



Connecticut Yankee DECAP

GRPI for Defueled Condition Fire Protection Program

Prepared by *E.A. Sawyer* Date *Dec 19, 1986*
E.A. Sawyer (DECAP - FP)

Reviewed by *T.B. Kazukynas* Date *12/19/96*
T. Kazukynas (CY - FP)

Reviewed by *E.P. Perkins* Date *12/19/96*
E.P. Perkins (CY - DECAP)

Approved by *J.D. Haseltine* Date *12/23/96*
J.D. Haseltine (Director of Engineering)

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FIRE PROTECTION PROGRAM REVISION

GRPI

Goals:

The primary goal for this effort is to revise the existing Fire Protection Program. The revised program should respond to the new 10CFR50.48 (f) criteria relating to the maintenance of a fire protection program from the time the plant ceases operation to the time the plant is completely decommissioned. Secondary goals for the effort are that the revised fire protection program should include provisions to address Nuclear Mutual Limited (NML) requirements; applicable Life Safety Code requirements; any OSHA requirements; and reasonable fire protection for "unnecessary" parts of the plant until they are razed. This should be done with as little impact upon decommissioning activities as possible, while still providing adequate fire protection.

Roles:

The groups that will participate in the Fire Protection Program revision process are:

Fire Protection

The Fire Protection group will be responsible for the overall coordination and performance of the revision process.

Operations

Operations will continue to perform certain surveillances, as well as be fire brigade members. Their function will be to provide input in these areas, and to review the final program.

Security

Security will continue to provide fire watches, as well as be fire brigade members. They could also be involved in providing watchman service during their rounds, as various pieces of the fire detection and suppression systems are dropped from service. Their function will be to provide input in these areas, and to review the final program.

Licensing

The Licensing group will assist in both the interpretation of 10CFR50.48 (f) and in arranging discussions with the Nuclear Regulatory Commission (NRC) as necessary. They will also review the final program.

Health Physics and Chemistry

Many of the changes in the Fire Protection program will be keyed to the deconning of plant areas. These groups also provide Fire Brigade members and support. The Fire Protection group will interface with Health Physics to develop the schedule for making changes in the program.

Maintenance

Maintenance will continue to provide maintenance for fire protection systems and equipment within the plant. The Fire Protection group will interface with them to discuss necessary maintenance and schedules.

Other

There will be other groups that will have some responsibilities that will affect the Fire Protection Program. An example is the group that will be responsible for the removal of combustible materials from the plant. The Fire Protection group will interface with them as necessary to address their effect on the Fire Protection Program.

Within the Fire Protection group, the designated lead engineer will be responsible for the overall coordination, review, and issue of the revised Fire Protection Program; as well as coordinating the interface with supporting groups. The support staff will assist in the writing of the program under the lead's direction.

After its approval by PORC, Plant Management will endorse and promulgate the revised Fire Protection Program.

Processes:

The process of revising the Fire Protection Program is a long one. There are many fire protection documents that will be revised or deleted (See Attachment A). The present plan is to produce a program that is flexible enough to support the decommissioning process as it moves toward the establishment of some kind of nuclear island. If this is done, it is anticipated that significant savings in resources can be achieved during the process.

To do this, the effort will start very soon. As soon as decisions are made on how to treat the SSC that were needed for safe shutdown but are no longer needed in the defueled condition, the fire protection program for certain areas of the plant can be modified. Additionally, having the list of necessary systems defined for the defueled condition is a critical prerequisite for developing the revised fire protection program. The major milestone for this effort is to have the revised program ready when the nuclear island is ready. However, the sooner it is ready, the sooner it can be used during the decommissioning process.

The first piece of this process is to establish the criteria that must be designed to or evaluated against. The process of establishing these criteria includes the following:

Review of 10CFR50.48 (f)

Paragraph (f) is the addition to 10CFR50.48, Fire Protection, that addresses fire protection during the decommissioning process.

The NRC staff stated their intention to provide a performance-based fire protection program that can readily be modified during the decommissioning process to address residual hazards. The actual revision to 50.48 says, in part, that the fire protection program should:

Address the potential for fires that could cause the release or spread of radioactive materials; and

The objectives of the program are:

1. Reasonably prevent such fires from occurring.
2. Rapidly detect, control, and extinguish those fires which do occur and could result in a radiological hazard.
3. Ensure the risk of fire-induced radiological hazards to the public, the environment, and plant personnel is minimized.

If a regulation is, in fact, performance-based rather than prescriptive, it allows the designer some latitude in providing a system or program that responds to the regulation. The following write-up is based upon the Society of Fire Protection Engineers (SFPE) Guidelines on the Relationship Between Performance-Based Fire Protection Engineering and Performance Based Regulations. It is unknown if this description is one that is acceptable to the NRC fire protection people or not. In at least one area, that of the use of fire modeling, it is known that the NRC does have some problems. This should be kept in mind when developing the revised fire protection program.

In a performance-based system, the minimum levels deemed acceptable to the regulator are described in the regulations by a set of flexibly defined functional objectives and performance requirements. It is then the responsibility of the designer to (1) translate those functional objectives and performance requirements into performance criteria that can be designed to or evaluated against, and (2) demonstrate that the performance objectives and functional requirements are met by the proposed design, which uses acceptable engineering tools and methodologies. It is anticipated that performance-based building codes, fire codes, and governmental regulations will recognize and accept the application of sound fire protection engineering practices as suitable vehicles for achieving the desired levels of fire and life safety performance in designs.

In reviewing this addition to 10CFR50.48, it will be necessary to apply the above process to the terms used in the rule, terms such as "potential", "reasonably", "rapidly", and "ensure". To do this will require thought on CY's part and contact with the NRC fire protection engineers to ascertain if they have any preconceived ideas on their meaning.

Establish Nuclear Mutual Limited (NML) criteria

The plant's property insurer is NML. The Fire Protection group will contact NML to establish what their criteria are for the protection of the plant in its cold shutdown condition. We will also provide input for evaluating potential for savings in the premium by doing such things as removing buildings and equipment from coverage or increasing the deductible.

Research NFPA 101 Life Safety Code requirements

As fire detection and suppression systems are removed from service because they are no longer required to protect equipment, there will continue to be plant personnel on site, within buildings. As long as they are there, there is the potential for needing appropriate exit paths from the buildings. In some cases, one of the ways to provide such a path can be providing suppression over the path.

Research OSHA requirements

If Connecticut is like most industrial states, they have developed their own OSHA program. This will have in it some fire protection requirements for those buildings that are no longer covered by NRC requirements. This will be researched, to ensure CY does not violate the Act.

Provision of "reasonable" fire protection

While the plant buildings are being gutted, with equipment being removed, there will continue to be a large amount of "hot work" active. The plant will need to continue with a "hot work" program of some type, as this will be one of the periods when a fire is most likely to occur. This can be done in a manner that impacts as little as possible the work going on; but it must be done.

In addition, there will still be the issue of reasonable life safety. There will be a staff of people throughout the plant doing the above work. The safety of those people must be of concern. The fire protection program will address this issue.

Once the general program design criteria have been established, the actual revision process can begin. All fire protection program documents, from NGP 2.14, Nuclear Plant Fire Protection Program, to test and maintenance procedures, will have to be reviewed in the light of the new criteria to ascertain if they should be revised. As information is developed on the SSC that will be needed for operating in the new mode; and as schedules are developed for decomming, removing combustibles, and removing equipment, the fire protection program to be applied will be subject to change. A plan to facilitate revisions will be defined to respond quickly to those changes that occur.

Administrative controls to be in place during the decommissioning process will be reviewed and revised as necessary. While there will no longer be a problem with safe shutdown of the plant, there will still be a problem with fires in the plant. The size and duties of the fire brigade will be

addressed, as well as the storage and use of fire protection equipment such as portable extinguishers and fire hoses throughout the plant.

Constraints

There are several constraints that must be addressed in this process. In general, they are related to the gathering of information, scheduling, and communication.

Information Gathering

- Contact will be established with representatives of other plants that have shut down. In two cases, Yankee and Trojan, the contacts have been established.
- The fire protection people need to talk directly with the NRC. This will be arranged through Nuclear Licensing.
- The team needs to know what systems, structures, and components **will** be used during the decommissioning process, and what **will not**. With that information, required continued protection can be provided.
- In the Fire Protection Program as well as in other Plant Programs, there are many commitments that were made during the plant life time to date. These commitments are usually listed in SERs, but we have found during the CMP effort that they can exist in other documents. There should be a process, possibly generic, to address or remove those commitments that no longer apply to a specific program.

Schedule

- The schedule for the clean-up of the plant, both from a radioactive contamination stand-point and from a combustible material stand-point, can substantially affect the schedule for revising the fire protection program. As the plant is cleaned up and combustibles are removed, the validity of shutting down and/or removing fire protection systems can be evaluated.
- The schedule for the removal or installation of equipment will also impact when specific fire protection program changes can be made.

Communication

- The work efforts of a number of other groups could impact the fire protection program. There needs to be an effort among the various team leaders to address interactions.

Interpersonal Relationships

There are two part of this which will receive attention. The first is the gathering of information from as many sources as possible. Decommissioning of nuclear power plants is relatively new, with only a limited industry experience data base to call on. Yankee Atomic, Trojan, and any other plants that have shut down will be contacted. Copies of their programs and procedures will be obtained if possible; and lessons learned from their efforts. However, at CY, we will define the programs, processes, and positions that are appropriate for our case.

The NRC will be contacted, to keep them appraised of the directions being taken by CY. Particular attention should be paid to the NRC ideas on what constitutes a "performance based" program.

The second is to recognize that not only should the representatives on the fire protection program team work together to produce a workable program; but the fire protection team should work with the other teams that are developing the new Connecticut Yankee. Special effort should be made to maintain open communications in both areas. To work efficiently, awareness of the goals and schedules of the other work efforts will be maintained. Periodic meetings and self-assessments within the fire protection team will occur, as well as periodic meetings with other work teams.

ATTACHMENT A

FIRE PROTECTION PROGRAM DOCUMENTS

The following fire protection program documents will be considered for revision.

Fire Protection Technical Requirements Manual

Nuclear Group Procedure NGP 2.14, Nuclear Fire Protection Program

Connecticut Yankee Fire Hazard Analysis

Connecticut Yankee Fire Fighting Strategies

Connecticut Yankee UFSAR

Procedures dealing with administrative controls, surveillance, testing, and maintenance of fire protection systems

Other documents that may be encountered during program revision process



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E.A. Sawyer (DECAP - FP)

Reviewed by *T.B. Kazukyras* Date *12/19/96*
T. Kazukyras (CY - FP)

Reviewed by *E.P. Perkins* Date *12/15/96*
E.P. Perkins (CY - DECAP)

Approved by *J.D. Raseltine* Date *12/23/96*
J.D. Raseltine (Director of Engineering)

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FIRE PROTECTION TECHNICAL REQUIREMENTS REVISION

GRPI

Goals

The primary goal for this effort is to revise the existing Fire Protection portions of the Technical Requirements (TR) to more appropriately address the required actions and surveillance requirements for fire protection systems during the decommissioning process.

The Fire Protection Technical Requirements Manual (TRM) is one of those documents that will be revised as a part of the development of a revised Fire Protection Program. Because there are significant resource savings to be had from any revision, it is the first part of the program scheduled for review and revision.

Roles

The groups that will participate in the revision of the Fire Protection portions of the Technical Requirements Manual are:

Fire Protection

The Fire Protection group will be responsible for the overall coordination and performance of the revision process.

Operations

Operations group will review the proposed TRM changes because of their role in performing certain surveillances, as well as being fire brigade members.

Security

Security will continue to provide fire watches, as well as fire brigade members. They could also be involved in providing watchman service during their rounds, as various pieces of the fire detection and suppression systems are dropped from service. Their function will be to provide input in these areas, and to review the final revisions.

Licensing

The Licensing group will assist in the interpretation of 10CFR50.48 (f), in arranging discussions with the Nuclear Regulatory Commission (NRC) as necessary, and in processing the changes to the TRM.

Health Physics and Chemistry

Many of the revisions to the Fire Protection Technical Requirements Manual will be keyed to the deconning of plant areas. The Fire Protection group will interface with Health Physics to develop the schedule for making those revisions. These two groups also provide Fire Brigade personnel

Maintenance

Maintenance will review the TRM changes due to their role in providing maintenance for fire protection systems and equipment within the plant. The Fire Protection group will interface with them to discuss necessary maintenance and schedules.

Other

There will be other groups that will have some responsibilities that will affect the Fire Protection TRM change process. An example is the group that will be responsible for the removal of combustible materials from the plant. The Fire Protection group will interface with them as necessary to address their effect on the schedule for revision of the Fire Protection TRM.

Within the Fire Protection group, the designated lead engineer will be responsible for the overall coordination, review, and issue of the revised Fire Protection Technical Requirements Manual; as well as the coordinating the interface with supporting groups. The support staff will assist in the writing of the revised document under the lead's direction.

After their approval by PORC, Plant Management will endorse and promulgate the revised Fire Protection Technical Requirements Manual.

Processes:

The process that will be followed is:

1. Address the constraints discussed below. Based on decisions made;
2. Review the Fire Protection TRM for reasonable change areas,
3. Discuss the changes with appropriate groups,
4. Prepare 50.59s for the changes, and
5. Make the agreed upon changes.

Constraints

The constraints are mainly decisions that have to be made by various groups before much other work can be done on the revision process. These constraints are:

Systems, Structures, and Components (SSC) to be Used During the Decommissioning Process

Before any changes can be made to the Fire Protection TRM, decisions will have to be made on the SSC that will be necessary for the decommissioning process. This could change as the effort progresses. A schedule must be developed to facilitate an orderly change of the TRM.

Extent of Revisions

There are some simple, justifiable changes that can be made to the Fire Protection Technical Requirements Manual very rapidly. These are changes that are supported by changes to the National Fire Protection Association (NFPA) Standards and Nuclear Mutual Limited (NML) guidelines and standards. Most of these will save plant resources, in that they increase the period between surveillances of smoke detectors and fire protection valves.

There are other areas that can be revised based on the premise that the areas are no longer necessary for safe shutdown of the plant. To do this will require a decision on whether the plant wants to proceed this way, as well as decisions on each individual area to ensure that they meet whatever criteria are developed. Most of these changes will come in the Action Statements, with a relaxation of the continuity or frequency of fire watches; and will also save the plant resources.

A decision should be made on how extensive the changes should be, and what the schedule will be. Will all changes to the TRM be made at once, or will the simpler changes that provide a quicker return be done first, followed by the rest?

10CFR50.59, Safety Evaluation, Process That Will be Used

In accordance with the UFSAR change that removed Fire Protection from Plant Technical Specifications, all changes to the Fire Protection TRM must be done using the 10CFR50.59 process as referenced in Generic Letter 86-10 (UFSAR Change 93-CY-18, dated 9/93). The generic letter addresses the application of the 50.59 process to Fire Protection changes. A significant difference between this application and the standard application, is that for fire protection, the **accident to be evaluated is the fire in the area as described in the Fire Hazard Analysis (FHA)**, not the Chapter 15 accident that could affect the area. This is a much more accurate representation of the actual event that could occur with a change to fire protection equipment or procedures.

The present version of Nuclear Group Procedure NGP 3.12, Safety Evaluations, does not allow this option for safety evaluations that are done at the present time. A revised 50.59

Safety Evaluation procedure will be developed for use in the near future. It will allow this option, simplifying the safety evaluation that must be performed.

A decision should be made on whether the present Safety Evaluation procedure will be used, will the effort wait for the revised one, or is there a way to use the directions provided in Generic Letter 86-10 without a revision of the 50.59 procedure.

To address most of these constraints requires a joint effort by several groups. As noted, this must be done before the concentrated effort on the revision of the Fire Protection TRM can start. This effort will be arranged. Once these constraints are addressed, the rest of the process can be done using the decisions reached.

Interpersonal Relationships

Decommissioning of nuclear power plants is relatively new, with only a limited industry experience data base to call on. Yankee Atomic, Trojan, and any other plants that have shut down will be contacted. Copies of their Fire Protection TRM will be obtained if possible; and lessons learned from their efforts. However, at CY we will update the TRM in the manner that is appropriate for CY.

The NRC will be contacted, to discuss with them our decisions and course of action. Particular attention will be paid to the NRC ideas on the removal of fire protection systems from service as the decommissioning process progresses.

Not only will the fire protection program team work together to produce a new set of Fire Protection Technical Requirements; but the fire protection team will work with the teams working on other efforts. Special effort will be made to maintain open communications in both areas. To work efficiently, awareness of the goals and schedules of the other work efforts will be maintained. Periodic meetings and self-assessments within the fire protection team will occur, as well as periodic meetings with other work teams.

ATTACHMENT A

SUGGESTED TRM CHANGES FOR CONSIDERATION

1. There are several TRM changes that could be made immediately, because the fire protection community as represented by the National Fire Protection Association (NFPA) has developed new, less frequent surveillance frequencies in their consensus-developed codes. They are:
 - a. Detection systems
 - Reduce the frequency of a TRIP ACTUATING DEVICE OPERATIONAL TEST from every six months to yearly.
 - Reduce the frequency of testing supervised detection system circuits (One in which a system trouble is alarmed) from every six months to yearly.
 - Reduce the frequency of testing nonsupervised detection system circuits (One in which system troubles are not alarmed) from once per 31 days to Quarterly.
 - b. Suppression systems
 - Reduce the visual inspection frequency of PIVs from once per 31 days to Quarterly.
 - Reduce the frequency of visual inspection of Control Valves from once per 31 days to Quarterly.
 - Reduce the frequency of flow testing the distribution system from once per 3 years to once per 5 years.
 - Reduce the frequency of air flow testing through open head systems from once per 3 years to once per 5 years.
 - Delete the requirement for an air flow test through CO2 system and Halon system headers and nozzles.
 - Reduce the frequency for opening each fire station valve to verify no blockage from once per 3 years to once per 5 years.
 - Reduce the hose hydrostatic test frequency from once per 12 months to once per three years.
2. There are others that should be changed to reflect the switch in emphasis from safe shutdown of the plant to protection of the spent fuel and against the release of radioactive material. This includes the removal of systems from the TRM, changing of

other surveillance intervals, and the LCO Actions, such as the duration and frequency of Fire Watches if a specific system is not operable. Some examples are:

a. LCO Actions

- In all cases that call for a fire watch as an action, the requirement for a continuous fire watch should be removed. There is no longer any requirement for immediate action in case of a fire, as there is no longer any need to quickly shut down operation of the unit.
- In those cases where a fire watch may still be necessary as an action, a roving fire watch on a two hour rotation, possibly the regular security patrol, should be considered.

b. Removal of Systems from TRM

- As plant systems are found not to be necessary to maintain the plant in its "safe" state, those systems will be taken out of service. After they are removed from service, and are no longer "Operable", the fire protection systems required to protect them when they were operable can be removed from the TRM.
- There could still be some reason to leave specific systems in the TRM, as they might respond to the performance objectives of the revised fire protection section of the decommissioning rule changes, to address the potential for fires that could cause the spread or release of radioactive material. However, this would be only a small number of systems.
- Note that removal of a system from the TRM does not mean that the system will be deactivated or not surveilled. Life Safety or insurance company concerns might still require some fire protection systems to remain in service. If a system is still in service, it must still be inspected and tested in accordance with the applicable NFPA standard. However, that inspection does not have to be in the TRM.
- Based upon the above, the Containment Cable Vault CO2 System should be able to be removed from the TRM immediately. Other TR sections need to be evaluated to see which systems can be removed.