A.(1)a.

Identification of fire hazards.

Many other instances of oversimplification and material deletion exist in the applicants response. PP&L is required to meet the acceptance criteria of first-Round Question 441.6 or provide adequate justification for deviations. Additionally, the applicant must include the response to this question as part of FSAR Section 13.2. Also, PP&L must commit to not using Shift Supervisor as the individual responsible for directing the actual fire fighting forces.

RESPONSE:

Please see the revised response to Question 441.6.

QUESTION 441.11

SSES must commit to following the guidance of Section 5.5.2 of ANSI N18.1-1971 in the training conducted for replacement personnel.

RESPONSE:

Replacement Training programs have been defined as being the individual's Cost Area Head's responsibility per Nuclear Department Instruction (NDI) QA 4.1.2. The requirements of this NDI include the requirements of ANSI 18.1-1971.

QUESTION 441.12

The staff requires that the applicant develop a program to ensure that all operating personnel are trained in the use of installed plant systems to control or mitigate an accident in which the core is severely damaged. The training program shall be completed prior to Full Power Operation and shall include the following topics:

(1) Incore Instrumentation

(a) Use of fixed or movable incore detectors to determine extent of core damage and geometry changes.

(b) Use of thermocouples in determining peak temperatures; methods for extended range readings; methods for direct readings at terminal junctions.

(2) Excore Nuclear Instrumentation (NIS)

(a) Use of NIS for determination of void information; void location basis for NIS response as a function of core temperatures and density changes.

(3) Vital Instrumentation

(a) Instrumentation response in an accident environment; failure sequence (time to failure, method of failure); indication reliability (actual vs. indicated level),

(b) Alternative methods for measuring flows, pressures, levels, and temperatures.

(i) Determination of pressurizer level if all level transmitters fail.

(ii) Determination of letdown flow with a clogged filter (low flow)

(iii) Determination of other Reactor Coolant System parameters if the primary method of measurement has failed.

(4) Primary Chemistry

(a) Expected chemistry results with severe core damage; consequences of transferring small

quantities of liquid outside containment; importance of using leak tight systems.

(b) Expected isotopic breakdown for core damage; for clad damage.

(c) Corrosion effects of extended immersion in primary water; time to failure.

(5) Radiation Monitoring

(a) Response to Process and Area Monitors to severe damages; behavior of detectors when saturated; method for detecting radiation readings by direct measurement at detector output (overanged detector); expected accuracy of detectors at different locations; use of detectors to determine extent of core damage.

(b) Methods of determining dose rate inside containment for measurements taken outside containment.

(6) Gas Generation

(a) Methods of H_2 generation during an accident; other sources of gas (Xe, Kr); techniques for venting or disposal of non-condensables.

(b) H_2 flammability and explosive limit, sources of O_2 in containment or Reactor Coolant System.

The operating personnel who receive this training must include the Station Superintendent, his assistant, Shift Technical Advisors, licensed operators, and all other members of the operating staff whose skills would be utilized during degraded core conditions. Chemistry, Health Physics, and ICS personnel should receive training in those areas applicable to their duties.

RESPONSE:

The requested information was provided in response to TMI related requirements transmitted to the NRC on January 22, 1981. Refer to PLA-614, N. W. Curtis to B. J. Youngblood.

QUESTION 441.13

(1) Training instructors who teach systems, integrated responses, transients and simulator courses shall successfully complete a SRO examination.

(2) Instructors shall attend appropriate retraining programs that address, as a minimum, current operating history, problems and changes to procedures and administrative limitations. In the event an instructor is a licensed SRO, his retraining shall be the SRO requalification program.

RESPONSE:

See Subsection 18.1.

QUESTION 441.14

(1) Applicants for SRO license shall have 4 years of responsible power plant experience, of which at least 2 years shall be nuclear power plant experience (including 6 months at the specific plant) and no more than 2 years shall be academic or related technical training.

(2) Certifications that operator license applicants have learned to operate the controls shall be signed by the highest level of corporate management for plant operation.

(3) Revise training programs to include training in heat transfer, fluid flow, thermodynamics, and plant transients.

RESPONSE:

The above has been addressed in response to TMI related requirements transmitted to the NRC on January 22, 1981. Refer to PLA-614, N. W. Curtis to B. J. Youngblood.

QUESTION 441.15

(1) Applicants for operator licenses will be required to grant permission to the NRC to inform their facility management regarding the results of examinations.

(2) Content of the licensed operator requalification program shall be modified to include instruction in heat transfer, fluid flow, thermodynamics, and mitigation of accidents involving a degraded core.

(3) The criteria for requiring a licensed individual to participant in accelerated requalification shall be modified to be consistent with the new passing grade for issuance of a license.

(4) Requalification programs shall be modified to require specific reactivity control manipulations. Normal control manipulations, such as plant or reactor start-ups, must be performed. Control manipulations during abnormal or emergency operations shall be walked through and evaluated by a member of the training staff. An appropriate simulator may be used to satisfy the requirements for control manipulations.

RESPONSE:

See Subsections 18.1 and 18.2.