

FIRE PROTECTION TASK ACTION PLAN (FP-TAP)

**Implementation of the Recommendations Made in the
Reassessment of the NRC Fire Protection Program Report
of February 27, 1993**

THIRD QUARTERLY STATUS REPORT

May 20, 1994

**Office of Nuclear Reactor Regulation
Plant Systems Branch
Special Projects Section**

FIRE PROTECTION TASK ACTION PLAN THIRD QUARTERLY STATUS REPORT

EXECUTIVE SUMMARY

The Fire Protection Task Action Plan (FP-TAP) addresses the recommendations made in the "Report on the Reassessment of the NRC Fire Protection Program" of February 27, 1993. This is the third quarterly FP-TAP status report.

RESOURCE AND SCHEDULE STATUS

The staff has added a new section to the end of this report that documents the overall resource and schedule status. In summary, the previous FP-TAP status report documented that the staff had reassigned fire protection resources from the FP-TAP to work on higher priority activities, principally, unplanned Thermo-Lag issues. This increased workload continued throughout the past quarter and contributed to delays in starting some FP-TAP tasks and completing others. The overall completion schedule, however, has not changed. In addition, on May 20, 1994, the staff briefed the Commission on the options for resolving the Thermo-Lag issues (submitted in SECY-94-127 of May 12, 1994). The options have significant resource implications which could affect both the Thermo-Lag Action Plan and the FP-TAP. Following receipt of the Commission guidance, the staff will reassess the action plans and decide how best to proceed. Additional technical assistance funds may be warranted to ensure that the tasks are completed in a timely manner.

The staff appropriately considered the action plan tasks within the broad scope of all demands in accordance with T.E. Murley's memorandum of June 6, 1993, regarding priority determinations. The staff and its technical assistance contractors have continued to work on the highest priority tasks. In addition, there are no immediate detriments associated with postponing or extending the affected tasks. Therefore, the staff concluded that the changes are acceptable.

NRC STAFF ACTIONS DURING THE PAST QUARTER

- Developed a plan of action for developing a new performance-oriented, risk-based fire protection regulation (SECY-94-090). (Part I, Recommendation 1-1)
- Started to review NIST Report of Test FR 3994, "Pilot-Scale Fire-Endurance tests of Fire-Barrier Mats, Blankets, and Panels," of March 31, 1994. (This report provides the results of small-scale fire endurance tests of fire barrier materials other than Thermo-Lag.) (Part I, Recommendation 1-2b)
- Met with Brookhaven National Laboratory representatives to continue discussions about plant shutdown procedures and modified the contract scope of work to include a risk assessment. (FP-TAP Part I, Recommendation 1-7)

- Corrected the weakness with the Fire Induced Vulnerability Evaluation screening process. (Part I, Recommendation 1-8)
- Developed guidance for the review of IPEEE submittals related to fire-induced alternate shutdown/control room panel interactions (GI-147). (Part III, Recommendation 3-2)
- Issued NRR Office Letter 116, which provides guidance to the NRR staff on procedures for implementing new requirements. (Part IV)
- Completed an evaluation of NRR past technical issues in the light of lessons learned from the fire protection program reassessment. (Part IV)

PLANNED ACTIONS

- Revise NRC fire protection regulation (Appendix R). (Part I)
- Complete the review of fire barriers other than Thermo-Lag. (Part I)
- Evaluate current NRR information management systems. (Part I)
- Develop fire protection training program for NRC staff. (Part I)
- Assess reassessment recommendations for further study. (Part II)
- Confirm that the Fire Risk Scoping Study addresses all safety-significant issues. (Part III)
- Apply lessons learned from the fire protection program reassessment to other NRR programs if warranted. (Part IV)

FIRE PROTECTION TASK ACTION PLAN THIRD QUARTERLY STATUS REPORT

INTRODUCTION

A reassessment of the NRR reactor fire protection program was performed in response to the programmatic concerns raised during the review of Thermo-Lag fire barriers (Part IV of the Thermo-Lag Action Plan). The results were provided in the "Report on the Reassessment of the NRC Fire Protection Program" of February 27, 1993. The Fire Protection Task Action Plan (FP-TAP) addresses implementation of the recommendations made in the reassessment report. This is the third quarterly FP-TAP status report.

The FP-TAP is divided into four parts. It addresses implementation of the following reassessment report recommendations and followup items.

- Part I Eight major recommendations for action¹
 Recommendations 1-1 through 1-8
- Part II Four recommendations for further study
 Recommendations 2-1 through 2-4
- Part III Five confirmation issues
 Recommendations 3-1 through 3-5
- Part IV Other Issues

A personal computer-based project management program is used to track and manage the FP-TAP. The program tracks task details, schedules, and completion dates. The attachment to this action plan is a Gantt chart that identifies each task with its schedule and status. The FP-TAP is revised as needed to add tasks that arise during the reviews, and to account for changing resources, work assignments, and priorities. Some of the recommendations for further study (Part II) and the confirmation issues (Part III) may involve significant resource implications. The staff will first perform preliminary assessments to determine whether or not any of the recommendations or issues will require new initiatives. If so, the staff will consider at least a qualitative cost/benefits analysis before fully implementing the recommendation. The action plan will be completed within the stated schedules if sufficient resources are available.

The following sections identify the individual recommendations. For each outstanding recommendation, the corresponding section identifies the scope of

¹ Implementation of the part of Recommendation 1-2b that addressed reevaluating the reviews done for qualification testing of electrical equipment is addressed in the Equipment Qualification Task Action Plan (WITS 9300107)

the implementing tasks, the estimated staff effort and technical assistance (resources), the estimated task durations and completion dates, and the current status. For each recommendation that has been fully implemented, or otherwise disposed of, the corresponding section summarizes the recommendation and the staff actions that closed the recommendations.

PART I RECOMMENDATIONS FOR ACTION

This part of the FP-TAP addresses the recommendations characterized as most significant in the NRC fire protection reassessment report of February 27, 1993.

RECOMMENDATION 1-1, FIRE PROTECTION REGULATION REVISION

Recommendation: The activities in the NRC Office of Research (RES) relating to a potential revision of the fire protection regulation (Appendix R) should be strongly supported.

Scope: Coordinate activities related to the proposed revision of the fire protection regulation.

Staff effort: 1 year (RES) and 1.3 years (NRR).

Tech assistance: RES technical assistance estimated for this effort is \$580K for technical assistance contracts with the National Institute of Standards and Technology (NIST) and Brookhaven National Laboratories (BNL). These contracts are in place. NRR also has a technical assistance contract with BNL.

Duration: 4 years.

Completion date: August 1996.

Status: Started. Completion date revised from December 1995 to August 1996 per SECY-94-090 of March 31, 1994. NRR has completed its resource estimates (reference previous FP-TAP). On the basis of its review of SECY-94-090 and its interactions with RES and Nuclear Energy Institute (NEI), NRR has increased its resource estimates to 1.3 staff year.

The NRR Plant Systems Branch (SPLB) continues to support RES activities relating to the proposed revision of the fire protection regulation. RES activities included surveying existing performance-based practices and approaches, studying a risk-based approach to performance-based requirements, and consideration of a case study. Additional efforts related to this recommendation are addressed under Recommendation 1-7.

The staff is continuing with this effort in accordance with the plan and schedule specified in SECY-94-090. The staff expects the NEI to submit a petition for rulemaking by late

summer 1994. The staff also plans to gather and compile specific detailed information on the exemptions it has granted from the current fire protection regulation (Appendix R to 10 CFR Part 50). The staff will assess the results of this exemption recapture effort to identify commonalities and areas where rulemaking may be warranted. As of the date of this status paper, the staff is preparing a contract to obtain assistance for this effort. The staff estimates that technical assistance resources of about \$200K will be needed for this effort. The actual amount will be documented in the next status report (after the contract statement of work is fully defined).

RECOMMENDATION 1-2a, FIRE TEST ACCEPTANCE CRITERIA

Recommendation: Current staff activity to clearly document a set of criteria for reviewing fire barrier endurance tests should continue to receive high priority and continue to receive close management oversight.

Status: No action was taken under the FP-TAP. This recommendation was completed under Part I of the Thermo-Lag Action Plan when the staff issued Generic Letter 86-10, Supplement 1, "Fire Endurance Test Acceptance Criteria for Fire Barrier Systems Used to Separate Redundant Safe Shutdown Trains Within the Same fire Area," on March 25, 1994.

RECOMMENDATION 1-2b, FIRE BARRIER SYSTEMS OTHER THAN THERMO-LAG

Recommendation: The Plant Systems Branch, NRR, should reevaluate the reviews done for fire barriers other than Thermo-Lag and for electrical equipment qualification testing (EQ).

Scope: Assess the ability of these other fire barrier systems to meet NRC fire protection guidelines and requirements.

Assess the previous staff reviews of qualification testing of fire barrier systems other than Thermo-Lag.

Staff effort: 12 months.

Tech assistance: \$125K.

Duration: 2 years and 3 months.

Completion date: May 1995.

Status: Started. Completion date revised. Resources unchanged.

The estimated completion date for this recommendation is changed from May 1994 to May 1995. For the reasons stated in the Overall Resource and Schedule Status, the staff

shifted resources from this task to higher priority work and reduced the pace of work on this task.

The staff completed the small-scale tests of fire barrier materials other than Thermo-Lag at NIST. The test results were provided by NIST in Report of Test FR 3994, "Pilot-Scale Fire-Endurance tests of Fire-Barrier Mats, Blankets, and Panels," March 31, 1994. If resources are available, the staff will continue its review of the information submitted by the fire barrier vendors and will review the NIST report during the next quarter.

RECOMMENDATION 1-3, ASSESS MANAGEMENT INFORMATION SYSTEM NEEDS

Recommendation: Management should initiate follow-up actions to identify specific areas to be improved in developing an integrated management information system. In addition, senior agency management should set clear expectations for the staff's use of such a system.

Scope: Near term: Identify the systems that currently reside within NRR, determine their limitations and capabilities, and make the information available to others in NRR.

Long term: Evaluate existing management tracking systems and information retrieval systems to assess the extent to which they meet NRR office needs.

Staff effort: 6 months.

Duration: 18 months.

Completion date: December 1994.

Status: Started. Completion date and resources unchanged.

The Program Management, Policy Development, and Analysis Staff (PMAS), NRR, is implementing this recommendation in accordance with the action plan documented in a memorandum of June 29, 1993, from A.T. Gody, Acting Director, PMAS, to T.E. Murley, Director, NRR. PMAS completed a survey of the current NRR databases and has provided the survey results to the staff in a memorandum of October 22, 1993.

During the next quarter, the staff plans to continue to evaluate the existing systems to assess the extent to which they meet NRR needs.

RECOMMENDATION 1-4, ASSESS RESOURCES NEEDED FOR THERMO-LAG AND FP-TAP REVIEWS

Recommendation: Additional staff resources may be appropriate, in the short term, to address the Thermo-Lag Action Plan and to address these recommendations.

Status: Completed March 1994. SPLB assessed the NRC staff and technical assistance resources available to implement the Thermo-Lag Action Plan and the FP-TAP in accordance with the schedules identified in the action plans. The staff allocated technical assistance resources as appropriate, documented its estimated schedules, completion dates, and resources in the action plans. The staff also hired a second senior fire protection engineer, who joined the NRR staff during March 1994. These actions completed this recommendation.

As part of its continued assessments of the Thermo-Lag Action Plan and FP-TAP, the staff considers at least quarterly the schedules and resources for each outstanding task in accordance with a memorandum of June 6, 1994, from T.E. Murley, Director, NRR, to the NRR staff regarding priority determination for NRR review efforts. The staff documents any schedule or resource changes and issues in the status sections of the individual recommendations. The staff also summarizes the changes and issues and their overall impacts in the "Overall Resource and Schedule Status" sections of the status reports.

RECOMMENDATION 1-5, DEVELOP FIRE PROTECTION TRAINING PROGRAM

Recommendation: The Plant Systems Branch Chief, NRR, should initiate discussions with the other NRR branches, the Office for Analysis and Evaluation of Operational Data, and the Office of Research with the goal of developing a fire protection training course (or courses) for staff reviewers, regional and resident inspectors, and for the staff involved in following up on problem indications.

Scope: Identify key personnel within the Office of Personnel, AEOD, RES, TTC, NRR, and the regions and solicit their needs and ideas for fire protection training. Formation of a task force or working group will be considered.

Propose to NRC management a fire protection training program for staff reviewers, regional and resident inspectors and for the staff involved in problem indicators follow-up.

Staff effort: 6 months.

Tech assistance: \$200K.

Duration: 16 months.

Completion date: June 1995.

Status: Future. Completion date and resources unchanged. However, for the reasons stated in the Overall Resource and Schedule Status, the staff did not begin work on this task as

originally scheduled. Pending completion of higher priority tasks and staff consideration of the Commission guidance on the Thermo-Lag options, the schedule and completion date for this recommendation are uncertain. The staff will assess the impact of the Commission guidance on available staff resources and the suitability and availability of technical assistance contractors for this task. The staff will reflect its decisions on schedules, staff resources, and technical assistance resources in the next status report.

The staff plans to consider commercially available training programs to determine whether or not existing programs can be used to satisfy the intent of the recommendation. If so, this effort can be reduced considerably. Technical assistance may be needed to develop the training program. Full implementation of the training program, which is expected to take several years, will not be tracked in this action plan. This task will end when the training program is finalized or a suitable commercially available program is found.

RECOMMENDATION 1-6. COORDINATION OF FIRE PROTECTION REVIEWS AND INSPECTIONS

Recommendation: The Plant Systems Branch Chief, NRR, should initiate discussions with the other NRR branches and the regional offices with the goal of developing a coordinated approach to fire protection and systems reviews and inspections. A pilot project to undertake one coordinated review and one coordinated inspection may be an appropriate step in such a program. The scope of the staff's fire protection inspection should be reevaluated in light of the insights from the Region I special fire safety inspections. The scope of the fire protection review and inspection should be checked against the recommended list of areas in Table 10.2.2 of Enclosure 1 to the reassessment report.

Scope: Reevaluate the scope of the staff's fire protection inspections in light of the insights from the Region I special fire safety inspections.

Assess the areas listed in Table 10.2.2 of Enclosure 1 of the reassessment report and determine if the fire protection review and inspection programs address the following issues.

Adequacy of manual fire fighting effectiveness.

Adequacy of local control capability for ventilation systems/dampers.

Adequacy of fire brigade notification and response procedures.

Adequacy of fire barrier elements.

Adequacy of protection from control systems interactions.

Adequacy of equipment protection from fire suppression system actuations.

Potential vulnerabilities due to broken or leaking flammable gas lines.

Potential vulnerabilities due to seismic/fire interactions.

Adequacy of sprinkler installations.

Adequacy of fire safe shutdown capability and procedures.

Adequacy of Technical Specifications in addressing upgraded fire barriers.

Adequacy of in-place detector testing.

Adequacy of fire damper testing.

Adequacy of licensee QA programs for fire protection.

Adequacy of Fire Hazards Analyses and fire analyses performed by licensees (i.e., 50.59 reviews).

Effect of fire barriers and cable coatings on ampacity.

Review documents such as current review and inspection guidance and procedures (for example, Standard Review Plan, inspection modules, and office letters); reports documenting reviews and inspections; and recent generic communications. The assessment will be used to determine whether or not there are weaknesses with the staff's current review and inspection practices.

Advise management of the results of the assessment and recommend revised review and inspection approach, if warranted. If needed, revise SRP, inspection modules, office letters, etc. to incorporate revised approach.

Staff effort: 13 months.

Duration: 24 months.

Completion date: February 1996.

Status: Future. Completion date and resources unchanged. However, for the reasons stated in the Overall Resource and Schedule

Status, the staff did not begin work on this task as originally scheduled. Pending completion of higher priority tasks and staff consideration of the Commission guidance on the Thermo-Lag options, the schedule and completion date for this recommendation are uncertain. The staff will assess the impact of the Commission guidance on available staff resources and the suitability and availability of technical assistance contractors for this task. The staff will reflect its decisions on schedules, staff resources, and technical assistance resources in the next status report.

Preliminary assessment indicates that adequate coordination between fire protection engineers and systems engineers currently exists. However, SPLB (with support from other branches and regions, as appropriate) will assess the scope of the fire protection reviews and inspections and will propose, if warranted, a revised approach.

RECOMMENDATION 1-7, ELECTRICAL LOAD MANAGEMENT FOLLOWING A SAFE SHUTDOWN FIRE

Recommendation: The Plant Systems Branch, NRR, should give high priority to the recent study of self-induced station blackout (SBO) to deal with fires. In addition, the study should be expanded since the Region I inspections have indicated that concerns can remain even for those plants which only selectively shut down electrical power systems.

Scope: Continue the current review of electrical load management with contractor support.

Expand the study to include those plants which only selectively shutdown electrical power systems.

Staff effort: 3 months.

Tech assistance: \$234K.

Duration: 1 year and 11 months.

Completion date: April 1995.

Status: Started. The staff extended the estimated completion date from November 1994 to April 1995 to reflect a modification to its technical assistance contract with Brookhaven National Laboratory (BNL). The new work, which is discussed below, will take additional time to complete. The staff is waiting for BNL's cost and technical proposals, but believes that the new work can be completed within current technical assistance resource estimates.

During the past quarter, the staff and BNL completed an initial review of the post-fire alternative shutdown procedures (for shutdown from outside the control room) for

all operating reactors. The staff found 8 plants that isolate on-site and off-site AC power to achieve shutdown in the event of a fire that results in control room evacuation. During the past quarter, the staff also modified the contract scope of work to include a risk assessment. This risk assessment will evaluate the probabilities of fires occurring in control rooms or cable spreading rooms that would require plant shutdown from outside the control room using the alternative shutdown methodology that creates a station black out. The assessment will also evaluate the probability of successfully achieving the plant shutdown when using the self-induced SBO shutdown methodology.

Currently, BNL is reviewing several secondary shutdown procedures that were referenced in the primary shutdown procedures discussed above. After it completes these reviews, BNL will submit a letter report that documents the overall results of the procedures review. The staff is also developing with BNL a plan for fully assessing the results of the procedures review, the shutdown methodologies, and the potential safety significance of such methodologies, and for conducting the risk assessment. The plan will identify additional information needed from the 8 plants and will identify subject areas for on-site assessments. For example, information on the assumptions that form the bases of the shutdown methodologies, plant-specific design characteristics and operational constraints that led the licensees to implement the SBO shutdown methodology, and evaluation of plant modifications necessary to eliminate the SBO conditions. The staff will identify representative plants to visit on the basis of its review of the additional information. After it completes the assessment and plant visits, the staff will report its findings and recommendations to management.

RECOMMENDATION 1-8, REASSESS THE "FIVE" METHODOLOGY

Recommendation: The effectiveness of the Fire Induced Vulnerability Evaluation (FIVE) Methodology should be reassessed for use in the Individual Plant Examination External Events (IPEEE) Program. In addition, the IPEEE program plays such a significant role in addressing seismically-induced fire scenarios that the staff should place special emphasis on this part of their review of the IPEEEs.

Status: Completed May 19, 1994.

The staff found a weakness in the FIVE methodology diagram (screening process). In a letter of July 26, 1993, the staff informed NUMARC of the weakness and suggested that it revise the diagram to correct the weakness. In a letter of September 7, 1993, NUMARC agreed with the proposed clarification and stated that the Electric Power Research

Institute (EPRI) would develop errata sheets for staff review. NUMARC submitted the errata sheets on September 30, 1993. In a memorandum of May 19, 1994, C.E. Ader, RES, informed C.E. McCracken, NRR, that RES staff had reviewed the errata sheets and found that the identified weakness was corrected.

The staff will place appropriate emphasis on seismically induced fire scenarios in their reviews of the IPEEEs.

PART II RECOMMENDATIONS FOR FURTHER STUDY

This part of the FP-TAP addresses the recommendations for further study from the NRC fire protection reassessment report of February 27, 1993. Some of the following recommendations may involve significant resource implications. The staff will first perform preliminary assessments of each recommendation to determine whether or not the recommendation will require new initiatives. If so, the staff will consider at least a qualitative cost benefits analysis before fully implementing the recommendation.

RECOMMENDATION 2-1, BIOFOULING OF FIRE WATER SYSTEMS

Recommendation: The Plant Systems Branch, NRR, should assess the implications of biofouling on the fire protection system and develop a recommendation for management review.

Scope: Assess the implications of biofouling on the fire protection system and develop recommendations for management consideration.

Staff effort: 6 weeks.

Duration: 6 months.

Completion date: June 1995.

Status: Started. Completion date and resources unchanged. To assess the implications of biofouling of fire protection systems and develop recommendations for management consideration, the staff is reviewing selected responses to IE Bulletin 81-03 "Flow Blockage of Cooling Water to Safety Systems by Clams and Mussels," which directed licensees to determine if fire protection systems are fouled by clams, mussels or other debris and provide a written report to the NRC. The staff will select 10 sites from different parts of the country that responded to Bulletin 81-03 that use raw water for fire protection systems. If the licensee responses are determined to be adequate to address this issue, the staff will recommend that this action plan item will be closed without further staff effort. If the responses do not adequately address the issue, then the staff will develop recommendations for management

consideration to address the concern. A recommendation for the development of generic communications to licensees or a temporary inspection procedure to address this issue may be submitted.

RECOMMENDATION 2-2. OPERABILITY REQUIREMENTS FOR SAFE SHUTDOWN EQUIPMENT

Recommendation: The Plant Systems Branch, NRR, should work with the Technical Specifications (TS) Branch, NRR, to determine: whether existing operability requirements and/or administrative controls for Appendix R safe shutdown equipment during operating and shutdown conditions are adequate and to determine if any additional requirements are appropriate for Appendix R safe shutdown equipment.

Scope: SPLB will work with the TS Branch to address the recommendations above which includes all aspects of backfit and current implementation.

Staff effort: 4 months (Technical assistance funding or RES may be needed to do cost-benefit analysis.)

Duration: 18 months.

Completion date: November 1995.

Status: Future. Completion date and resources unchanged. However, for the reasons stated in the Overall Resource and Schedule Status, the staff did not begin work on this task as originally scheduled. Pending completion of higher priority tasks and staff consideration of the Commission guidance on the Thermo-Lag options, the schedule and completion date for this recommendation are uncertain. The staff will assess the impact of the Commission guidance on available staff resources and the suitability and availability of technical assistance contractors for this task. The staff will reflect its decisions on schedules, staff resources, and technical assistance resources in the next status report.

RECOMMENDATION 2-3. FIRE BARRIER SURVEILLANCE REQUIREMENTS

Recommendation: The Plant Systems Branch, NRR, should determine whether pre-1979 Technical Specifications for active fire barriers (e.g., dampers, fire doors, etc.) are adequate.

Staff effort: 3 weeks.

Duration: 4 months.

Completion date: February 1995.

Status: Future. Completion date and resources unchanged. However, for the reasons stated in the Overall Resource and Schedule

Status, the staff did not begin work on this task as originally scheduled. However, as stated in the previous status reports, a preliminary assessment indicated that adequate procedures are in place for active fire barriers. Ongoing plant inspections will continue to verify that the procedures are adequate. SPLB will reconsider this recommendation at a later date.

RECOMMENDATION 2-4. FIRE BARRIER RELIABILITY

Recommendation: Fire barrier elements are qualified with negative pressure conditions existing on the side of the barrier exposed to the fire. This may not be conservative if fires can occur where the pressure on the exposed side of the barrier is actually positive. Also, seals that contain air passages can allow flames and hot gases to pass through. The Plant Systems Branch, NRR, should consider specific testing to determine whether fire barriers are sufficiently reliable.

Scope: RES is currently reviewing fire barrier reliability under Generic Issue (GI) 149. SPLB will assess the scope and priority of the RES effort. SPLB will advise RES of the results of its assessment if changes in the scope or priority are warranted.

Staff effort: 3 months.

Duration: 12 months.

Completion date: February 1995.

Status: Started. Completion date and resources unchanged. In a memorandum of April 29, 1994, from A.T. Thadani, Associate Director for Inspection and Technical Assessment, NRR, to E.S. Beckjord, Director, RES, the staff provided information on Thermo-Lag fire barriers that could warrant reprioritization of the previously prioritized low-priority of GI 149.

PART III CONFIRMATION ISSUES

This part of the FP-TAP addresses the confirmation issues identified in the NRC fire protection reassessment report of February 27, 1993. Some of the following confirmation issues may contain significant resource implications. The staff will first perform a preliminary assessment to determine whether or not any of the following recommendations will require new initiatives. If so, the staff will first consider at least a qualitative cost/benefits analysis before fully implementing the recommendation.

RECOMMENDATIONS 3-1, 3-2, 3-3 AND 3-4, GENERIC ISSUES

Recommendation: The Plant Systems Branch, NRR, should review the following issues and confirm that the NRC's current requirements or on-going programs adequately address the underlying safety concern:

- GSI-148 Adequacy of Manual Fire Fighting Effectiveness (Recommendation 3-1).
- GSI-147 Fire Related Control Systems Interactions (Recommendation 3-2).
- GSI-57 Effects of Fire Protection System Actuation on Safety-Related Equipment (Recommendation 3-3).
- GSI-106 Broken or Leaking Flammable Gas Lines (Recommendation 3-4).

Scope: Review the issues and provide confirmation or alternative action.

Staff effort: 4 months.

Duration: 12 months.

Completion date: March 1995.

Status: Completion date and resources unchanged.

Recommendation 3-1 (GSI-148) is under review. Recommendations 3-2 (GSI-147), 3-3 (GSI-57), and 3-4 (GSI-106) are completed.

As documented in a memorandum of March 9, 1994, from J. Murphy, Acting Director, Division of Safety Issue Resolution, RES, to E.S. Beckjord, Director, RES, the prioritization of GSI-147 in 1992, resulted in its classification as a licensing issue. However, the safety significance was deemed to vary greatly from plant to plant. Therefore, it appeared unlikely that any cost-effective generic resolution could be identified. On this basis, the staff recommended that plant-specific reviews be performed to evaluate the significance of this issue. Such reviews are currently required as part of the IPEEE program and brief procedural guidance is provided in NUREG-1407, which was issued in June 1991. The resolution of GSI-147 was to develop staff review guidance of IPEEE submittals related to fire-induced alternate shutdown/control room panel interactions. This review guidance, which was provided with the memorandum of March 9, 1994, will be incorporated into

the overall review guidance document for the IPEEE. This action satisfies Recommendation 3-2.

Recommendation 3-3 (GSI-57) was completed by NRR concurrence with NUREG-1472, "Regulatory Analysis for the Resolution of Generic Issue 57," October 1993. From its participation in Advisory Committee on Reactor Safeguards and its review of the NUREG report, NRR staff concluded that the underlying safety issue was adequately addressed.

Recommendation 3-4 (GSI-106) was completed by NRR concurrence with Generic Letter 93-06, "Research Results on Generic Safety Issue 106, Piping and the Use of Highly Combustible Gases in Vital Areas," October 25, 1993. From its review of NUREG-1364, "Regulatory Analysis for the Resolution of Generic Safety Issue 106: Piping and the Use of Highly Combustible Gases in Vital Areas," and GL 93-06, NRR staff concluded that the underlying safety issue was adequately addressed.

The staff is currently preparing review guidance for GSI-148 which will be incorporated into the overall review guidance document for the IPEEE.

RECOMMENDATION 3-5, FIRE PROTECTION CONFIRMATORY ISSUES

Recommendation: The Plant Systems Branch, NRR, should review the technical issues identified in Table 10.2-1 of Enclosure 1 of the reassessment report and confirm that they do not raise significant safety concerns or require additional staff review. The Plant Systems Branch, NRR, should initiate a dialogue with NRR and the Office of Research to confirm that there are no safety significant issues from the Fire Risk Scoping Study which remain unresolved. The Plant Systems Branch, NRR, should identify any additional actions necessary, in their view, to strengthen the NRC Fire Protection Program.

Scope: Assess the following technical issues and determine whether or not they raise any significant safety concerns.

Capability to man the fire brigade and shutdown the plant from outside the control room simultaneously.

Acceptability of the fire brigade responding to a fire outside the plant or protected area.

Adequacy of local control capability for ventilation systems/dampers.

Adequacy of fire brigade notification and response procedures.

Acceptability of the thermal damage threshold currently assigned to electrical cables in light of the Sandia test results.

Effect of fire barriers and cable coatings on ampacity (Thermo-Lag Action Plan).

Effects of fire and smoke on plant equipment.

Adequacy of sprinkler installations.

Acceptability of using foam and deluge nozzles in high fire hazard areas.

Adequacy of fire safe shutdown capability and procedures.

Adequacy of in-place detector testing.

Adequacy of licensee QA programs for fire protection.

Adequacy of Fire Hazards Analyses and fire analyses (i.e., 50.59 reviews) performed by licensees.

Adequacy of NRC reporting requirements for fire events.

Reassess the fire risk scoping study and coordinate any unresolved issues with RES (SPLB).

Perform a programmatic review of the fire protection review and inspection programs and identify any additional action necessary to strengthen the programs (SPLB).

Staff effort: Under development.

Duration: 24 months (preliminary estimate).

Completion date: May 1997 (preliminary estimate).

Status: Future. Completion date and resources unchanged.

There is overlap between most of the confirmation issues and those previously identified under Recommendation 1-6 and Recommendations 2-1 through 3-4. To the extent practicable, SPLB will assess the confirmation issues as part of and integral to the reviews and assessments performed under Recommendation 1-6 and 2-1 through 3-4. Any confirmation issue that is not fully assessed and disposed of during these reviews will be scheduled for review as resources allow.

Independent of the reassessment report, NRR staff reviewed shift staffing practices at nuclear power plants (SECY-93-184, June 29, 1993) and is monitoring plant events with respect to the sufficiency of licensee shift staffing and task allocation. The results of these efforts will be considered, as appropriate, when Recommendation 3-5 is addressed.

PART IV OTHER ISSUES

This part of the FP-TAP identifies issues for staff action that are related to the fire protection program reassessment, but that were not specifically identified in the reassessment of the NRC fire protection report of February 27, 1993.

LESSONS LEARNED

Issue: In a memorandum of August 17, 1992, to J. Taylor, EDO, the Commission requested that the staff address several issues raised in the OIG's report on the staff's review and acceptance of Thermo-Lag fire barrier material. In a memorandum to J. Taylor, EDO, of August 21, 1992, T. Murley, NRR, stated that the staff would apply the lessons learned from the fire protection program reassessment to other NRR programs and would include corrective actions for programmatic improvements if necessary. Responsibility for this assessment was assigned to PMAS. (This activity is also being tracked as WITS Item 9200200.)

Scope: To determine the applicability of the lessons learned from the staff reassessment of the fire protection program to other NRR technical areas.

Staff effort: One year.

Tech assistance: \$250K.

Duration: 18 months.

Completion date: December 1994.

Status: Started. Completion date and resources unchanged.

This assessment is being performed by NRR/PMAS. In a memorandum of June 29, 1993, from A.T. Gody, Acting Director, PMAS, to T.E. Murley, Director, NRR, PMAS provided its plan of action for identifying the lessons learned from the fire protection reassessment and for determining their applicability to other NRR technical areas. The PMAS staff has developed an evaluation criteria and a scope of review to evaluate the staff's handling of past NRR technical issues. A contract is in place with INEL to perform the

screening evaluations. The technical assistance resources may be increased after a better understanding of the work is completed.

During the past quarter, PMAS issued NRR Office Letter 116, "Procedures for Implementation of New Requirements," in accordance with its action plan. The office letter provides staff guidance for the periodic management review of implementation of new requirements. PMAS staff also completed an evaluation of NRR past technical issues in the light of the lessons learned from the fire protection program reassessment.

The staff is currently reviewing the results of the INEL screening evaluations to identify issues that need additional attention. The staff plans to further review these issues by examining records such as Licensee Event Reports, allegations, Part 21 reports. On the basis of the results of this review, the staff plans to recommend candidate programs for in-depth evaluation.

Application of lessons learned to the qualification testing of electrical equipment is addressed in the Equipment Qualification Task Action Plan (WITS Item No. 9300107).

OVERALL RESOURCE AND SCHEDULE STATUS

In the FP-TAP status report of February 4, 1994, the staff informed the Commission that it had shifted some of its fire protection resources from the FP-TAP to higher priority activities such as advanced reactors reviews, plant-specific licensing actions, and unplanned Thermo-Lag issues (such as resolving testing issues with the Nuclear Energy Institute; requesting and reviewing additional licensee information; reassessing the present course of action; and identifying and assessing options). This increased workload continued throughout the past quarter. The need to reassign these resources delayed the start of some of the FP-TAP tasks and the completion of others. The overall completion schedule, however, has not changed at this time.

On May 20, 1994, the staff briefed the Commission on the options and the recommended course of action for resolving the Thermo-Lag issues (submitted in SECY-94-127 of May 12, 1994). Several of the options have significant resource implications which could impact both the Thermo-Lag Action Plan and the FP-TAP. If the Commission guidance changes the present course of action, or impacts schedules or resources, the staff will reflect those changes in the next quarterly status reports. The staff will also assess how best to implement the guidance. Additional technical assistance funds may be warranted to ensure that the tasks that have been postponed or extended are completed in a timely manner.

The staff appropriately considered the action plan tasks within the broad scope of all demands in accordance with T.E. Murley's memorandum of June 6, 1993, regarding priority determinations. The staff and its technical

assistance contractors have continued to work on the highest priority tasks. In addition, there are no immediate detriments associated with postponing or extending the affected tasks. Therefore, the staff concluded that the changes are acceptable.

GANTT CHART

The attached Gantt chart shows the recommendations with the scheduled duration for completion and the completion status (future, started, or done).

FIRE PROTECTION TASK ACTION PLAN (FP-TAP)

Task Name	1993	1994	1995	1996	1997
PART I - MAJOR RECOMMENDATIONS	Started				
R.1-1 APPENDIX R REVISION	Started				
R.1-2b OTHER FIRE BARRIERS	Started				
R.1-3 MANAGEMENT INFO. SYSTEM	Started				
R.1-4 RESOURCES FOR TL/FP-TAP	Done				
R.1-5 DEVELOP TRAINING PROGRAM	Future				
R.1-6 INSPECTION COORDINATION	Future				
R.1-7 ELEC. LOAD MANAGEMENT	Started				
R.1-8 REASSESS "FIVE" METH.	Done				
PART II - REC. FURTHER STUDY	Started				
R.2-1 BIOFOULING	Started				
R.2-2 S/D OPERABILITY REQ.	Future				
R.2-3 FIRE BARRIERS SURV.REQ.	Future				
R.2-4 FIRE BARRIER RELIABILITY	Started				
PART III - CONFIRMATION ISSUES	Started				
R.3-1 MANUAL FIRE FIGHTING	Started				
R.3-2 CONTROL SYST.INTERACTION	Done				
R.3-3 EQUIPMENT PROTECTION	Done				
R.3-4 FLAMMABLE GAS LINES	Done				
R.3-5 REMAINING ISSUES	Future				
PART IV - LESSONS LEARNED	Started				