



U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

OFFICE OF NUCLEAR REACTOR REGULATION

13.2.2 TRAINING FOR NON-LICENSED PLANT STAFF

REVIEW RESPONSIBILITIES

Primary - ~~Licensee Qualifications Branch (LQB)~~ Human Factors Assessment Branch (HHFB)¹

Secondary - None

I. AREAS OF REVIEW

The applicant's training program for the non-licensed plant staff, as described in the safety analysis report (SAR), is reviewed. This section of the SAR should contain the description and scheduling of the training and re-training programs for the non-licensed plant staff. The program descriptions should include the following elements which are reviewed hereunder²:

~~For the Preliminary Safety Analysis Report (PSAR)~~ For construction permit (CP) and combined license (COL) applications, during the early stages of plant design or construction³:

1. The applicant's commitment to meet the guidelines of ANSI/ANS-3.1⁴ Regulatory Guide 1.8⁵ for non-licensed personnel.
2. The proposed subject matter of each course, the duration of the course (approximate number of weeks in full-time attendance), the organization teaching the course or supervising instruction, and the position titles for which the course is given.
3. The description of ~~r~~Reactor⁶ operations experience training by nuclear power plant simulator that complies with Regulatory Guide 1.149⁷ or by assignment to a similar plant, including length of time (weeks), and identity of simulator and/or similar plant(s) where operations experience training is to be provided/obtained⁸.

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USNRC STANDARD REVIEW PLAN

Standard review plans are prepared for the guidance of the Office of Nuclear Reactor Regulation staff responsible for the review of applications to construct and operate nuclear power plants. These documents are made available to the public as part of the Commission's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Standard review plans are not substitutes for regulatory guides or the Commission's regulations and compliance with them is not required. The standard review plan sections are keyed to the Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants. Not all sections of the Standard Format have a corresponding review plan.

Published standard review plans will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience.

Comments and suggestions for improvement will be considered and should be sent to the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Washington, D.C. 20555.

4. A commitment to conduct an onsite formal training program and on-the-job training such that the entire plant staff will be qualified before the initial fuel loading.
5. A commitment to meet the requirements of training for ~~shift technical~~ ~~advisors~~ individuals providing engineering and accident assessment expertise on shift⁹.
6. A commitment to meet the requirements of training for mitigating core damage.
7. A commitment to conduct an initial fire protection training program including:
 - a. Periodic drills during construction.
 - b. Provisions for indoctrination of construction personnel, as necessary.

~~The initial training shall be completed~~ commitment is reviewed to verify that initial training will be completed¹⁰ prior to receipt of fuel at the site.

8. A description of the provisions for training employees and other non-employees whose assistance may be needed in a radiological emergency, as required by 10 CFR Part 50, Appendix E, Section II.F.¹¹
89. A description of the training program for the individual(s) responsible for the formulation and assurance of the implementation of the fire protection program. The training program ~~should address~~ description is reviewed to verify that it adequately addresses¹² those items listed in Branch Technical Position CMEBSPLB 9.5-1 (Reference 11)¹³ attached to Standard Review Plan (SRP),¹⁴ Section 9.5.1.
910. The applicant ~~shall describe his~~ plans for conducting a position task analysis for all operating personnel, in which are reviewed to verify that the tasks performed by the persons in each position are defined, and that the training, in conjunction with education and experience, is identified to provide assurance that the tasks can be effectively carried out.¹⁵
1011. The proposed means for evaluating the training program effectiveness for all employees.

This program description should also include a ~~chart to show the~~ schedule of each part of the training program for each position or organizational unit identified in SAR Section 13.1.2. The schedule is reviewed to verify that ~~time should be~~ it is specified relative to expected fuel loading, reflects expected completion of required initial training prior to fuel load, and ~~should also display~~ adequately covers the preoperational test period.¹⁶

~~In the Final Safety Analysis Report (FSAR)~~ For operating licenses (OLs) and COLs, during the later stages of plant design, construction, and licensing¹⁷:

1. A detailed description of the training programs for non-licensed personnel to meet the requirements guidelines¹⁸ of ANSI/ANS-3.1¹⁹ Regulatory Guide 1.8²⁰.

2. A detailed description of the training program for ~~shift technical advisor~~ individuals providing engineering and accident assessment expertise on shift²¹.
3. A detailed description of the training program for mitigating core damage (13.2.2.4).
4. A description of training and exercises, via periodic drills, of radiation emergency plans required by 10 CFR Part 50, Appendix E, Section IV.F. The training program is verified to include initial training and periodic retraining for categories of employees and non-employees whose assistance may be needed in the event of a radiological emergency.²²
45. ~~OL and COL applicants, who have~~having previously provided, ~~during the CP stage, a description of their plans for conducting a position task analysis for all operating personnel, in which the tasks performed by the person in each position are defined, and the training, in conjunction with education and experience, identified to provide assurance that the tasks can be effectively carried out, should provide~~ shall describe a description of the results of the task analysis and the program as ~~completed~~implemented. The description is reviewed to verify that the program has been appropriately implemented. ~~All other OL applicants shall describe their plans for conducting the program.~~²³²⁴
56. The subject matter of each course, including a syllabus or equivalent course description, the duration of the course (approximate number of weeks in full time attendance), the organization teaching the course or supervising instruction, and the position titles for which the course is given. The program ~~should~~is verified to²⁵ distinguish between classroom training and on-the-job training, before and after the initial fuel loading.
67. The description of ~~r~~Reactor²⁶ operations experience training by nuclear power plant simulator or by assignment to a similar plant ~~that complies~~is reviewed with respect to Regulatory Guide 1.149 ~~or assignment to a similar plant~~ or with respect to the adequacy of the experience gained at the similar plant(s) based upon its similarity and relevance, including the length of time (weeks), and identity of simulator and/or similar plant(s) where operations experience training was obtained²⁷²⁸.
78. Any difference in the training programs for individuals based on the extent of previous nuclear power plant experience. The structuring of training based on ~~e~~Experience groups ~~should include~~is verified to appropriately address the following categories of personnel experience²⁹:
 - a. Individuals with no previous experience.
 - b. Individuals who have had nuclear experience at facilities not subject to licensing.
 - c. Individuals who have had experience at comparable nuclear facilities.

89. A detailed description of the fire protection training and retraining for the initial plant staff and replacement personnel. The program ~~shall describe~~ is verified to adequately address³⁰:
- The training planned for each member of the fire brigade,
 - The type and frequency of periodic firefighting drills,
 - The training provided for all remaining staff members, including personnel responsible for maintenance and inspection of fire protection equipment,
 - The indoctrination and training provided for people temporarily assigned onsite duties during shutdown and maintenance outages, particularly those allowed unescorted access,
 - The training provided for the fire protection staff members. The program description ~~shall~~ is verified to³¹ include the course of instruction, the number of hours of each course, and the organization conducting the training.
910. Means for evaluating the training program effectiveness for each employee in accordance with a systems approach to training.³²

The program description section should also include a ~~chart to show the~~ schedule of each part of the training program for each position or organizational unit identified in FSAR³³ Section 13.1.2. The schedule is reviewed to verify that ~~time scale should be~~ it is specified relative to expected fuel loading, that it appropriately reflects the initial training required prior to fuel load with provisions to address maintaining the currency of qualifications and training for fuel load, and that it ~~should also display~~ adequately covers the preoperational test period.³⁴

The description ~~should~~ is verified to delineate clearly the extent to which the training program has been accomplished at the approximate time to submittal of the FSAR³⁵. Contingency plans for additional training ~~should~~ are also verified to³⁶ be described in the event fuel loading is significantly delayed from the date indicated in the FSAR³⁷.

The FSAR ~~should describe the~~ applicant's plans for retraining of plant non-licensed personnel are also reviewed and verified to adequately. ~~The FSAR should also~~ identify the additional position categories on the plant staff for which retraining will be provided, and ~~should describe~~ the nature, scope, and frequency of such retraining (13.2.2.2).³⁸

Review Interfaces³⁹

The HHFB performs the following related reviews under the SRP sections indicated:

- Reviews several matters related to the capabilities of the applicant's personnel to discharge assigned responsibilities and perform effectively (e.g., organizational structure, personnel qualifications and experience, procedure adequacy, organizational provisions for independent reviews and verifications, use of human factors engineering principles,

etc.) under SRP Sections 13.1.1 through 13.1.3, 13.2.1, 13.4, 13.5.2, and 18.0 (proposed) through 18.2. HHFB will also coordinate with its review under SRP Section 13.2.1 to support an overall verification that all cognizant plant staff are adequately trained with respect to mitigating core damage.^{40 41}

2. Reviews the adequacy of the integration of human factors engineering principles into the applicant's design, construction, and operations activities as part of its primary review responsibility for SRP Section 18.0 (proposed).⁴²

In addition, the ~~LQB~~ HHFB⁴³ will coordinate other branches⁴⁴ evaluations and reviews that interface with the overall review of training requirements for non-licensed plant staff as follows:

1. The ~~Chemical Engineering Branch (CMEB)~~ Plant Systems Branch (SPLB)⁴⁵ for fire protection training as part of its primary review responsibility for SRP Section 9.5.1.

~~Operator Licensing Branch (OLB) for training for mitigating core damage as part of its primary review responsibility for SRP Section 13.2.1.~~⁴⁶

2. Emergency Preparedness ~~Licensing and Radiation Protection Branch (EPLB)~~ (PERB)⁴⁷ for training during emergencies as part of its primary review responsibility for SRP Section 13.3. The PERB also performs the detailed reviews of the radiological protection training and retraining programs as part of its primary review responsibility for SRP Section 12.5.⁴⁸
3. ~~Physical Security Licensing Branch (PSLB)~~ Safeguards Branch (PSGB)⁴⁹ for training for personnel controlling secured areas as part of its primary review responsibility for SRP Section 13.6.

For those areas of review identified above as being ~~reviewed as part of the primary review responsibility of other branches~~ under other SRP sections, the acceptance criteria necessary for the review and their methods of application are contained in the referenced SRP sections ~~of the corresponding primary branch.~~⁵⁰

II. ACCEPTANCE CRITERIA

The SAR should demonstrate that the training provided, or to be provided, for each position on the plant staff will be adequate to provide assurance that all plant staff personnel training requirements will be met at the time needed, i.e., prior to preoperational tests, prior to fuel loading, or prior to appointment or reappointment to the position.

Staff acceptance criteria in this subsection are designed to provide reasonable assurance that an applicant in compliance with these criteria will meet the relevant requirements of the following regulations:

- A. 10 CFR Part 19, ~~K~~§19.12⁵¹ as it relates to training ~~appropriately informing and instructing personnel in the and necessary health protection measures associated with exposure to~~ regarding the presence of radioactive materials ~~and radiation when entering a~~

~~restricted area,~~ health protection problems associated with exposure thereto, means and responsibilities for protection of workers therefrom, and the availability upon request of radiation exposure reports. The personnel that must be so informed and instructed are all individuals who are likely to receive in a year an occupational dose greater than 1 mSv (100 mrem).⁵²

- B. 10 CFR Part 26, §26.21 and §26.22 as they relate to providing personnel training in conjunction with the fitness-for-duty program.⁵³
- BC. 10 CFR Part 50, ~~§~~§50.34 (a & b) as it ~~relates~~ they relate⁵⁴ to details of training given to non-licensed plant personnel and a schedule for such training.
- CD. 10 CFR Part 50, ~~§~~§50.40(b) as it relates to training being an integral part of personnel technical qualifications which contributes to the finding that the applicant is technically qualified to engage in licensing activities.
- E. 10 CFR Part 50, §50.120 and 10 CFR Part 52, §52.78 as they relate to derivation of training programs from a systems approach to training.⁵⁵
- F. 10 CFR Part 50, Appendix E, Sections II.F and IV.F as they relate to establishing emergency preparedness training and retraining programs covering employees and other non-employees whose assistance may be needed in a radiological emergency.⁵⁶

Specific criteria necessary to meet the relevant requirements of ~~10 CFR 19.12, 26.21, 26.22, §50.34 (a & b), and §50.40(b), 50.120, and 52.78~~⁵⁷ are as follows:

- 1. The non-licensed plant personnel ~~shall~~ should⁵⁸ be trained in accordance with the guidance of ~~Task Action Plan Item I.A.2.2 of NUREG-0660 and the following:~~⁵⁹
 - a. ~~ANSI/ANS-3.1 and/or ANS N18.1 sections on, Section 5.1, "General Aspects"; Section 5.3, "Training of Personnel Not Requiring NRC Licenses"; Section 5.4, "General Employee Training"; and Section 5.5, "Retraining..." as endorsed by Regulatory Guide 1.8.~~^{60,61}
- 2. Training programs shall be developed, established, implemented, and maintained using a systems approach to training as required by 10 CFR 52.78 and 10 CFR 50.120 and as defined in 10 CFR 55.4.⁶² Training program development will be evaluated by the staff using the guidance contained in NUREG-0711 (Reference 12) whereas training program content and effectiveness will be evaluated using NUREG-1220 (Reference 14).⁶³
- 23. Simulators used for training non-licensed plant personnel should meet the guidelines of Regulatory Guide 1.149.
- 4. Personnel to be granted access to protected areas or to emergency operations facilities shall be trained to ensure understanding of information related to the fitness-for-duty program including the associated policies and procedures, the hazards and effects associated with drugs and alcohol, available employee assistance programs,

responsibilities under the policy, and the consequences that may result from lack of adherence to the policy, as required in 10 CFR 26.21. Managers, supervisors, and persons assigned to escort duties must be trained to ensure they understand the roles and responsibilities of personnel involved in the fitness-for-duty program, techniques for recognizing drugs and indications of drug possession or use, techniques for behavioral observation, and procedures for initiating corrective actions under the program, as required in 10 CFR 26.22.⁶⁴

5. Training programs related to radiological emergencies shall meet the requirements of 10 CFR 50, Appendix E, Section II.F or IV.F, as applicable. The detailed evaluation criteria and methods for the verification of overall compliance with these requirements are contained in SRP Section 13.3.⁶⁵
36. Formal segments of the initial training program should be substantially completed when the preoperational test program begins.
47. The number of people for whom training is planned prior to ~~criticality~~fuel load⁶⁶ should be sufficient to ~~assure~~ensure that applicable technical specification conditions with respect to the number of plant personnel can be met from the time of initial fuel loading of the first unit, with due allowance given for contingencies and the need to avoid planned overtime for supervisory personnel during the startup phase.
58. Refresher training for non-licensed personnel should be periodic and not less frequent than every 2 years and should include, at a minimum, refresher instruction on administrative, radiation protection, emergency, and security procedures.
9. The detailed guidance and criteria for review of radiological protection training and retraining programs, including the evaluation of their adequacy in informing and instructing personnel pursuant to the requirements of 10 CFR 19.12, is described in SRP Section 12.5.⁶⁷
610. Fire Protection Training⁶⁸

A. Fire Brigade Training

The fire brigade training program shall in general follow the guidelines of Branch Technical Position (BTP) ~~CMEBSPLB~~⁶⁹ 9.5-1⁷⁰ to ensure that the capability to fight potential fires is established and maintained. The program shall consist of an initial classroom instruction program followed by periodic classroom instruction, firefighting practice, and fire drills as follows:

i. Instruction

- a. The initial classroom instruction shall include:

- (1) Indoctrination of the plant firefighting plan with specific identification of each individual's responsibilities.

- (2) Identification of the type and location of fire hazards and associated types of fires that could occur in the plant.
- (3) The toxic and corrosive characteristics of expected products of combustion.
- (4) Identification of the location of firefighting equipment for each fire area and familiarization with the layout of the plant, including access and egress routes to each area.
- (5) The proper use of available firefighting 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 modifications (welding), and record file fires.
- (6) The proper use of communication, lighting, ventilation, and emergency breathing equipment.
- (7) The proper method for fighting fires inside buildings and confined spaces.
- (8) The direction and coordination of the firefighting activities (fire brigade leaders only).
- (9) Detailed review of firefighting strategies and procedures.
- (10) Review of the latest plant modifications and corresponding changes in firefighting plans.

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

- b. The instruction shall be provided by qualified individuals who are knowledgeable, experienced, and suitably trained in fighting the types of fires that could occur in the plant and in using the types of equipment available in the nuclear power plant.
- c. Instruction shall be provided to all fire brigade members and fire brigade leaders.
- d. Regular planned meetings shall be held at least every 3 months for all brigade members to review changes in the fire protection program and other subjects as necessary.

- e. Periodic refresher training sessions shall be held to repeat the classroom instruction program for all brigade members over a two-year period. These sessions may be concurrent with the regular planned meetings.

- ii. Practice

Practice sessions shall be held for each shift fire brigade on the proper method of fighting the various types of fires that could occur in a nuclear power plant. These sessions shall provide brigade members with experience in actual fire extinguishment and the use of emergency breathing apparatus under strenuous conditions encountered in firefighting. These practice sessions shall be provided at least once per year for each fire brigade member.

- iii. Drills

- a. Fire brigade drills shall be performed in the plant so that the fire brigade can practice as a team.
- b. Drills shall be performed at regular intervals not to exceed 3 months for each shift fire brigade. Each fire brigade member should participate in each drill, but must participate in at least two drills per year.

A sufficient number of these drills, but not less than one for each shift fire brigade per year, shall be unannounced to determine the firefighting readiness of the plant fire brigade, brigade leader, and fire protection systems and equipment. Persons planning and authorizing an unannounced drill shall ensure that the responding shift fire brigade members are not aware that a drill is being planned until it is begun. Unannounced drills shall not be scheduled closer than four weeks.

At least one drill per year shall be performed on a "back shift" for each shift fire brigade.

- c. The drills shall be pre-planned to establish the training objectives of the drill and shall be critiqued to determine how well the training objectives have been met.

Unannounced drills shall be planned and critiqued by members of the management staff responsible for plant safety and fire protection. Performance deficiencies of a fire brigade or of individual fire brigade members shall be remedied by scheduling additional training for the brigade or members. Unsatisfactory drill performance shall be followed by a repeat drill within 30 days.

- d. At 3-year intervals, a randomly selected unannounced drill shall be critiqued by qualified individuals independent of the licensee's staff. A written report from such individuals shall be available for NRC review.⁷¹

- e. Drills shall, as a minimum, include the following:
 - (1) Assessment of fire alarm effectiveness, time required to notify and assemble the fire brigade, and selection, placement and use of equipment and firefighting strategies.
 - (2) Assessment of each brigade member's knowledge of his or her role in the firefighting strategy for the area assumed to contain the fire. Assessment of the brigade member's conformance with established plant firefighting procedures and use of firefighting equipment, including self-contained emergency breathing apparatus, communication equipment, and ventilation equipment, to the extent practicable.
 - (3) The simulated use of firefighting equipment required to cope with the situation and type of fire selected for the drill. The area and type of fire chosen for the drill should differ from those used in the previous drill so that brigade members are trained in fighting fires in various plant areas. The situation selected should simulate the size and arrangement of a fire that could reasonably occur in the area selected, allowing for fire development due to the time required to respond, to obtain equipment, and organize for the fire, assuming the loss of automatic suppression capability.
 - (4) Assessment of the brigade leader's direction of the firefighting effort as to thoroughness, accuracy, and effectiveness.

iv. Records

Individual records of training provided to each fire brigade member, including drill critiques, shall be maintained for at least 3 years to ensure that each member receives training in all parts of the training program. These records of training shall be available for NRC review. Retraining or broadened training for firefighting within buildings shall be scheduled for all those brigade members whose performance records show deficiencies.

B. Other Station Employees

i. Instruction

- a. Instruction shall be provided for all employees once a year. It shall be repeated on an annual basis. The instruction shall be given, as appropriate, on (a) the fire protection plan (b) the evacuation routes, and (c) the procedure for reporting a fire.
- b. Instruction shall be provided for security personnel that addresses (a) entry procedures for outside fire departments, (b) crowd control for people

exiting the station, and (c) procedures for reporting potential fire hazards observed when touring the facility.

- c. Instruction should be provided to all shift personnel that complements that provided members of the fire brigade.
- d. Instruction shall be provided to temporary employees so that they are familiar with (a) evacuation signals, (b) evacuation routes and (c) the procedure for reporting fires.

ii. Drills

All employees should participate in an annual evacuation drill.

C. Fire Protection Staff

Training for the fire protection staff members shall include courses in:

- i. Design and maintenance of fire detection, suppression and extinguishing systems,
- ii. Fire prevention techniques and procedures,
- iii. Training and manual firefighting techniques and procedures for plant personnel and the fire brigade.

611. Shift Technical Advisor (STA) Engineering and Accident Assessment Expertise on Shift

~~Each licensee provides an STA to the shift supervisor that should be trained in accordance with~~ The shift technical advisor (STA) role may be used to satisfy requirements to provide engineering and accident assessment expertise on shift or alternatively, a combined senior reactor operator (SRO)/STA position may be used. To meet the requirements of TMI Action Plan Item I.A.1.1 of NUREG-0737 (Reference 13) and the Commission Policy Statement on Engineering Expertise on Shift (Reference 16) as transmitted to licensees and applicants by Generic Letter 86-04 (Reference 15), the engineering- and accident assessment-related training and qualifications should meet the requirements of TMI Action Plan Item I.A.1.1 of NUREG-0737 and the following:⁷²

A. General Technical Education

The technical education of the STA should include basic subjects in engineering and science. The purpose of this education is to permit the STA to advise the shift supervisor and licensed operators in assessing unusual plant situations not explicitly covered in the current operator training and/or plant procedures. The following is a tentative list of areas of knowledge that are considered to be desirable:

Mathematics, including elementary calculus

Reactor physics, chemistry, and materials
Reactor thermodynamics, fluid mechanics, and heat transfer
Electrical engineering, including reactor control theory

These areas of knowledge should be taught at the college level and would be equivalent to about 60 semester hours. Although a college graduate engineer would have many of these subjects and more that would not be essential, some engineers might be deficient in a few of these specific areas, e.g., reactor physics.

Educational alternatives for the combined SRO/STA option, as delineated in the Commission Policy Statement on Engineering Expertise on Shift, are as follows:

- i. Bachelor's degree in engineering from an accredited institution;
- ii. Professional Engineer's license obtained by the successful completion of the PE examination;
- iii. Bachelor's degree in engineering technology from an accredited institution, including course work in the physical, mathematical, or engineering sciences; or
- iv. Bachelor's degree in a physical sciences from an accredited institution, including course work in the physical, mathematical, or engineering sciences.⁷³

B. Training

i. Reactor Operations Training

The STA individuals providing engineering and accident assessment expertise on shift⁷⁴ should be trained in the details of the design, function, arrangement, and operation of the plant systems. This training is necessary to ~~assure~~ ensure that the meaning and significance of instrument readings and the effect of control actions are known. A graduate engineer not previously licensed or trained as an operator or senior operator would require additional training to fulfill these requirements.⁷⁵
~~characteristic.~~

ii. Transient and Accident Response Training

In addition to the training in normal operations, anticipated transients, and accidents presently required of operators and senior operators, the ~~shift technical advisor~~ individuals providing engineering and accident assessment expertise on shift⁷⁶ should be trained to recognize and react to a wide range of unusual situations including multiple equipment failures and operator errors. This training should not be limited to written procedures or specific accident scenarios, but should include the recognition of symptoms of accident conditions such as complex transient responses or inadequate core cooling and possible

corrective actions. The purpose of this training is to broaden the ability for prompt recognition of and response to unusual events, not to modify the instinctive, rapid procedural response to transients and accidents provided by reactor operators. The training is required in recognition of the fact that real accidents inherently are initiated and accompanied by unusual and unexpected events. The training is also to emphasize the need to focus on the essential parameters that indicate the status of the core and the primary coolant boundary. This additional training would take up to a year to accomplish for a person not already experienced in nuclear plant transient and accident analysis or evaluation. Both inexperienced graduate engineers and currently licensed operators would require additional training to fulfill this characteristic these requirements.⁷⁷

C. Absences from STA Duties

~~People~~ Individuals designated to provide engineering and accident assessment expertise on shift⁷⁸ that do have not actively performing these STA functions for a period of 30 days or longer, at least three shifts per quarter,⁷⁹ shall, prior to assuming responsibilities of the position, as a minimum, receive training sufficient to ensure he is awareness of facility and procedural changes that occurred during his absence.⁸⁰

712. Training For Mitigating Core Damage

To meet TMI Action Plan Item II.B.4 of NUREG-0737 applicants are required to develop and implement a training program to teach the use of installed equipment and systems to control or mitigate accidents in which the core is severely damaged. ~~They must then implement the training program.~~⁸¹

Shift technical advisors and operating personnel from the plant manager through the operations chain to the licensed operators shall receive all the training indicated below.

Managers and technicians in the instrumentation and control (I&C), health physics, and chemistry departments shall receive training commensurate with their responsibilities.

A. Incore Instrumentation

- i. Use of fixed or movable incore detectors to determine the extent of core damage and geometry changes.
- ii. Use of thermocouples in determining peak temperatures; methods for extended range readings; methods for direct readings at terminal junctions.
- iii. Methods for calling up (printing) incore data from the plant computer.

B. Excore Nuclear Instrumentation (NIS)

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

C. Vital Instrumentation

- i. Instrumentation response in an accident environment; failure sequence (time to failure, method of failure); indication reliability (actual versus indicated level).
- ii. Alternative methods for measuring flows, pressures, levels, and temperatures.
 - a. Determination of pressurizer level if all level transmitters fail.
 - b. Determination of letdown flow with a clogged filter (low flow).
 - c. Determination of other reactor coolant system parameters if the primary methods of measurement has failed.

D. Primary Chemistry

- i. Expected chemistry results with severe core damage; consequences of transferring small quantities of liquid outside containment; importance of using leak-tight systems.
- ii. Expected isotopic breakdown for core damage; for clad damage.
- iii. Corrosion effects of extended immersion in primary water; time to failure.

E. Radiation Monitoring

- i. Response of process and area monitors to severe damages; behavior of detectors when saturated; method for detecting radiation readings by direct measurement at detector output (overranged detector); expected accuracy of detectors at different locations; use of detectors to determine extent of core damage.
- ii. Methods of determining dose rate inside containment from measurements taken outside containment.

F. Gas Generation

- i. Methods of hydrogen generation during an accident; other sources of gas (xenon, krypton); techniques for venting or disposal of non-condensibles.
- ii. Hydrogen flammability and explosive limit, sources of oxygen in containment or reactor coolant system.

The technical rationale for application of these acceptance criteria to reviewing non-licensed plant staff training is discussed in the following paragraphs:⁸³

1. Compliance with the relevant requirements of 10 CFR 19.12 requires that the applicant provide, to all individuals who are likely to receive in a year an occupational dose in excess of 1 mSv (100 mrem), information and instruction on the health effects of radiation and means to minimize exposure.

The non-licensed staff training program established by the applicant provides the means to train individuals in precautions and procedures to minimize radiation exposure.

Meeting these requirements provides assurance that the applicant will provide employees with the information needed to minimize radiation exposure.⁸⁴

2. Compliance with the relevant requirements of 10 CFR 26.21 and 26.22 requires that the applicant provide initial and refresher training to ensure that plant staff understand the policy, procedures, and responsibilities of the applicant's fitness-for-duty program.

The non-licensed staff training program established by the applicant provides the means to train individuals in the policies, procedures and responsibilities of the fitness-for-duty program. The fitness-for-duty program provides a means for ensuring that plant staff members understand their roles and responsibilities in having only fit individuals present and involved in plant activities.

Meeting these requirements provides assurance that only trained and fit individuals will be on site and involved in plant activities.⁸⁵

3. Compliance with the relevant requirements of 10 CFR 50.34 (a & b) requires that the applicant submit a PSAR and an FSAR, with a minimum of the information as described in the requirements. Required information includes plans for training personnel and personnel qualification requirements.

The non-licensed staff training program established by the applicant provides the means to train individuals in the knowledge, skills, and abilities needed to perform required tasks, particularly those tasks associated with fire brigades or radiological response teams, where the skills are not used on a day-to-day basis.

Meeting these requirements provides assurance that trained personnel will be available to perform needed tasks to ensure safe plant operation and response to emergency situations.⁸⁶

4. Compliance with the relevant requirements of 10 CFR 50.40(b) requires that the applicant be technically qualified to engage in activities associated with the design, construction, and operation of a nuclear power plant in accordance with the regulations in 10 CFR 50.

The non-licensed staff training program established by the applicant provides the means to train individuals in the knowledge, skills, and abilities needed to perform required tasks, particularly those tasks associated with fire brigades or radiological response teams, where the skills are not used on a day-to-day basis. The applicant's plan and program for training of non-licensed staff provides insight into the applicant's approach to safe plant operation. This information contributes to the determination that an applicant is technically qualified by ensuring that appropriate considerations were used in the establishment of general training and qualification requirements for all non-licensed personnel.

Meeting these requirements provides assurance that the applicant is technically qualified to engage in the proposed activities and has established the necessary training program to safely operate the proposed facility.⁸⁷

5. Compliance with the requirements of 10 CFR 50.120 and 10 CFR 52.78 require that training programs for specified categories of personnel, including several non-licensed personnel categories, be established, implemented, and maintained using a systems approach to training as defined in 10 CFR 55.4.

The non-licensed staff training program established by the applicant provides the means to train individuals in the knowledge, skills, and abilities needed to perform required tasks.

Meeting these requirements provides assurance that trained personnel will be available to perform needed tasks to ensure safe plant operation and appropriate response to abnormal or emergency situations.⁸⁸

III. REVIEW PROCEDURES

Preparation for the review of Section 13.2 of the SAR should include familiarization with the documents listed in subsection H.1VI⁸⁹ of this SRP section. ~~The reviewer may use training course descriptions obtained independently from vendors.~~⁹⁰

The review procedure for this SRP section consists of:

1. A careful examination of the information submitted to determine that all subject matter identified in subsection I.1⁹¹ above has been addressed, that the information submitted supports the reviews and verifications described therein,⁹² and
2. A detailed comparison of the information with the acceptance criteria of subsection II above.

The reviewer should ensure that, whenever the applicant has committed to follow the position of a regulatory guide, industry standard or other reference document, the specific revision being referred to is identified. Similarly, whenever the reviewer is using a position in a reference document as a basis for acceptability, the revision being used should be identified.

The reviewer should also ensure that the applicant has committed to a reasonable schedule for the training programs that relates to the fuel loading date. The reviewer may consult with CMEBSPLB⁹³ in the area of fire protection training and with OLB in the area of training for mitigating core damage.⁹⁴

The reviewer then determines, based upon the foregoing, the overall acceptability of the applicant's plant staff training plans.

For standard design certification reviews under 10 CFR Part 52, the procedures above should be followed, as modified by the procedures in SRP Section 14.3 (proposed), to verify that the design set forth in the standard safety analysis report, including inspections, tests, analysis, and acceptance criteria (ITAAC), site interface requirements and combined license action items, meet the acceptance criteria given in subsection II. SRP Section 14.3 (proposed) contains procedures for the review of certified design material (CDM) for the standard design, including the site parameters, interface criteria, and ITAAC.⁹⁵

IV. EVALUATION FINDINGS

The reviewer should verify that the information presented and his that the⁹⁶ review support an evaluation findings statement of the following type, to be used in the staff's safety evaluation report:

1. ~~For a construction permit:~~

~~The staff concludes that the training for non-licensed plant staff personnel is acceptable and meets the requirements of 10 CFR Part 19, §19.12; Part 50, § 50.34 (a & b) and Part 50, §50.40(b). This conclusion is based on the following:~~

~~The applicant has described in the PSAR, in accordance with the requirements of 10 CFR Part 50, §50.34(a)(6), a preliminary plan for training of non-licensed plant personnel:~~

~~All non-licensed plant personnel will be trained in accordance with the requirements and guidance of ANSI/ANS 3.1 as endorsed by Regulatory Guide 1.8. In addition, specialized training will be given to fire protection⁹⁷ personnel, to the shift technical advisors, and to senior plant operating personnel for mitigating core damage.~~

~~Simulators used in the training program should meet the guidelines of Regulatory Guide 1.149.~~

~~This preliminary plan and commitment provides an acceptable basis for finding that, insofar as the plans for training of non-licensed personnel is concerned, the applicant meets the technical qualification requirements of 10 CFR Part 50, §50.40(b) of the Commission's regulations.~~

2. ~~For an operating license:~~⁹⁸

The staff concludes that the training for non-licensed plant staff personnel is acceptable and meets the requirements of 10 CFR ~~Part 19, §19.12; 26.21 and 26.22; Part 50, §50.34 (a & or b); and Part 50, §50.40(b); and 50.120.~~⁹⁹ This conclusion is based on the following:

(Provide the following finding only for a construction permit) The applicant has described in the SAR, in accordance with the requirements of 10 CFR 50.34(a)(6), an acceptable preliminary plan for training of non-licensed plant personnel and appropriate commitments with respect to the plan such that it has been demonstrated to satisfy relevant requirements as discussed further below.¹⁰⁰

(Provide the following finding only for operating license or combined license) The applicant has described in the FSAR¹⁰¹, in accordance with the requirements of 10 CFR ~~Part 50, §50.34(b)(7),~~ the details of its training program for non-licensed personnel including appropriate commitments with respect to the program, the training given to non-licensed plant personnel, and a schedule for that training as related to the applicant's presently-scheduled fuel load date¹⁰².

Training and retraining of non-licensed personnel meets the requirements of ~~ANSI/ANS 3.1 as endorsed by~~ guidance of¹⁰³ Regulatory Guide 1.8.

The applicant meets the requirements of 10 CFR 19.12 by inclusion of provisions in the training program for informing and instructing appropriate personnel regarding radioactive materials and radiation, health protection problems associated with exposure thereto, means and responsibilities for protection of workers therefrom, and the availability upon request of radiation exposure reports. The findings regarding radiation protection training and retraining programs that address these issues in greater detail are presented in Section 12.5 of this report.¹⁰⁴

Personnel will be trained to ensure that they are adequately informed regarding the fitness-for-duty policy whereas supervisors and persons assigned to escort duties will be trained to ensure that they understand the roles, responsibilities, and procedures for the fitness-for-duty program and to ensure that they will possess knowledge and skills necessary for recognition of behavioral changes, drugs, and/or indications of the use of drugs as required by 10 CFR 26.21 and 26.22.¹⁰⁵

The training program that the applicant has committed to establish, implement, and maintain will utilize a systems approach to training as required by 10 CFR 50.120 and as defined in 10 CFR 55.4. The training program was evaluated using staff review criteria for performance-based training programs and is acceptable.¹⁰⁶

Fire brigade personnel will undergo classroom instruction, firefighting practice and periodic fire drills.

~~Shift technical advisers~~ The applicant meets the Commission's Policy regarding engineering expertise on shift and the personnel providing the required

engineering expertise¹⁰⁷ will receive training in the areas of mathematics, reactor physics, thermodynamics, controls, reactor operations, and transient and accident response.

Simulators used in the training program ~~should~~¹⁰⁸ meet the guidelines of Regulatory Guide 1.149.

~~Shift technical advisors and other~~ Appropriate operating personnel, including senior plant operating personnel, shift technical advisors, and operations support personnel,¹⁰⁹ will receive training in the mitigation of core damage. This training will concentrate on instrumentation, water chemistry, radiation monitoring, and gas generation during an accident.

The training program includes initial training and periodic retraining for categories of employees and non-employees whose assistance may be needed in the event of a radiological emergency. The findings regarding the adequacy of training and retraining programs related to radiological emergencies are presented in Section 13.3 of this report.¹¹⁰

All initial¹¹¹ training of the non-licensed plant staff is scheduled to be completed prior to fuel loading.

Meeting the staff's requirements given above provides an acceptable basis for finding that, insofar as the training of non-licensed personnel is concerned, the applicant meets the technical qualification requirements of 10 CFR ~~Part 50,~~ §50.40(b) of the Commission's regulations.

For design certification reviews, the findings will also summarize, to the extent that the review is not discussed in other safety evaluation report sections, the staff's evaluation of inspections, tests, analyses, and acceptance criteria (ITAAC), including design acceptance criteria (DAC), site interface requirements, and combined license action items that are relevant to this SRP section.¹¹²

V. IMPLEMENTATION

The following is intended to provide guidance to applicants and licensees regarding the NRC staff's plans for using this SRP section.

This SRP section will be used by the staff when performing safety evaluations of license applications submitted by applicants pursuant to 10 CFR 50 or 10 CFR 52.¹¹³ Except in those cases in which the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

The provisions of this SRP section apply to reviews of applications docketed six months or more after the date of issuance of this SRP section.¹¹⁴

Implementation schedules for conformance to parts of the method discussed herein are contained in the referenced regulatory guides, and NUREGS.

VI. REFERENCES¹¹⁵

1. 10 CFR Part 19, §19.12, "Instruction to Workers."
2. 10 CFR Part 26, §26.21, "Policy Communications and Awareness Training."¹¹⁶
3. 10 CFR Part 26, §26.22, "Training of Supervisors and Escorts."¹¹⁷
24. 10 CFR Part 50, §50.34, "Content of Applications; Technical Information," (Paragraph a.6).
35. 10 CFR Part 50, §50.40, "Common Standards," (Paragraph b).
6. 10 CFR Part 50, §50.120, "Training and Qualification of Nuclear Power Plant Personnel."¹¹⁸
7. 10 CFR Part 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities."¹¹⁹
8. 10 CFR Part 52, §52.78, "Contents of Applications; Training and Qualification of Nuclear Power Plant Personnel."¹²⁰
49. Regulatory Guide 1.8, "Personnel Qualifications and Training" Qualification and Training of Personnel for Nuclear Power Plants."¹²¹ (endorses ANSI/ANS-3.1-1981 "Selection, Qualification and Training of Personnel for Nuclear Power Plants," as supplemented by regulatory position 1 for certain organizational positions and ANSI N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel" for other organizational positions)¹²²
910. Regulatory Guide 1.149, "Nuclear Power Plant Simulator Facilities for use in Operator Training License Examinations."¹²³
511. Branch Technical Position CMEBSPLB¹²⁴ 9.5-1, attached to SRP Section 9.5.1, "Fire Protection."
7. ~~NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident."~~
12. NUREG-0711, "Human Factors Engineering Program Review Model," July 1994.¹²⁵
813. NUREG-0737, "Clarification of TMI Action Plan Requirements."
14. NUREG-1220, "Training Review Criteria and Procedures," July 1986.¹²⁶

15. Generic Letter 86-04, Policy Statement on Engineering Expertise on Shift," February 1986.¹²⁷
16. 50 FR 43621, "Commission Policy Statement on Engineering Expertise on Shift," October 1985.¹²⁸
6. ~~ANSI/ANS-3.1, "Selection and Training of Nuclear Power Plant Personnel."~~¹²⁹

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SRP Draft Section 13.2.2

Attachment A - Proposed Changes in Order of Occurrence

Item numbers in the following table correspond to superscript numbers in the redline/strikeout copy of the draft SRP section.

Item	Source	Description
1.	Current PRB abbreviation	Changed Licensee Qualification Branch (LQB) to Human Factors Assessment Branch (HHFB).
2.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
3.	Editorial, Incorporate PRB Comments	Revised to eliminate discussion of specific types of SARs and instead discuss the expected SAR content in terms of the project stage since the COL process may not be amenable to a PSAR-FSAR progression such as was the case with the Part 50 licensing process. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).
4.	Integrated Impact No. 681	ANSI/ANS-3.1 needs to be updated to the 1993 version if comparison supports update of the citation.

SRP Draft Section 13.2.2**Attachment A - Proposed Changes in Order of Occurrence**

Item	Source	Description
5.	Integrated Impact 956, Reference verification	RG 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," Rev. 2 indicates that the requirements contained in ANS-3.1-1981 are acceptable as supplemented by regulatory position 1 for the shift supervisor, senior operator, licensed operator, shift technical advisor, and radiation protection manager organizational positions and that for other organizational positions listed in ANSI N18.1-1971, the requirements contained in ANSI N18.1-1971 are generally acceptable. Thus, until new staff positions endorsing a more recent version ANS 3.1 for this purpose are approved and issued, RG 1.8 is a more appropriate basis for evaluation of training of non-licensed plant staff than ANS 3.1.
6.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
7.	SRP-UDP format item	Regulatory Guide 1.149 is currently under revision. This SRP section may be impacted by the revision. Therefore, this SRP should be reviewed for impact of when the revised RG 1.149 becomes available.
8.	Editorial	Revised to clarify that information regarding where experience training was obtained is reviewed.
9.	Editorial	Revised to cover both options delineated in the Commission's Policy statement on Engineering Expertise on Shift.
10.	Editorial	Revised to reflect Areas of Review rather than application content guidance.

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Item	Source	Description
11.	Integrated Impact No. 1362	Added requirement for emergency preparedness training for those who may assist in a radiological emergency. Modified list numbering to reflect correct sequence (global change for this section).
12.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
13.	Reference verification	Revised to reflect current designation for this BTP. Also added identification by reference number at the point of its first citation.
14.	Editorial	Defined SRP.
15.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
16.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
17.	Editorial, Incorporate PRB Comments	Revised to eliminate discussion of specific types of SARs and instead discuss the expected SAR content in terms of the project stage since the COL process may not be amenable to a PSAR-FSAR progression such as was the case with the Part 50 licensing process. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).

SRP Draft Section 13.2.2**Attachment A - Proposed Changes in Order of Occurrence**

Item	Source	Description
18.	Editorial	In the earlier citation of ANSI/ANS 3.1 (now updated to RG 1.8) the more appropriate term "guidelines" is used instead of "requirements" to characterize the content of the standard/RG. Thus revised for consistency with the earlier similar citation/discussion.
19.	Integrated Impact No. 681	ANSI/ANS-3.1 needs to be updated to the 1993 version if comparison supports update of the citation.
20.	Integrated Impact 956, Reference verification	RG 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," Rev. 2 indicates that the requirements contained in ANS-3.1-1981 are acceptable as supplemented by regulatory position 1 for the shift supervisor, senior operator, licensed operator, shift technical advisor, and radiation protection manager organizational positions and that for other organizational positions listed in ANSI N18.1-1971, the requirements contained in ANSI N18.1-1971 are generally acceptable. Thus, until new staff positions endorsing a more recent version ANS 3.1 for this purpose are approved and issued, RG 1.8 is a more appropriate basis for evaluation of training of non-licensed plant staff than ANS 3.1.
21.	Editorial	Revised to cover both options delineated in the Commission's Policy statement on Engineering Expertise on Shift.
22.	Integrated Impact No. 1362	Added requirement for emergency preparedness training for those who may assist in a radiological emergency.

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Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
23.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
24.	Editorial	Item 10 above already discussed this review area as an early stage review. Since the plan will have been reviewed previously, the restatement of the review of the plan is deleted and expectations to review a final description of the implemented program are substituted.
25.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
26.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
27.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
28.	Editorial	Revised to clarify that information regarding where experience training was obtained is reviewed.
29.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
30.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
31.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
32.	Integrated Impact No. 957	Included requirement for "systems approach to training."
33.	Editorial, Incorporate PRB Comments	Revised to eliminate discussion of specific types of SARs. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).

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Item	Source	Description
34.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
35.	Editorial, Incorporate PRB Comments	Revised to eliminate discussion of specific types of SARs. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).
36.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
37.	Editorial, Incorporate PRB Comments	Revised to eliminate discussion of specific types of SARs. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).
38.	Editorial	Revised to reflect Areas of Review rather than application content guidance.
39.	SRP-UDP format item	Added "Review Interfaces" to AREAS OF REVIEW and organized in numbered paragraphs to describe how HHFB coordinates the review with other NRR branches.
40.	SRP-UDP format item	Added explicit coordination within HHFB for review of Section 13.2.1.
41.	Integrated Impact 1358, Editorial	Added descriptions of other HHFB reviews that are related to reviews performed under this SRP section.
42.	Integrated Impact 1358, Editorial	Added descriptions of other HHFB reviews that are related to reviews performed under this SRP section.
43.	Current PRB abbreviation	Changed LQB to HHFB (global change for this section).

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Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
44.	Editorial, Incorporation of PRB Comment	Added apostrophe to denote the possessive state.
45.	SRP-UDP format item	Replaced CMEB with SPLB with respect to the current responsibility for review of Section 9.5.1.
46.	SRP-UDP format item	Deleted review interface since HHFB is now the primary review branch for Section 13.2.1
47.	SRP-UDP format item	Replaced EPLB with PERB with respect to the current responsibility for review of Section 13.3.
48.	Editorial	Added interface describing a fairly significant training program reviewed by another branch under SRP Section 12.5.
49.	SRP-UDP format item	Replaced PSLB with PSGB with respect to the current responsibility for review of Section 13.6.
50.	SRP-UDP format item	Revised to reflect interfaces in terms of other SRP sections rather than in terms of other branches since typically interfaces to other reviews by the PRB are also described in this subsection.
51.	Editorial	Provided correct format for citing references to Title 10 of CFR (global change for this section).
52.	Integrated Impact No. 1377, Reference Verification	Revised to reflect current 10 CFR 19.12 requirements as amended in 60 FR 36038.
53.	Integrated Impact No. 960	Added requirement for training related to fitness-for-duty program.
54.	Editorial	Since 2 paragraphs are specified revised to discuss them in plural sense for grammatical correctness.

SRP Draft Section 13.2.2**Attachment A - Proposed Changes in Order of Occurrence**

Item	Source	Description
55.	Integrated Impact No. 957	Added requirement for "systems approach to training."
56.	Integrated Impact No. 1362	Added requirement for emergency preparedness training for those who may assist in a radiological emergency.
57.	Integrated Impacts No. 957 and 960	Added references to 10 CFR 26.21 and 26.22 for requirements related to fitness-for-duty program and 10 CFR 50.120 and 52.78 for requirements related to systems-based training.
58.	Editorial	Revised to reflect that RG content is guidance, not mandatory requirements.
59.	Integrated Impact No. 985	Deleted citation to NUREG-0660 TMI action plan item I.A.2.2.
60.	Integrated Impact No. 956	Revised paragraph to reflect the actual endorsement of RG 1.8 (Rev. 2, 1987) with respect to sections of ANSI/ANS-3.1 (1981) and ANS N18.1 (1971)
61.	SRP-UDP format item	Regulatory Guide 1.8 is currently under revision. This SRP section may be impacted by the revision. Therefore, this SRP should be reviewed for impact when the revised RG 1.8 becomes available.
62.	Integrated Impact No. 957	Added requirement for "systems approach to training."

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Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
63.	Integrated Impact No. 1361, Incorporation of PRB Comment	Added criteria for review contained in NUREG-0711. Also added discussion of the staff's use of NUREG-1220 as recommended by the PRB. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision). It should be noted that NUREGs 0711 and 1220 were developed to provide staff evaluation criteria not applicant or licensee implementation guidance.
64.	Integrated Impact No. 960	Added requirement for training related to fitness-for-duty program.
65.	Integrated Impact No. 1362	Added requirement for emergency preparedness training for those who may assist in a radiological emergency.
66.	Editorial	Criticality normally occurs after fuel load, thus the criteria was revised to reflect "prior to fuel load" rather than "prior to criticality" since adequacy is verified later in the paragraph with respect to the time of initial fuel loading.
67.	Integrated Impact No. 1377, Reference Verification	Added reference to SRP Section 12.5 specific criteria related to 10 CFR 19.12 requirements.
68.	No Change	Based on the substantial number of changes to BTP SPLB 9.5-1 under the SRP-UDP, it is suggested that this criteria be evaluated further against current content of the BTP and revised if necessary for consistency with the BTP.
69.	Reference verification	Revised to reflect current designation for this BTP.
70.	Editorial	Defined BTP.

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Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
71.	No change	The PRB should note that compliance with this criteria, as stated, cannot be verified by review of the SAR.
72.	Integrated Impact No. 959 and 1079	Added references to the "Commission Policy Statement on Engineering Expertise on Shift" and Generic Letter 86-04 regarding the requirements for an STA.
73.	Integrated Impact Nos 959 and 1079	Added references to the "Commission Policy Statement on Engineering Expertise on Shift" regarding educational requirements for an STA.
74.	Editorial	Revised to cover both options delineated in the Commission's Policy statement on Engineering Expertise on Shift.
75.	Editorial	Completed an incomplete sentence based on what is written in the following paragraph.
76.	Editorial	Revised to cover both options delineated in the Commission's Policy statement on Engineering Expertise on Shift.
77.	Editorial	Replaced "characteristic" with "requisite" for clarity.
78.	Editorial	Revised to cover both options delineated in the Commission's Policy statement on Engineering Expertise on Shift.
79.	Integrated Impact No. 959	Revised requirement for STAs being actively functioning as STA as given in RG 1.8 (Rev 2).
80.	Editorial	Revised sentence to eliminate "he" and "his."
81.	Editorial	Added "and implement" to the first sentence, eliminating the need for the second sentence.

SRP Draft Section 13.2.2**Attachment A - Proposed Changes in Order of Occurrence**

Item	Source	Description
82.	SRP-UDP format item	Added "Technical Rationale" to ACCEPTANCE CRITERIA and put in paragraph form.
83.	SRP-UDP format item	Added lead-in sentence for "Technical Rationale."
84.	SRP-UDP format item	Added technical rationale for 10 CFR 19.12 requirements.
85.	SRP-UDP format item	Added technical rationale for 10 CFR 26.21 and 26.22 requirements.
86.	SRP-UDP format item	Added technical rationale for 10 CFR 50.34(a & b) requirements.
87.	SRP-UDP format item	Added technical rationale for 10 CFR 50.40(b) requirements.
88.	SRP-UDP format item	Added technical rationale for 10 CFR 50.120 requirements.
89.	Incorporate PRB Comments	Revised to cite all relevant references instead of just one isolate group of references. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).
90.	Incorporate PRB Comments	Deleted discussion of vendor provided course descriptions. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).

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Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
91.	Incorporate PRB Comments	Revised to cite all Areas of Review instead of just one subsection of review areas. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).
92.	Editorial	Since subsection I was extensively revised to reflect areas of review (as opposed to application content guidance) and related review verifications for those areas without relocating the verification steps to subsection III, added general discussion that the verifications should be performed in subsection III.
93.	Current PRB responsibilities	Revised to reflect that SPLB is the PRB currently responsible for review of fire protection matters.
94.	SRP-UDP format item	Eliminated reference to OLB because HHFB now has primary review responsibilities for SRP 13.2.1 with regard to training for mitigating core damage.
95.	SRP-UDP Guidance, Implementation of 10 CFR 52	Added standard paragraph to address application of Review Procedures in design certification reviews.
96.	Editorial	Replaced "his" with " that the."
97.	Editorial	Corrected misspelled word.
98.	Editorial	Revised to reflect that with review of COL applications added to the section, it is no longer feasible to divide the findings into 2 categories.

SRP Draft Section 13.2.2**Attachment A - Proposed Changes in Order of Occurrence**

Item	Source	Description
99.	Integrated Impact Nos 957 and 960	Added references to 10 CFR 26.21 and 26.22 for requirements related to fitness-for-duty program and 10 CFR 50.120 requirements related to systems based training.
100.	Editorial	Relocated this finding from above.
101.	Editorial, Incorporate PRB Comments	Revised to eliminate discussion of specific types of SARs. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).
102.	Editorial	Revised to provide a finding consistent with the review performed (i.e. a training program description is reviewed and found to be acceptable).
103.	Integrated Impact 956, Reference verification	Revised to characterize the positions of RG 1.8, Rev. 2 which do not endorse ANS 3.1 for most non-licensed personnel.
104.	Integrated Impact 1377, Incorporation of PRB Comment	Added findings related to 10 CFR 19.12 as recommended by the PRB. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).
105.	Integrated Impact 960, Incorporation of PRB Comment	Added findings related to 10 CFR 26 as recommended by the PRB. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).

SRP Draft Section 13.2.2**Attachment A - Proposed Changes in Order of Occurrence**

Item	Source	Description
106.	Integrated Impact 957, Incorporate PRB Comment	Added findings related to 10 CFR 50.120 and 52.78 as generally recommended by the PRB. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).
107.	Integrated Impacts 959 and 1079	Revised to reflect that an STA is no longer firmly required as the only acceptable means of providing engineering expertise on shift.
108.	Editorial	Revised to provide a finding rather than a recommendation.
109.	Editorial	Revised to provide a more general finding consistent with the review/criteria described earlier in this SRP section.
110.	Integrated Impact 1362, Editorial	Added findings related to training programs for radiological emergencies since specific criteria is specified related to training for radiological emergencies in subsection II.
111.	Editorial	Revised to reflect that training obviously continues beyond fuel load.
112.	SRP-UDP Format Item, Implement 10 CFR 52 Related Changes	To address design certification reviews a new paragraph was added to the end of the Evaluation Findings. This paragraph addresses design certification specific items including ITAAC, DAC, site interface requirements, and combined license action items relevant to this SRP section.
113.	SRP-UDP Guidance, Implementation of 10 CFR 52	Added standard sentence to address application of the SRP section to reviews of applications filed under 10 CFR Part 52, as well as Part 50.

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Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
114.	SRP-UDP Guidance	Added standard paragraph to indicate applicability of this section to reviews of future applications.
115.	Editorial	Revised REFERENCES section to delete references not cited, add new references, and modify existing references to appropriate format.
116.	Integrated Impact No. 960	Added reference to 10 CFR 26.21 as an update to section.
117.	Integrated Impact No. 960	Added reference to 10 CFR 26.22 as an update to section.
118.	Integrated Impact No. 957	Added reference to 10 CFR 50.120 as an update to section.
119.	Integrated Impact No. 1362	Added reference to 10 CFR 50, Appendix E as an update to section.
120.	Integrated Impact No. 957	Added reference to 10 CFR 52.78 as an update to section.
121.	SRP-UDP Reference verification	Revised to reflect current title of the RG.
122.	Integrated Impact 1517	Added reference to a standard cited in the text.
123.	SRP-UDP Reference verification	Revised to reflect current title of the RG.
124.	Reference verification	Revised to reflect current designation for this BTP.
125.	Integrated Impact No. 1361	Added reference to NUREG-0711 as an update to section.

SRP Draft Section 13.2.2**Attachment A - Proposed Changes in Order of Occurrence**

Item	Source	Description
126.	Incorporate PRB Comment	At the request of the PRB, reference to NUREG-1220 was added in subsection II. Thus listed the NUREG as a reference. This change incorporates the intent of PRB comments (see the January 19 Memorandum to R.W. Borchardt from C.O. Thomas transmitting comments on a previous draft revision).
127.	Integrated Impact No. 1079	Added reference to Generic Letter 86-04 as an update to section.
128.	Integrated Impacts No. 959 and 1079	Added reference to 50 FR 43621 as an update to section.
129.	Editorial	Revised to cover in conjunction with RG 1.8 above.

SRP Draft Section 13.2.2
Attachment B - Cross Reference of Integrated Impacts

Integrated Impact No.	Issue	SRP Subsections Affected
681	Update reference to ANSI/ANS 3.1 to most current version (1993).	Not updated. No staff position to support changes.
956	Eliminate the apparent inconsistency between Regulatory Guide 1.8, ANSI/ANS 3.1, ANS N18.1, and SRP Section 13.2.2.	Section I, AREAS OF REVIEW, Early item 1, Later item 1 Section II, ACCEPTANCE CRITERIA, Specific Criterion 1 Section IV, EVALUATION FINDINGS
957	Add a discussion to reflect the requirements of 10 CFR 52.78 and 10 CFR 50.120 to have a training program derived from a systems approach to training.	Section I, AREAS OF REVIEW, Later item 10 Section II, ACCEPTANCE CRITERIA, Paragraph E and Specific Criterion 2 Section IV, EVALUATION FINDINGS Section VI, REFERENCES, References 6 and 8
958	Modify acceptance criteria to reflect the resolution of TMI Action Item I.A.2.2 by including the Commission Policy Statement on Training and Qualification of Nuclear Power Plant Personnel.	No changes.
959	Modify acceptance criteria to reflect issuance of the Commission Policy Statement on Engineering Expertise on Shift and the guidance related to STAs in RG 1.8.	Section II, ACCEPTANCE CRITERIA, Specific Criterion 11 Section IV, EVALUATION FINDINGS Section VI, REFERENCES, References 15 and 16

SRP Draft Section 13.2.2
Attachment B - Cross Reference of Integrated Impacts

Integrated Impact No.	Issue	SRP Subsections Affected
960	Add acceptance criteria and evaluation findings related to training requirements for fitness-for-duty programs as required in 10 CFR 26.	Section II, ACCEPTANCE CRITERIA, Paragraph B, Specific Criterion 4 Section IV, EVALUATION FINDINGS Section VI, REFERENCES, References 2 and 3
985	Delete NUREG-0660 TMI Action Plan Item I.A.2.2 as this issue has been resolved and is addressed in RG 1.8, ANSI/ANS-3.1, and the Commission Policy Statement on Training and Qualification of Nuclear Power Plant Personnel.	Section II, ACCEPTANCE CRITERIA, Item 1
1079	Modify acceptance criteria to be consistent with current NRC policy regarding engineering expertise on shift.	Section II, ACCEPTANCE CRITERIA, Specific Criterion 11 Section IV, EVALUATION FINDINGS Section VI, REFERENCES, References 15 and 16
1197	Revise the Acceptance Criteria and Review Procedures to incorporate the requirements from proposed rulemaking 59 FR 5132. This proposed rulemaking would amend 10 CFR 19.12 and 10 CFR 20. 10 CFR 19.12 would be amended to require radiation protection training be provided to all persons with the potential to be occupationally exposed.	Not processed.
1361	Consider incorporating relevant review considerations from NUREG-0711, particularly considerations from Element 9, into SRP Section 13.2.2.	Section 2, ACCEPTANCE CRITERIA, Specific criterion 2 Section VI, REFERENCES, References 12 and 14

SRP Draft Section 13.2.2
Attachment B - Cross Reference of Integrated Impacts

Integrated Impact No.	Issue	SRP Subsections Affected
1362	Consider incorporating emergency preparedness training requirements as provided in 10 CFR 50, Appendix E, II.F and IV.F.	Section I, AREAS OF REVIEW, Early item 8, Later item 4 Section II, ACCEPTANCE CRITERIA, Paragraph F and Specific Criterion 5 Section IV, EVALUATION FINDINGS Section VI, REFERENCES, Reference 7
1377	Consider revising the discussion of 10 CFR 19.12 to reflect the amended regulation as published in 60 FR 36038.	Section II, ACCEPTANCE CRITERIA, Paragraph A Section IV, EVALUATION FINDINGS
1517	Consider updating the citation of ANS 3.1 in SRP Section 13.2.2 to cite the 1981 version.	Section VI, REFERENCES, Reference 9