



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W.
 ATLANTA, GEORGIA 30323

Report No.: 50-400/86-42

Licensee: Carolina Power and Light Company
 P. O. Box 1551
 Raleigh, NC 27602

Docket No.: 50-400

License No.: CPPR-158

Facility Name: Shearon Harris

Inspection Conducted: June 3-6, 1986

Inspectors: A. B. Ruff 7/10/85
 A. B. Ruff Date Signed
 for Derald R. Wiseman
 P. M. Madden July 10, 1986
 Date Signed

Accompanying Personnel: P. Fillion

Approved by: T. E. Conlon 7/10/86
 T. E. Conlon, Section Chief Date Signed
 Systems Section
 Division of Reactor Safety

SUMMARY

Scope: This routine, special announced inspection was performed in the areas of fire protection and the licensee's actions regarding implementation of the plant's safe shutdown guidance provided in NUREG 0800, Standard Review Plan, Section 9.5.1, Fire Protection Program, positions C.5.b and c.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *G. Campbell, Manager Maintenance
- *W. Caraway, Harris Project Engineering Support (HPES) Fire Protection
- *N. Chiangi, Manager Quality Assurance/Quality Control (QA/QC)
- *J. Collins, Manager Operations
- *W. Edwards, HPES Instrumentation and Controls (I&C)
- *R. Elks, Operations QA Technician
- *G. Forhand, Director QA/QC
- *J. Harness, Assistant Plant Manager
- *A. Howe, Specialist Regulatory Compliance
- *J. Lawrence, HPES, Technical Assistant
- *L. Loflin, Manager HPES
- *C. McKenzie, Acting Director, QA/QC Operations
- *M. Oats, Principal Engineer, Nuclear Licensing
- *L. Ollivier, HPES-Technical Assistant
- *J. Pinto, HPES-Fire Protection
- *R. Prunty, Jr., HPES-I&C
- *J. Smith, Operations
- *R. Stewart, HPES-Mechanical
- *R. Van Metre, Manager, Technical Support
- *M. Wallace, Specialist Regulatory Compliance
- *J. Willis, Plant General Manager

Other licensee employees contacted included engineers, technicians, operators, security force members, and office personnel.

Other Organizations

- *G. Attarian, EBASCO, Electrical Engineer
- *H. Jones, EBASCO, I&C Engineer
- A. Lane, EBASCO, Electrical Engineer
- W. Pehush, EBASCO, I&C Supervisory Engineer
- *G. Rao, EBASCO, Electrical Engineer
- *J. Somma, EBASCO, Electrical Engineer

NRC Resident Inspector

- *G. Maxwell

*Attended exit interview.



The following information was obtained from the records of the
 Department of the Interior, Bureau of Land Management, regarding
 the land parcels described herein. The information is being provided
 for your information and is not intended to constitute a warranty
 of any kind. The information is based on the records of the
 Department of the Interior, Bureau of Land Management, and is
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 constitute a warranty of any kind.

2. Exit Interview

The inspection scope and findings were summarized on June 6, 1986, with those persons indicated in the paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

- a. Inspector Followup Item (400/86-42-01), Review of Testing Instructions For Periodic Testing of Circuits Breakers Covered by Appendix R Coordination Study, paragraph 5.(2).
- b. Inspector Followup Item (400/86-42-02), Review Completed Installation Work for Redundant Fuses, paragraph 5.(2).
- c. Inspector Followup Item (400/86-42-03), Pre-Fire Plans Fail to Properly Identify an Adequate Fire Brigade Strategy with Respect to Smoke Control, paragraph 8.a.(3)
- d. Inspector Followup Item (440/86-42-04), Present Fire Brigade Radio Communication System Does Not Provide Adequate Two-Way Communications to Support Fire Fighting Operations, paragraph 8.a.(5)
- e. Inspector Followup Item (400/86-42-05) Inadequate Fire Response Methods Utilized by the Fire Brigade, paragraph 8.a.(5)

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during the inspection.

5. Associated Circuits

(1) General

An inspection was made of associated circuits as defined in Generic Letter (GL) 81-12 of February 20, 1981, and Supplement to GL 81-12 issued in the spring of 1982. The inspection was based on the associated circuit portion of the Shearon Harris Fire Protection Plan/Safety Evaluation Report (FPP/SER) Section 9.5.1, supplemental correspondence from CP&L dated September 26, 1985, October 15, 1985 and January 7, 1986, and information received from the licensee during the inspection.

The GL defines the associated circuits of concern as those circuits that have a physical separation less than that required by Standard Review Plan 9.5.1, Position C.5.b and have one of the following:

- a. A common power source (common bus) with the shutdown equipment and the power source is not electrically protected from the circuit of concern by coordinated breakers, fuses, or similar devices; or
- b. A connection to circuits of equipment who spurious operation (spurious signal) would adversely affect the shutdown capability; or
- c. A common enclosure with the shutdown cables, and
 - (Type 1) are not electrically protected by circuit breakers, fuses or similar devices, or
 - (Type 2) will allow propagation of the fire into the enclosure.

At Shearon Harris the circuits that are needed for shutdown operations and circuits that could affect shutdown operations as a result of fire induced failures are classified as safe shutdown circuits and are protected where required.

(2) Associated Circuits by Common Power Supply (Common Bus)

Circuits and cables associated by common power supply are simply nonsafe shutdown cables whose fire-induced failure will cause the loss of a power source (bus, distribution panel, or MCC) that is necessary to support safe shutdown. This problem could exist for power, control, or instrumentation circuits. The problem of associated circuits of concern by common power supply is resolved by ensuring adequate electrical coordination between the safe shutdown power source supply breaker and the component feeder breaker or fuses.

The electrical circuit fault protection, at the Harris Plant, was originally designed to provide protection for plant electric circuits via protective relaying circuit breaker and fusing. This original coordination study (E-2 6900v and E-1 480v) was reviewed by the licensee and was expanded for Appendix R circuits. The Appendix R coordination is covered by the licensee's calculation E-5506.

In order to audit this concern at Shearon Harris, the above referenced coordination studies were reviewed and a sample selection of circuits

were checked. The following are examples that were reviewed during this inspection:

<u>Description/Breaker and/or Component</u>	<u>Coordination Study</u>
6900v Emergency Bus	E-2/E-1
1A-SA Feeder 1A1B-SA	E-2/E-1
480v Emergency Bus 1A1	E-2/E-1
Breaker 1A24	E-2/E-1
RHR Pump	E-2/E-1
Emergency Service Water Pump	
480v, Turbine Generator Bearing Oil Pump Motor	E5506 Sheet #16
480v, Containment Spray Pump Motor	E5506 Sheet #8&9
480v, MCC 1 and 4A33 SA	E5506 Sheet #10
480v, MCC 1 and 4B33 SA	E5506 Sheet #11
480v, Motor Operated Valve 2SI-V-587-SA-1	E5506 Sheet #18
125v D.C. Bus DP-1A2-SA	E5506 Sheet #50
125v D.C. Bus DP-1A-1 & Bus DP-1A-11	E5506 Sheet #51

The SER states that the licensee's breakers identified in their coordination study will be tested every 18 months to demonstrate that the overall scheme remains within the design limits. This testing will probably be on a percentage basis with the percentage being increased when discrepancies are encountered. This testing scheme is still being formulated by the licensee and will be reviewed during a future inspection. This is identified as Inspection Followup Item 50-400/86-42-01, Review of Testing Instructions for Periodic Testing of Circuits Breakers Covered by Appendix R Coordination Study.

IE Information Notice 85-09, Isolation Transfer Switches and Post-Fire Shutdown Capability, was issued January 31, 1985. This Notice identifies a potential problem concerning fuses in control circuits that are common for operation of equipment from the Control Room and Alternate Hot Shutdown area. A fire in the Control Room could cause these common fuses to blow before transfer is made to the Alternate Hot Shutdown area. If the control circuit is needed at the Alternate Shutdown area to energize a piece of equipment and if the fuse(s) blew before transfer, equipment would not be operable without replacing the blown



fuse(s). The licensee stated that the corrective action for this potential problem is being implemented by their FCR-I-3220, 3199, 3245, and FCR-E-5865, Rev. 2. The work for these FCRs is almost complete and should be completed before fuel load. This item is identified as Inspection Followup Item 50-400/86-42-02, Review Completed Installation Work for Redundant Fuses.

Several electrical schematics drawings were reviewed for redundant fuses and were found to be acceptable. The following sheets of Drawing Car 2166 B401 were reviewed for redundant fusing:

- a. Sheet 2212, Emergency Service Water Pump 1B-SB
- b. Sheet 1779, 480V Emergency Bus 1B3-SB to MCC 1B32-SB Breaker 1B32-SB
- c. Sheet 1701, Emergency Diesel Generator 1A
- d. Sheet 1769, 480V Emergency Bus 1B3-SB to MCC 1B21-SB, Breaker 1B21-SB

3. Associated Circuits Causing Spurious Operation (Spurious Signals)

Circuits associated because of spurious operation are those that can, by fire-induced failures cause safe shutdown equipment of nonsafe shutdown equipment to malfunction in a way that affects the function of safe shutdown systems or equipment. Examples include the uncontrolled opening or closing of valves, or of circuit breakers, due to fire-induced damage to nonsafe shutdown instrument and control circuits that affect the control circuit interlocks of the safe shutdown components.

The analysis of spurious operations considered equipment (safe shutdown and nonsafe shutdown) that could affect safe shutdown of the plant. The potential effects of associated circuits of concern were considered in the spurious operations analysis.

Redundancy between shutdown circuits with proper separation, protection, modification and/or analysis has been used by the licensee to resolve this concern.

The high/low pressure interface electrically operated valves were reviewed in detail for spurious signal concerns. These valves are associated with the five systems listed below:

- a. The reactor coolant vent system
- b. The letdown system
- c. The primary sampling system
- d. The power operated relief valve (PORV)/block valve
- e. The RHR system (suction side valves)



The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures that the financial statements are reliable and can be audited without issue.

In the second section, the author outlines the various methods used to collect and analyze data. This includes both primary and secondary research techniques. The goal is to gather comprehensive information that can be used to identify trends and make informed decisions.

The third part of the document focuses on the implementation of the proposed strategies. It details the steps involved in setting up the necessary infrastructure and the roles of different departments. The author stresses the need for clear communication and coordination throughout the process.

Finally, the document concludes with a summary of the key findings and recommendations. It reiterates the importance of ongoing monitoring and evaluation to ensure that the implemented strategies are effective and can be adjusted as needed.



The spurious operation of these valves were mitigated by valve redundancy, proper separation, protection of cables, analysis, operator actions and/or flow restrictors on small diameter piping or tubing installed in some reactor coolant system fluid lines.

(4) Associated Circuits by Common Enclosure

A circuit, whether safety-related or not, is classified as an associated circuit of concern if it shares a common enclosure (e.g., cable tray, conduit, panel or junction box) with a "Required Circuit," and, is not adequately protected by circuit breakers, fuses or similar devices, or could allow fire propagation into the Shared Common Enclosure.

At Shearon Harris the definition of enclosure has been extended to include the entire fire area. The propagation of fire through or between enclosure will be mitigated for the following reasons:

- a. Cable sizing and overcurrent protection are provided for safe-shutdown cables
- b. Safe shutdown cables are IEEE 383 qualified
- c. Fire stops are installed whenever a cable penetrates a fire area

6. Damage Control Measures

NUREG 0800, Section II, paragraph 2.a references Branch Technical Position (BTP) CMEB 9.5.1. Paragraph C.5.b (1) of BTP requires fire protection features to be provided for structures, systems and components important to safe shutdown and to be capable of limiting fire damage so that systems necessary to achieve and maintain cold shutdown are free of fire damage or can be repaired such that the equipment can be made operable within 72 hours. Materials for such repairs are required to be readily available on site and procedures are to be in effect to implement such repairs.

Shearon Harris Abnormal Operating Procedure (AOP)-004, Safe Shutdown in Case of Fire in Control Room Inaccessibility, is used to bring the plant to hot standby and cold shutdown under abnormal conditions. After attaining hot shutdown, RHR suction isolation valve have to be opened to go to cold shutdown. If the containment is inaccessible at this time and a fire has disabled one of the electrical power trains then electrical power from the subject motor operator valve can be transferred from its normal power supply to an alternate Class 1E supply in accordance with FSAR 5.4.7.2.6. The detailed information for transfer of power is specified in AOP-020. Dedicated spare cables have been routed and installed to insure that this can be readily accomplished. The inspectors verified the cable termination leads were marked for proper phasing. This marking will insure that AC valve motor will move in the proper direction after these leads are connected in the circuit.

7. Wrapping of Conduit and Cable Trays to Comply with Physical Separation Criteria as Stipulated in the Standard Review Plan Section 9.5.1 Position C.b.5.

The inspectors reviewed the licensee's program for determining ampacity derating factors for cables in cable trays or conduits provided with fire barrier wraps. The licensee presented a test report entitled "Ampacity Test Program for the Carolina Power and Light Company Shearon Harris Nuclear Power Plant - Unit 1" by Wyle Laboratories Scientific Services & System Group. The test setup for the cable tray was a ten-foot length of cable tray filled 30% and mounted in a controlled ambient temperature chamber. Current through the cables could be varied, and temperatures were measured by thermocouples mounted under the insulation directly on the conductor. Current and temperature were recorded. A "base" case test and "wrapped" case test were run. The "base" case was cable tray without a cover or wrapping. Comparison of the two cases yielded a derating factor for cable in cable trays with a one-hour fire wrap. This derating factor was applied to the plant design criteria ampacity table to determine the allowable ampacity of a cable in a cable tray with a one-hour fire wrap. A similar approach was used by Wyle Laboratories for cable in conduit with fire wraps. The test report covered test specimen description; test equipment, requirements, procedures and results. The NRC does not have any further questions on the test report nor on the resultant derating factors at this time.

8. Fire Prevention/Protection Program (Module 64704)

a. Plant Fire Brigade

(1) Fire Brigade Organization

Currently the total station fire brigade is composed of approximately 48 personnel from the operations staff. The on duty fire brigade shift consists of five members in accordance with NUREG 0800 Standard Review Plan 9.5.1, Fire Protection Programs for Nuclear Power Facilities. The fire brigade team leader and two members are composed of personnel from the reactor operations group and the remaining two members are assigned to the brigade from the radwaste operations group.

In addition, at the time of this inspection the licensee's site fire protection staff was conducting the initial fire brigade training program for approximately 24 additional personnel. The Harris facility; by plant general order PGO-024, dated April 25, 1986, has implemented their fire brigade organization which provides the minimum five member brigade requirements.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for ensuring the integrity of the financial statements and for providing a clear audit trail. The text notes that any discrepancies or errors in the records can lead to significant complications during an audit and may result in legal consequences for the company.

2. The second part of the document outlines the specific procedures that should be followed when recording transactions. It details the steps from identifying the transaction to the final entry in the accounting system. Key points include the need for proper documentation, such as invoices and receipts, and the importance of timely recording to avoid errors and omissions. The document also mentions the role of the accounting department in ensuring that all transactions are properly classified and recorded in the appropriate accounts.

3. The third part of the document addresses the issue of internal controls. It explains that strong internal controls are necessary to prevent fraud and to ensure that the company's assets are protected. The text describes various control measures, such as segregation of duties, authorization requirements, and regular reconciliations. It stresses that these controls should be designed to be effective and efficient, and that they should be regularly reviewed and updated to reflect changes in the company's operations.

4. The fourth part of the document discusses the importance of transparency and communication. It notes that the company should maintain open lines of communication with its stakeholders, including investors, creditors, and regulatory authorities. This involves providing timely and accurate financial information and being transparent about any potential risks or uncertainties. The text also highlights the importance of maintaining accurate records of all communications and decisions related to financial reporting.

5. The fifth and final part of the document provides a summary of the key points discussed. It reiterates the importance of accurate record-keeping, proper internal controls, and transparent communication. The document concludes by stating that these practices are essential for the long-term success and sustainability of the company. It encourages the company to continue to improve its financial reporting processes and to stay up-to-date on the latest developments in accounting and financial reporting.

(2) Fire Brigade Training

The inspectors reviewed the following lesson plans associated with the licensee's initial 40 hour fire brigade training program:

- Radiological
- Emergency Plan
- Firefighting Fog Streams
- Salvage and Overhaul
- Self-Contained Breathing Apparatus
- Ropes and Knots
- Introduction
- Search and Rescue
- Protective Clothing
- Ventilation
- Hose and Hose Streams
- Command, Strategy and Tactics
- Extinguishers

Based on the review of the initial fire brigade training program lesson plans and actual observations of fire brigade training session conducted by the Harris facility fire protection staff, the inspectors identified that the lesson plans do not cover all of the instructional aspects of the practical firefighting exercises required by the fire brigade training program. The licensee agreed to review the content of the following lesson plans and revise these plans in order to assure teaching continuity with respect to the following manual firefighting exercises:

- Salvage and overhaul

This lesson plan does not discuss the various salvage cover deployment throws, folds, and applications. In addition, the application of salvage covers for firefighting water runoff control is not addressed.

- Firefighting fog streams

This lesson plan does not address the practical aspects of utilizing fog streams on electrical and flammable liquid fires, for smoke removal and for exposure protection.

- Self-contained breathing apparatus

This lesson plan does not address the practical evaluations of donning the apparatus, breathing techniques, emergency breathing techniques, and obscured vision exercises.

- Ropes and knots

This lesson does not fully cover practical knot tying, tying of rope to firefighting equipment and hoisting evaluations and rope coiling and storage exercises.

- Search and rescue

The search and rescue lesson plan should address the practical aspects associated with the rescue and removal of a victim from the plant area experiencing the fire.

- Ventilation

The practical evaluations associated with this lesson plan do not address the placement and operation of portable smoke ejection equipment.

- Hose and hose streams

This lesson plan does not address the practical applications of fog and/or straight firefighting streams and how they should be utilized under various fire conditions.

- Fire extinguishers

This lesson plan is written for general employee orientation. The practical firefighting application of extinguishers as outlined by this lesson plan utilizes a 12 square foot pan fire for extinguisher training and is appropriate for non-fire brigade members. However, with respect to the practical fire extinguisher training for the fire brigade the fire size should be increased in order to assure brigade proficiency.

(3) Fire Brigade Firefighting Pre-Fire Plans

The inspector reviewed the following pre-fire plans to determine if the plans developed proper firefighting strategies and addressed the guidelines established by Standard Review Plan 9.5.1, Fire Protection Program:

- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - tank area, fire zone 1-A-3-TA, elevation 236' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - pump and equipment area (north end), fire zone 1-A-3-PBB, elevation 236' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - pump and equipment area (south end), fire zone 1-A-3-PBA, elevation 236' - 0"



I have been thinking about you a lot lately
 and wondering how you are getting on.
 I hope you are well and happy.
 I have been busy with work lately
 but I will try to get back to you soon.
 I have been thinking about you a lot lately
 and wondering how you are getting on.
 I hope you are well and happy.
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 but I will try to get back to you soon.
 I have been thinking about you a lot lately
 and wondering how you are getting on.
 I hope you are well and happy.
 I have been busy with work lately
 but I will try to get back to you soon.



- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - mechanical penetration area (north end), fire zone 1-A-3-MPB, elevation 236' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - mechanical penetration area (south end), fire zone 1-A-3-MPA, elevation 236' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - access corridor, fire zone 1-A-3-Cor, elevation 236' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - columns 41 to 43 and I to L, fire zone 1-A-3-Comi, elevation 236' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - columns 41 to 43 and E to H, fire zone 1-A-3-Come, elevation 236' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - columns 41 to 43 and B to E, fire zone 1-A-3-Comb, elevation 236' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - Columns 41 to 43 and B to E, fire zone 1-A-3-Comb, elevation 236' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - Residual heat removal heat exchanger B, fire zone 1-A-34-RHXB, elevations 236' - 0" thru 286' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - residual heat exchanger A, fire zone 1-A-34-RHXA, elevations 236' - 0" thru 286' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - charging pump loft area, fire zone 1-A-3-PB, elevation 247' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-EP3 - electrical penetration area B, elevation 261' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-EPA - electrical penetration area B, elevation 261' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - tank area, fire zone 1-A-4-TA, elevation 261' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - access corridor, fire zone 1-A-4, Cor, elevation 261' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - columns 43 and I to L, fire zone 1-A-4-Comi, elevation 261' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-B - columns 41 to 43 and E to H, fire zone 1-A-4-Come, elevation 261' - 0"

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is crucial for ensuring the integrity of the financial statements and for providing a clear audit trail. The text notes that any discrepancies or errors in the records can lead to significant complications during an audit and may result in the disallowance of certain expenses.

2. The second part of the document outlines the specific procedures for recording transactions. It details the requirements for receipts, invoices, and other supporting documents. It states that all receipts must be properly dated, itemized, and signed by the individual receiving the goods or services. Additionally, it requires that all invoices be reviewed for accuracy and that any missing or incomplete information be promptly addressed.

3. The third part of the document addresses the issue of expense reporting. It explains that employees are required to submit a detailed report of all business-related expenses incurred during the reporting period. This report should include a breakdown of the expenses by category and a clear explanation of the business purpose for each expense. The text also notes that any personal expenses must be clearly identified and excluded from the report.

4. The fourth part of the document discusses the process of reviewing and approving expense reports. It states that all reports must be reviewed by the appropriate supervisor or manager to ensure that the expenses are legitimate and necessary for the business. The reviewer should verify that the supporting documents are complete and accurate and that the expenses comply with the organization's policies and procedures. Once approved, the reports should be submitted to the accounting department for processing.

5. The fifth part of the document provides information regarding the consequences of non-compliance with the expense reporting policies. It states that employees who fail to provide accurate and complete reports may be subject to disciplinary action, including the denial of reimbursement for their expenses. In severe cases, this could result in the employee being held personally liable for the expenses incurred.

6. The sixth part of the document offers advice on how to avoid common mistakes when reporting expenses. It suggests that employees should keep receipts for all business-related purchases, even for small amounts. It also advises that employees should clearly distinguish between business and personal expenses and should not include any non-business-related items in their reports. Finally, it recommends that employees should review their reports carefully before submitting them to ensure that all information is accurate and complete.

7. The seventh part of the document provides a summary of the key points discussed in the document. It reiterates the importance of accurate record-keeping, the requirements for receipts and invoices, the process of reporting and approving expenses, and the consequences of non-compliance. It concludes by stating that the organization is committed to providing a fair and equitable reimbursement process for all legitimate business expenses and encourages employees to adhere to the policies and procedures outlined in this document.



- Reactor Auxiliary Building, Fire Area 1-A-Bal-B - columns 41 to 43 and B to E, fire zone 1-A-4-Comb, elevation 261' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-B - chiller room (north end) fire zone 1-A-4-CHLRB, elevation 261' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal - chiller room (south end), fire zone 1-A-4-CHLRA, elevation 261' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - charcoal filter B, fire zone 1-A-4-CHFB, elevation 261' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-A - charcoal filter A, fire zone 1-A-4-CHFA, elevation 261' - 0"
- Reactor Auxiliary Building, Fire Area 1-A-Bal-B - Steam feedwater tunnel, fire zone 1-A-46-ST, elevation 261' - 0" to 305' - 0"

The above pre-fire plans and firefighting strategies appear to meet the guidelines of Standard Review Plan 9.5.1 - Fire Protection Program, Position C.2.0 except for smoke control measures. The pre-fire plans should address smoke control measures with regard to utilizing normal fixed plant ventilation systems and portable smoke removal equipment. The individual pre-fire plans for manual smoke removal didn't identify the power pickup locations for A/C powered portable smoke removal fans, and a backup plan for moving the smoke to a safe location utilizing the portable fans and ducting in the event the ventilation system isolates as a result of a fire. This is identified as Inspector Followup Item (400/86-42-03), Pre-Fire Plans Fail to Properly Identify An Adequate Fire Brigade Strategy With Respect To Smoke Control.

(4) Fire Brigade Equipment

The inspectors performed an inspection of the fire brigade equipment, consisting of fire hose, nozzles, tools and miscellaneous firefighting equipment stored at the site fire station. The inspector verified that a total of ten (10) sets of turnout gear (coats, boots, pants, helmets, etc.), ten (10) sets of self contained breathing apparatus and ten (10) spare air cylinders are stored at the site fire station. Based on this inspection, the designated fire brigade equipment appeared to be properly maintained and stored in a ready condition.



The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures that the financial statements are reliable and can be audited without any discrepancies.

In the second section, the author outlines the various methods used to collect and analyze data. This includes both primary and secondary research techniques. The primary research involves direct observation and interviews, while secondary research involves the use of existing data sources. The analysis of this data is crucial for identifying trends and making informed decisions.

The third part of the document focuses on the implementation of the findings. It provides a detailed plan of action, including the allocation of resources and the assignment of responsibilities. The author stresses the need for clear communication and regular reporting to ensure that the project stays on track and achieves its objectives.

Finally, the document concludes with a summary of the key points and a call to action. It encourages the reader to take the necessary steps to implement the recommendations and to continue to monitor the progress of the project. The author expresses confidence that the findings will lead to significant improvements in the organization's performance.



(5) Fire Brigade Drill

During this inspection, the inspector witnessed two unannounced fire brigade drills. The first fire scenario was a fire in the diesel fuel storage transfer building sand pit area. Five fire brigade members and the on-shift fire protection technical aide responded to the pending fire emergency. The brigade assembled outside the area in full protective firefighting turnout clothing a self contained breathing apparatus. The initial sizeup of the fire emergency was made by the fire brigade leader and the fire protection technical aide. Based on this sizeup, the brigade established one 1½-inch foam-water fire attack hose line and a 1½ inch exposure hose line and advanced them into the plant area experiencing the fire condition. The fire attack and exposure hose lines were placed in service in the location of the fire in approximately 24 minutes.

The second fire scenario was a fire in Containment Charcoal Filter Unit 1B-ARRU. Five fire brigade members responded to the pending fire emergency. The brigade assembled outside the containment airlock in full protective firefighting turnout clothing and self-contained breathing apparatus. An initial sizeup of the fire condition was made by the fire brigade team leader and based on this sizeup the brigade established two 1½ inch exposure hose lines over the fire and one 1½ inch fire attack hose line was advanced into the area of the charcoal filter unit. The exposure hose and fire attack hose lines were placed in service in the location of the fire in approximately 33 minutes.

Based on the observation of these drills, the inspector identified two unsatisfactory conditions with respect to radio communications and fire brigade response time.

During the drill, the fire brigade radio communication system appeared to be unsatisfactory. The fire brigade leader during both drill scenarios was unable under certain conditions to communicate with the control room or with other fire brigade members. Therefore, due to the poor radio communications the overall firefighting brigade operations under these drill conditions were not implemented in an efficient manner. Therefore, this is identified as Inspector Followup Item (400/86-42-04), Present Fire Brigade Radio Communication System does not Provide Adequate Two-Way Communications to Support Fire Fighting Operations.

In addition, with respect to the fire brigade's response time, the inspector noted that it is presently taking approximately ten (10) minutes for the fire brigade members to assemble at the site fire station, don their firefighting turnout clothing and breathing

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1. The first part of the report deals with the general situation of the country and the progress of the work during the year. It is divided into two main sections: the first section deals with the general situation and the second section deals with the progress of the work.

2. The second part of the report deals with the results of the work during the year. It is divided into two main sections: the first section deals with the results of the work in the field of research and the second section deals with the results of the work in the field of education.

3. The third part of the report deals with the conclusions of the work during the year. It is divided into two main sections: the first section deals with the conclusions of the work in the field of research and the second section deals with the conclusions of the work in the field of education.

4. The fourth part of the report deals with the recommendations of the work during the year. It is divided into two main sections: the first section deals with the recommendations of the work in the field of research and the second section deals with the recommendations of the work in the field of education.

apparatus and assemble the necessary firefighting equipment prior to the response from the fire station to the fire. This time appears to be excessive and the overall brigade response time could be reduced through the utilization of quick response wall mounts for the brigade's self contained breathing apparatus, quick response firefighting equipment carts and improved hose transport and deployment methods. The licensee's site fire protection staff indicated that they would evaluate the various methods available to improve the brigade response time and implement the appropriate corrective actions. Therefore, this is identified as Inspector Followup Item (400/86-42-05), Inadequate Fire Response Methods Utilized by the Fire Brigade.

9. Inspector Followup Items

- a. (Closed) Inspector Followup Item (400/85-40-04), Operation Surveillance Test Procedures are not Developed and Issued for Permanent Plant Fire Protection Features. The licensee has completed the development of the surveillance procedures for: fire doors, fire dampers, penetration seals, fire detection systems, fire hose stations and fire hose. The inspector verified the development of these procedures, however, a detailed review of these procedures during this inspection was not conducted and will be conducted during a subsequent NRC inspection. This item is closed.
- b. (Closed) Inspector Followup Item (400/85-40-05), Additional Personnel Required to be Provided with Fire Brigade Training Prior to Fuel Load. The Harris Facility by Plant General Order PGO-029, dated April 25, 1986, has implemented their fire brigade organization which provides the minimum five member fire brigade requirements. This item is closed.
- c. (Closed) Inspector Followup Item (400/85-40-10), Verification that Pre-Action Fire Suppression Valve Installations Conform to the Manufacturers Requirements. The inspector made a visual inspection of the pre-action sprinkler systems protecting the diesel generator areas. The inspector verified that the diesel generator pre-action sprinkler valves were functional and installed in accordance with the manufacturer's recommendations. In addition, the inspector reviewed temporary field modification log for system 6175 (Diesel Generator Pre-action Sprinkler System) and verified that the system valves were modified and returned to the pre-action status. This item is closed.
- d. (Closed) Inspector Followup Item (400/85-40-14), Procedure Required to Drain or Verify Reactor Coolant Pump Oil Collection System Drain Tanks are Empty Prior to Startup. The licensee has revised general procedure GP-001, Reactor Coolant System Fill and Vent (Mode 5), to verify that the reactor coolant pump collection system drain tanks are empty prior to start up. Therefore, this item is closed.

