

Florida Power

CORPORATION

Crystal River Unit 3
Docket No. 90-302

February 9, 1994
3F0294-15

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: Response to Additional Information Request on Generic Letter 92-08,
"Thermo-Lag Fire Barriers," Pursuant to 10 CFR 50.54(f)

Reference: A. NRC to FPC letter, 3N1293-36, dated December 22, 1993
B. FPC to NRC letter, 3F1193-11, dated November 24, 1993
C. NRC to FPC letter, 3N1093-15, dated October 21, 1993
D. FPC to NRC letter, 3F0493-06, dated April 15, 1993
E. NRC to FPC letter, 3N1292-17, dated December 17, 1992
F. IN 92-46, 3N0692-16, dated June 23, 1992

Dear Sir:

The Nuclear Regulatory Commission (NRC), in Reference A, requested information concerning the configurations and amounts of Thermo-Lag 330-1 fire barriers installed at Crystal River Unit 3 and the cable loadings within particular Thermo-Lag configurations in accordance with the provisions of 10 CFR 50.54(f). This request stated that this information was needed to review NUMARC's guidance for applying test results to plant-specific configurations and to identify fire barrier configurations that are outside the scope of the NUMARC program. In addition, for those configurations that were not bounded by the NUMARC test program or those configurations that Florida Power Corporation (FPC) deemed impractical to upgrade, it was requested that plans and schedules for resolving the associated technical issues identified in Generic Letter 92-08 also be provided.

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In Reference B, Florida Power Corporation stated that we intend to use the results of the NUMARC test program and our plant-specific risk assessment data to demonstrate that adequate protection is provided by the existing fire barriers. FPC is continuing to monitor and provide input as necessary to the NUMARC Thermo-Lag program, and is participating in an EPRI fire Probabalistic Safety Assessment (PSA) program. These activities will culminate in the application of a performance based approach to resolution of the Thermo-Lag fire barrier issue.

The attachments provide the information available on the various subjects addressed in Reference A at this time. FPC will supplement this response as additional pertinent information is obtained.

Sincerely,



P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

PMB
Attachments

xc: Regional Administrator, Region II
NRR Project Manager
Senior Resident Inspector

Attachment 1
Response to Request for Additional
Information Regarding Generic Letter 92-08
"Thermo-Lag 330-1 Fire Barriers"

I. Thermo-Lag Fire Barrier Configuration and Amounts

NRC Request I.B

1. Describe the Thermo-Lag 330-1 barriers installed in the plant to
 - a. meet 10 CFR 50.48 or Appendix R to 10 CFR Part 50
 - b. support an exemption from Appendix R,
 - c. achieve physical independence of electrical systems,
 - d. meet a condition of the plant operating license,
 - e. satisfy licensing commitments.

The descriptions should include the following information: the intended purpose and fire rating of the barrier, and the type and dimension of the barrier.

2. For the total population of Thermo-Lag fire barriers described under Item I.B.1, submit an approximation of:
 - a. For cable tray barriers: the total linear feet and square feet of 1-hour barriers and the total linear feet and square feet of 3-hour barriers.
 - b. For conduit barriers: the total linear feet of 1-hour barriers and the total linear feet of 3-hour barriers.
 - c. For all other fire barriers: the total square feet of 1-hour barriers and the total square feet of 3-hour barriers.
 - d. For all other barriers and radiant heat shields: the total linear or square feet of 1-hour barriers and the total linear or square feet of 3-hour barriers, as appropriate for the barrier configuration or type.

FPC Response to I.B.1 and I.B.2

Thermo-Lag 330-1 fire barriers are used at Crystal River Unit 3 to meet the safe shutdown requirements of 10 CFR 50, Appendix R. Several evaluations for exemptions from Appendix R used the protection of associated safe shutdown circuits with Thermo-Lag fire barrier material as part of the justification for deviation from the regulations. The protection of these circuits was required by Section III.G of Appendix R and credit was taken during evaluations for the exemptions for the protection afforded these circuits. Information was submitted to the NRC on the configurations of Thermo-Lag 330-1 on July 29, 1992, October 2, 1992, and April 15, 1993, in response to NRC Bulletin 92-01, "Failure of Thermo-Lag 330 Fire Barrier System to Maintain Cabling in Wide Cable Trays and Small Conduits Free from Fire Damage," and its Supplement. A summary of Thermo-Lag configurations identifying the types, purposes, sizes, ratings, and amounts of material is provided below.

<u>TYPE</u>	<u>PURPOSE</u>	<u>SIZE</u>	<u>FIRE RATING</u>	<u>AMOUNT^a</u>
Conduit	(1)	1/2"	1 Hour	24 ft.
Conduit	(1)	3/4"	1 Hour	320 ft.
Conduit	(1)	3/4"	3 Hour	70 ft.
Conduit	(1)	1"	1 Hour	185 ft.
Conduit	(1)	1"	3 Hour	181 ft.
Conduit	(1)	1 1/4"	1 Hour	40 ft.
Conduit	(1)	1 1/2"	1 Hour	779 ft.
Conduit	(1)	1 1/2"	3 Hour	378 ft.
Conduit	(1)	2"	1 Hour	701 ft.
Conduit	(1)	2"	3 Hour	58 ft.
Conduit	(1)	3"	1 Hour	1107 ft.
Conduit	(1)	3"	3 Hour	1552 ft.
Conduit	(1)	4"	1 Hour	104 ft.
Conduit	(1)	5"	1 Hour	80 ft.
Conduit	(1)	5"	3 Hour	36 ft.
Cable Tray	(1)	4"X 4"	1 Hour	144 ft. / 144 ft. ²
Cable Tray	(1)	6"X 4"	3 Hour	51 ft. / 102 ft. ²
Cable Tray	(1)	6"X 6"	1 Hour	9 ft. / 18 ft. ²
Cable Tray	(1)	6"X 6"	3 Hour	206 ft. / 412 ft. ²
Cable Tray	(1)	12"X 4"	1 Hour	178 ft. / 534 ft. ²
Cable Tray	(1)	12"X 4"	3 Hour	40 ft. / 152 ft. ²
Cable Tray	(1)	12"X 6"	1 Hour	72 ft. / 216 ft. ²
Cable Tray	(1)	12"X 6"	3 Hour	122 ft. / 386 ft. ²
Cable Tray	(1)	18"X 6"	1 Hour	144 ft. / 576 ft. ²
Cable Tray	(1)	18"X 6"	3 Hour	72 ft. / 288 ft. ²
Cable Tray	(1)	24"X 4"	1 Hour	290 ft. / 1330 ft. ²
Cable Tray	(1)	24"X 4"	3 Hour	24 ft. / 120 ft. ²
Cable Tray	(1)	24"X 6"	1 Hour	657 ft. / 3285 ft. ²
Cable Tray	(1)	24"X 6"	3 Hour	126 ft. / 630 ft. ²

<u>TYPE</u>	<u>PURPOSE</u>	<u>SIZE</u>	<u>FIRE RATING</u>	<u>AMOUNT^a</u>
Junction Boxes (18)	(1)	Various	1 Hour	288 ft. ²
Valve Box	(2)	4'X 6'X 4'	1 Hour	96 ft. ²
Valve Box	(1)	4'X 5'X 3.5'	1 Hour	70 ft. ²
Damper Box (one)	(1)	2.5'X 2.5'X 2'	3 Hour	17 ft. ²
Structural Steel (one beam)	(1)	88'	3 Hour	440 ft. ²

Purpose Codes: (1) Appendix R
(2) Appendix R Exemption

^a The amounts of Thermo-lag material provided above were estimated

<u>TYPE</u>	<u>PURPOSE</u>	<u>SIZE</u>	<u>FIRE RATING</u>	<u>AMOUNT^a</u>
Containment Penetrations	(1)	Various	1 Hour	341 ft. ²
Radiant Energy Heat Shields in Reactor Building				
Conduit	(1)	3/4"	0.5 Hour	208 ft.
Conduit	(1)	1"	0.5 Hour	152 ft.
Conduit	(1)	1 1/2"	0.5 Hour	272 ft.
Conduit	(1)	3"	0.5 Hour	48 ft.
Cable Tray	(1)	24"X 6"	0.5 Hour	80 ft.

Purpose Codes: (1) Appendix R
 (2) Appendix R Exemption

Estimated Total^b Linear Feet of Thermo-Lag Covered Cable Tray = 2135 ft.
 Estimated Total^b Linear Feet of Thermo-Lag Covered Conduit = 5615 ft.
 Total = 7750 ft.

- ^a The amounts of Thermo-Lag material provided above were estimated
^b Does not include radiant energy heat shield amounts

II. Important Barrier Parameters

In a letter dated July 29, 1993, from NUMARC to the NRC, twenty-four (24) important fire barrier parameters and eight (8) parameters of importance for cables protected by fire barriers were identified.

NRC Request II.B

1. State whether or not you have obtained and verified each of the aforementioned parameters for each Thermo-Lag barrier installed in the plant. If not, discuss the parameters you have not obtained or verified. Retain detailed information on site for NRC audit where the aforementioned parameters are known.
2. For any parameter that is not known or has not been verified, describe how you will evaluate the in-plant barrier for acceptability.
3. To evaluate NUMARC's application guidance, an understanding of the types and extent of the unknown parameters is needed. Describe the type and extent of the unknown parameters at your plant in this context.

FPC Response to II.B.1

The following discussion pertains to the current status of information obtained regarding important barrier parameters identified in Section II.A of Reference A. This information was obtained from existing documentation and at this time is considered preliminary and will be verified where appropriate by a non-destructive, as-built walk down for areas outside the Reactor Building.

Important Fire Barrier Parameters:

1. Raceway Orientation - This information has been obtained for cable trays from a documentation review. The Thermo-Lag fire barrier as-built walk down effort will verify the cable tray orientation.
2. Conduit Orientation - This information has not yet been documented. The Thermo-Lag walk down effort will document the orientation of conduits.
3. Junction Boxes and Lateral Bends - The basic construction technique and associated conduits are known from the documentation review effort. The walk down activity will verify this information and document additional detailed data (i.e., size, extra trowel grade material, etc.).
4. Ladder-back Cable Tray with Single Layer Cable Fill - This information has not been documented. The plant walk down effort along with additional raceway document reviews will verify this parameter.
5. Cable Tray with T-section - The cable trays with T-sections are known. Preliminary results indicate there are three (3) cable trays with vertical T-sections and eight (8) cable trays with horizontal T-sections. Further reviews and walk downs will be needed to verify this parameter.
6. Raceway Material - The cable tray and conduit material is aluminum for areas outside the Reactor Building per the documentation reviewed. This will be verified by inspection of unprotected raceways during the walk down effort.
7. Support Protection, Thermal Shorts - Intervening steel and support materials were protected for a distance of 18 inches for both one and three hour rated configurations.
8. Air Drops - One air drop has been identified from the documentation review. The walk down effort will document the critical performance parameters for this and any other air drops should more be identified.
9. Baseline Fire Barrier Panel Thickness - The baseline Thermo-Lag panel thickness is documented as 0.5 inches for one hour barrier applications and 1 inch for three hour rated configurations as documented in the applicable work package.
10. Preformed Conduit Panels - Preformed conduit sections were used as required. The specific application of these sections will be documented for each conduit during the walk down effort.

11. Panel Rib Orientation - The documentation reviewed to date does not expressly identify the panel v-rib orientation. Based on the maximum width of cable trays (24") at Crystal River Unit 3, the v-rib orientation is conservatively assumed to be parallel to the raceway. This assumption may be verified by selective destructive examination, as necessary, based on the results of the NUMARC testing.
12. Unsupported Spans - The maximum unsupported span of a horizontal box configuration is approximately 24 inches.
13. Stress Skin Orientation - Stress skin is located on the inside only for one hour rated configurations and on both the inside and outside for three hour rated configurations.
14. Stress Skin Over Joints - Butt joints were not reinforced with stress skin.
15. Stress Skin Ties - Stress skin ties were not used.
16. Dry-fit, Post-buttered, or Pre-buttered Joints - All butt joints outside of the Reactor Building were pre-buttered. The radiant energy shields inside the Reactor Building were similarly constructed as those outside except that the butt joints were done as a dry-fit.
17. Joint Gap Width - The butt joints were constructed with no gap width. This applies to applications both inside and outside the Reactor Building.
18. Butt Joints or Grooved and Scored Joints - Butt joints were used at Crystal River Unit 3 as documented in the work packages.
19. Steel Bands or Tie Wires - Steel bands were used in construction of the Thermo-Lag material at Crystal River Unit 3 as documented in the work packages.
20. Band/Wire Spacing - Steel band spacing is documented in the installation work packages as not to exceed 12 inches center to center.
21. Band/Wire Distance to Joints - Steel band spacing is documented in installation work packages as not to exceed 2 inches from the joint.
22. Internal Bands in Trays - No internal bands in the trays were used. However, stainless steel tie wires were used as required to secure the bottom and side cable tray panels to facilitate installation of the top panel. The specific application of the tie wires for each raceway will be documented during the walk down effort.
23. Additional Trowel Material Over Sections and Joints - Additional trowel grade material was applied to Thermo-Lag configurations only in the Control Complex areas at Crystal River Unit 3.
24. Edge Guards - No tray edge guards were used.

Parameters Important to Cables Protected by Fire Barriers:

The parameters of importance (8 items) concerning cables protected by fire barriers have not been obtained. The gathering and documentation of information in support of this has been deferred as discussed in Item II.B.3.

FPC Response to II.B.2

For any parameter that may be identified as unknown or that has not been verified, the following actions are available to substantiate the acceptability of the in-plant configuration.

1. Additional document searches along with plant walk downs where appropriate can be used to verify the important parameters in question for installed configurations.
2. Bounding assumptions concerning the important parameters relative to barrier installation can be made where it is conservative to do so and where qualification will support it.
3. If necessary, destructive examination can be performed on representative samples.

At present, there are no unknown important fire barrier parameters for Crystal River Unit 3. Verification of some of the parameters will be accomplished during plant walk downs as discussed in Item II.B.1.

The parameters of importance for cables (all 8 items) are unknown at this time. A description of an approach to evaluating fire barrier acceptability in light of these unknown parameters is provided in II.B.3.

FPC Response to II.B.3

Information was requested concerning important parameters on cables protected by Thermo-Lag fire barriers. This information has not been obtained. The gathering and documentation of information in support of this has been deferred until the scope of cable functionality verification activities becomes clear and must obviously follow the completion of the fire barrier testing program. If fire tests demonstrate temperature criteria are exceeded, one approach for resolution, as provided in the NRC draft test and acceptance criteria, would be to evaluate cable functionality at the elevated temperatures. In this case, determination of cable performance at elevated temperatures (Item 8) would be necessary, using cable performance test data or information for specific, installed cable types (Items 1, 2, 3, and 7 of the NRC listing). However, the NRC has yet to finalize requirements for cable functionality evaluation, nor are test results yet available that would clearly indicate the scope of such evaluations. The degree and conservatism of cable functionality evaluation requirements implied by the NRC listing of cable parameters, and discussed in proposed Supplement I to Generic Letter 86-10, significantly exceeds the original requirements of that Generic Letter.

Items 4, 5 and 6 of the NRC listing address issues relative to potential cable to barrier contact for cable trays. This is an unresolved issue at this time, and barrier inspection in this regard would be difficult or impossible. Barrier contact would be most likely to occur in situations of large cable fills. However, the large cable fills also provide significant thermal mass that could improve barrier system performance and mitigate the effect of cables in contact with the barrier. NUMARC has agreed to provide additional thermocouples below the cable tray rungs in the Phase 2 cable tray tests to provide information to address NRC concerns relative to potential contact of cables with the cold side of the fire barriers. Further, note that a small piece of Sealtemp cloth (NRC item 6) was used only in NUMARC test Number 1-4 (24" steel cable tray with air drop, three hour test), and did not impact performance or useability of the test.

Preliminary chemical composition testing of the Thermo-Lag material by NUMARC has not revealed significant variations in the chemical composition of the material. Unless contrary information is obtained from the NUMARC Phase 2 test results, FPC will not perform individual or plant specific chemical evaluations on the Thermo-Lag material.

III. Thermo-Lag Fire Barriers Outside the Scope of NUMARC Program

NRC Request III.B

1. Describe the barriers discussed under Item I.B.1 that you have determined will not be bounded by the NUMARC test program.
2. Describe the plant-specific corrective action program or plan you expect to use to evaluate the fire barrier configurations particular to the plant. This description should include a discussion of the evaluations and tests being considered to resolve the fire barrier issues identified in GL 92-08 and to demonstrate the adequacy of existing in-plant barriers.
3. If a plant-specific fire endurance test program is anticipated describe the following:
 - a. Anticipated test specimens.
 - b. Test methodology and acceptance criteria including cable functionality.

FPC Response to III.B.1

The evaluation of the Thermo-Lag fire barrier configurations at CR-3 is progressing. As additional data becomes available from NUMARC including test results and Application Guideline information, a better understanding of which configurations are bounded by the program can be made. The Thermo-Lag fire barrier configurations identified thus far which are considered to be not bounded by the NUMARC program include the following.

Configurations Presently Considered not Bounded by NUMARC Program

Junction Boxes - 1 Hour fire endurance rating

There are 18 junction boxes wrapped with Thermo-Lag barrier material. All of these installations are for a one hour rating.

Valve Boxes - 1 Hour fire endurance rating

Two separate enclosures around valves.

Enclosure 1 is approximately 4'X 6'X 4' constructed of 1/2" thick pre-formed Thermo-Lag panels positioned on a concrete base.

Enclosure 2 is approximately 4'X 5'X 3.5' constructed of 1/2" thick pre-formed Thermo-Lag panels positioned on a concrete base.

Damper Box - 3 Hour fire endurance rating

One enclosure around a ventilation damper constructed of pre-formed panels and is approximately 2.5'X 2.5'X 2' in size.

Structural Steel Beam - 1 Hour fire endurance rating

Approximately 88 feet of steel 'I' beam enclosed in 1" thick Thermo-Lag material. The enclosure covers three separate areas within a room.

Containment Penetrations - 1 Hour fire endurance rating

Protection of these penetrations was accomplished using 1/2" thick material.

Radiant Energy Heat Shields - 0.5 Hour fire endurance rating

Comprised of 680 linear feet of conduit (3/4" to 3" in diameter) and 80 linear feet of cable trays (24"X 6") located in the Reactor Building.

FPC Response to III.B.2

The plant specific corrective action plan for resolution of the Thermo-Lag fire barrier issues will involve the following. The basic steps of the corrective action plan are provided below and a more detailed logic flow chart is provided in Attachment 2.

Determination of qualified fire barriers - Completion of the NUMARC Application Guidelines for each Thermo-Lag configuration at CR-3 to determine qualified barriers. This process would use NUMARC test data (Phase 1 & 2), Texas Utility Electric Company (TUEC) test data, and Tennessee Valley Authority (TVA) test data.

Determination of area fire loads - Completion of the EPRI methodology with respect to fire areas within the plant.

Non-tested configuration qualification - Evaluation of those configurations clearly outside the NUMARC test program to determine barrier performance or rating for fire endurance.

Performance based evaluation of unqualified fire barriers - For Thermo-Lag fire barriers which are not fully qualified or tested, resolution of the required barrier performance with the qualified barrier capability would be performed using fire loading/duration calculations and test results.

Final resolution of unqualified barriers through Engineering benefit versus cost evaluation. Options would include:

- Exemptions to Appendix R
- Barrier upgrades or replacement
- Elimination or rerouting of safe shutdown circuits
- Adding detection/suppression to reduce needed barrier rating

FPC Response to III.B.3

Florida Power Corporation does not intend at this time to conduct independent fire endurance testing of Thermo-Lag fire barrier configurations. If additional tests are necessary, it is anticipated they would be accomplished in cooperation with other utilities which have similar configurations requiring testing. The test specimen configurations, test methodology and acceptance criteria would be determined in concert with the participating owners once the decision to conduct the test(s) was made.

IV. Ampacity Derating

NRC Request IV.B

1. For the barriers described under Item I.B.1, describe those that you have determined will fall within the scope of the NUMARC program for ampacity derating, those that will not be bounded by the NUMARC program, and those for which ampacity derating does not apply.
2. For the barriers you have determined fall within the scope of the NUMARC program, describe what additional testing or evaluation you will need to perform to derive valid ampacity derating factors.
3. For the barrier configurations that you have determined will not be bounded by the NUMARC test program, describe your plan for evaluating whether or not the ampacity derating tests relied upon for the ampacity derating factors used for those electrical components protected by Thermo-Lag 330-1 (for protecting the safe-shutdown capability from fire or to achieve physical independence of electrical systems) are correct and applicable to the plant design. Describe all corrective actions needed and submit the schedule for completing such actions.

4. In the event that the NUMARC fire barrier tests indicate the need to upgrade existing in-plant barriers or to replace existing Thermo-Lag barriers with another fire barrier system, describe the alternative actions you will take (and the schedule for performing those actions) to confirm that the ampacity derating factors were derived by valid tests and are applicable to the modified plant design.

FPC Response to IV.B

Ampacity derating is an issue that applies only to cable raceways containing power cables. Ampacity derating factors determined for upgraded configurations can be conservatively applied to baseline configurations. The NUMARC program for ampacity derating evaluation contains the following elements.

For upgraded one hour cable trays and conduits, NUMARC will be discussing with NRC the generic applicability of ampacity derating factors derived from Texas Utilities Electric Company using the methodology of IEEE P848 Draft 11, with some modifications. The IEEE P848 test methodology has been extensively discussed with NRC by NUMARC and TUEC. However, NRC acceptance of the methodology is still pending. The NRC has informed NUMARC that they will issue a request for further information to TUEC regarding the submitted ampacity test report. The TUEC testing provided preliminary ampacity derating factors of 32% for cable trays and 11% for conduits, which are within the range of previously reported values.

NUMARC will conduct ampacity testing of upgraded three hour barriers to the requirements of IEEE P848, following determination of appropriate barrier upgrades for three hour installations and agreement with NRC on ampacity test methodology. It is expected that this testing would be conducted in the second quarter of 1994, at the earliest. To the extent that successful upgrades using alternative materials are identified, ampacity testing of these upgrades would be considered as well.

The IEEE P848 approach provides for testing of a single cable tray, and small and large conduits. The limiting conduit derating factor (of the two sizes tested) is applied to the range of conduit sizes, cable fills, etc. Thus, ampacity testing can be performed generically with broad applicability, unlike fire testing where many performance parameters must be considered. The NUMARC program is expected to provide ampacity derating factors for one and three hour barriers, for cable trays and conduits. Assuming NRC agreement with the IEEE P848 approach, few if any installations are expected to fall outside the generic scope.

V. Alternatives

NRC Request IV.B

Describe the specific alternatives available to you for achieving compliance with NRC fire protection requirements in plant areas that contain Thermo-Lag fire barriers. Examples of possible alternatives to Thermo-Lag-based upgrades include the following:

1. Upgrade existing in-plant barriers using other materials.
2. Replace Thermo-Lag barriers with other fire barrier materials or systems.
3. Reroute cables or relocate other protected components.
4. Qualify 3-hour barriers as 1-hour barriers and install detection and suppression systems to satisfy NRC fire protection requirements.

FPC Response to IV.B

Florida Power Corporation intends to maintain all options for resolution of the Thermo-Lag fire barrier issue open at this time. Upgrades to the existing Thermo-Lag barriers may not be an available option for most if not all of the configurations at Crystal River Unit 3 (CR-3). The existing installation would apparently not allow additional material to be added to most of the configurations due to hanger loading criteria, ampacity derating, and cost. Other alternatives have been and will continue to be explored. Provided herein are other options and their relative importance to CR-3.

1. The re-evaluation of engineering analyses used for determining Appendix R safe shutdown pathways, equipment, and actions could provide a basis for reduction in the scope of protected circuits and their associated fire barriers. An initial review of this option does not indicate a substantial reduction in the number of circuits requiring protection at CR-3, however, this option remains viable.
2. Exemption requests could be submitted based upon the use of fire modeling in conjunction with fire endurance test results as a means of demonstrating adequate protection from the installed fire barriers is available for the existing fire hazard. FPC is presently involved in detailed modeling of plant area fire hazards (EPRI Tailored Collaboration Project) in order to provide a performance based assessment of the Thermo-Lag fire barriers. Development of fire PSA data is also in progress. This approach will likely be the main-stay of FPC's resolution of this issue.
3. Rerouting cables or relocating components as a means of protecting safe shutdown functions is considered to be a possible alternative. For CR-3, this option is very expensive and time consuming and is not seen as a viable alternative to significantly reduce the amount of Thermo-Lag material used in the plant.
4. The qualification of three hour barriers as one hour barriers with the installation of detection and suppression systems is a possible option. This option is expensive and would involve an extensive

amount of evaluation and plant modification to accomplish. There may be some limited application of this option at CR-3.

As stated above, FPC will use any or all options to resolve the Thermo-Lag issue. The choice of option used will depend primarily on the viability of the option and the associated cost. Which option is chosen for a specific application will be determined once all of the information on the installed configurations and associated test data is analyzed, and an engineering evaluation is performed to determine benefit/cost.

VI. Schedules

NRC Request VI.B

Submit an integrated schedule that addresses the overall corrective action schedule for the plant. At a minimum, the schedule should address the following aspects for the plant.

1. implementation and completion of corrective actions and fire barrier upgrades for fire barrier configurations within the scope of the NUMARC program,
2. implementation and completion of plant-specific analyses, testing, or alternative actions for fire barriers outside the scope of the NUMARC program.

FPC Response to VI.B.1

The following information provides the schedule for resolution of the Thermo-Lag fire barrier material issue associated with configurations bounded by the scope of the NUMARC program.

1. FPC will have determined and documented those Thermo-Lag fire barrier configurations which are bounded by the NUMARC program and are acceptable as is by the end of October, 1994.
2. Those Thermo-Lag fire barrier configurations which are bounded by the NUMARC program but do not meet the required fire endurance criteria will be evaluated in accordance with Attachment 2 and an action plan for resolution of the unqualified barrier developed and submitted to the NRC by the end of December, 1994.

FPC Response to VI.B.2

The following information provides the schedule for resolution of the Thermo-Lag fire barrier material issue associated with configuration outside the scope of the NUMARC program.

1. The damper box and the structural steel beam identified in III.B.1 as not bounded by the NUMARC program will be upgraded to fully meet the 10 CFR 50. Appendix R criteria by December 31, 1994. Present plans are to utilize other qualified fire barrier materials to upgrade these barriers.

2. The configurations represented by the junction boxes (18) and the valve boxes (2) identified in III.B.1 may be included in the NUMARC expanded test program. If this is the case, an action plan to resolve the qualification of these barriers will be submitted to the NRC within 90 days of the receipt of the test reports on these barriers. This action plan will follow the guidance provided in Attachment 2. If these configurations are not incorporated into future tests, then the actions of item 3 below will be followed.
3. The radiant energy heat shields and the containment penetration barriers will be evaluated against the provisions of Attachment 2 and an action plan on the resolution of the qualification of these barriers submitted to the NRC by October, 1994.

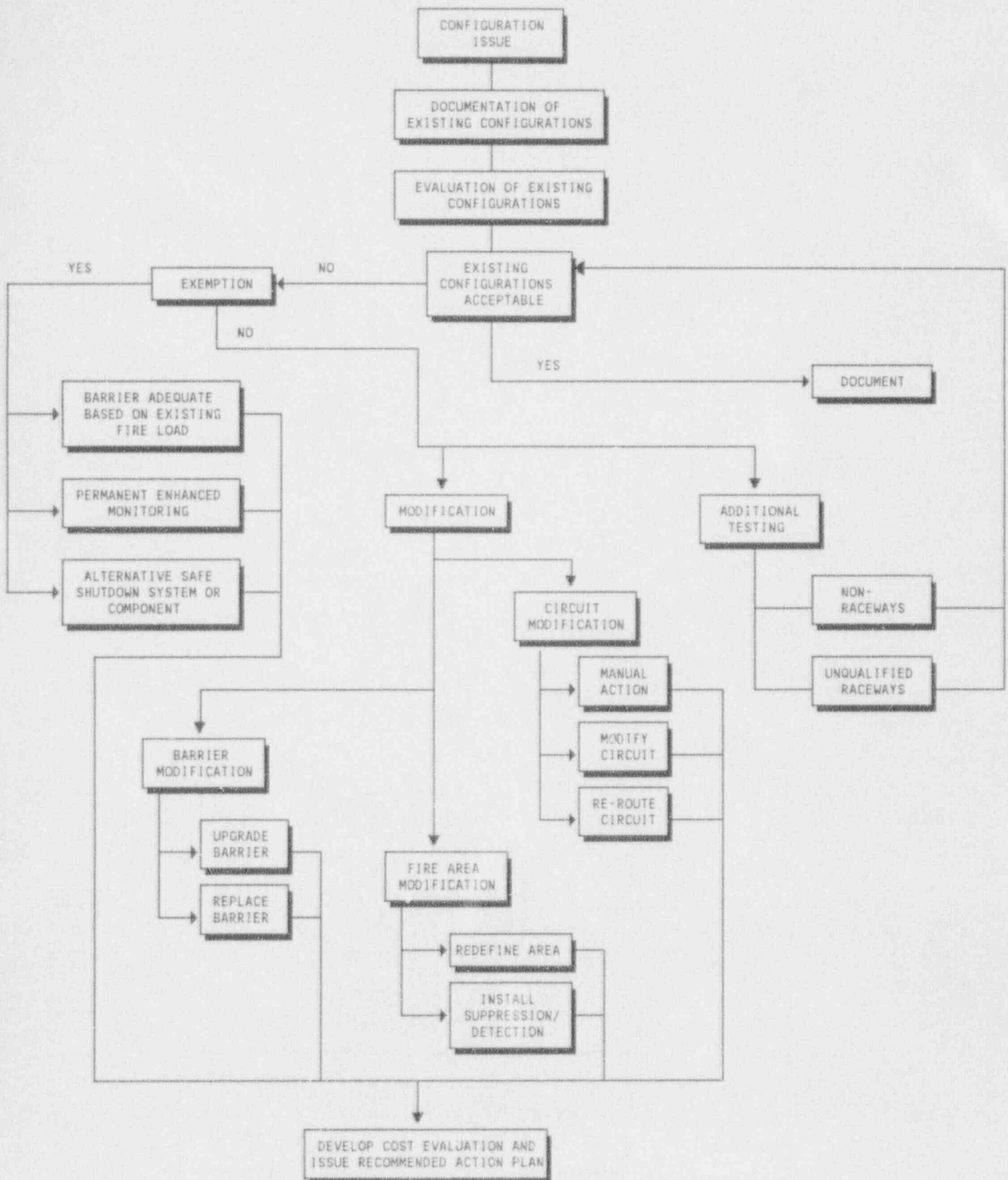
VII. Sources and Correctness of Information

NRC Request VII.B

Describe the sources of the information provided in response to this request for information (for example, from plant drawings, quality assurance documentation, walk downs or inspections) and how the accuracy and validity of the information was verified.

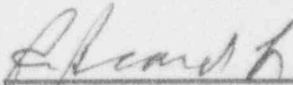
FPC Response to VII.B

The sources of information provided in this letter include quality document record searches, plant walk downs, and reviews of plant drawings. The configurations and estimated amounts of materials involved (Item I) were obtained through quality record searches and walk downs. The important barrier parameters (Item II) were determined through quality document searches. The determination of Thermo-Lag configurations bounded by the NUMARC program (Item III) resulted from quality document searches and plant walk downs. The accuracy and validity of this information was verified by spot checks through walk downs and reliance on the quality record system at CR-3. No destructive examinations were performed.

CORRECTIVE ACTION PLAN FOR RESOLUTION OF THERMO-LAG
FIRE BARRIER ISSUE

STATE OF FLORIDA
COUNTY OF CITRUS

P.M. Beard, Jr. states that he is the Senior Vice President, Nuclear Operations for Florida Power Corporation; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the information attached hereto; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information, and belief.



P.M. Beard, Jr.
Senior Vice President
Nuclear Operations

Subscribed and sworn to before me, a Notary Public in and for the State and County above named, this 9th day of February, 1994.

JOAN BUFE CARR
Notary Public (print)



Notary Public (signature)

Notary Public, State of Florida at Large
My Commission Expires: 6-21-95

NOTARY PUBLIC, STATE OF FLORIDA.
MY COMMISSION EXPIRES: June 21, 1995.
BONDED THRU NOTARY PUBLIC UNDERWRITERS.