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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

August 19, 1992

(10 CFR 2.206)

Mr. Michael Mariotte  
Executive Director  
Nuclear Information and Resource Service  
Suite 601  
1424 16th Street, N.W.  
Washington, D.C. 20036

Dear Mr. Mariotte:

I am writing to acknowledge receiving a Petition filed by you on behalf of the Nuclear Information and Resource Service and other organizations (Petitioners) with the U.S. Nuclear Regulatory Commission (NRC) dated July 21, 1992, as supplemented by the addenda of August 12, 1992, pursuant to Section 2.206 of Title 10 of the Code of Federal Regulations (10 CFR 2.206). Joining with the Nuclear Information and Resources Service in filing the Petition are the Alliance for Affordable Energy, Citizens Organized to Protect our Parish, Citizens for Fair Utility Regulation, Don't Waste New York, Citizens Against Radioactive Dumping, Coalition for Alternatives to Shearon Harris, Conservation Council for North Carolina, Safe Energy Coalition of Michigan, Steve Langdon, Essex County Citizens Against Fermi-2, Natural Guard, and Northwest Environmental Advocates. The original Petition presented concerns regarding the use of Thermo-Lag 330 (Thermo-Lag) fire barrier material for protecting against fire in the nuclear industry and requested immediate actions related to Gulf States Utilities' River Bend Station. The addenda of August 12, 1992, requested immediate actions related to the Comanche Peak, Shearon Harris, Fermi-2, Ginna, WNP-2 and Robinson nuclear facilities. The Petition has been referred to my office for preparation of a response.

The Petition alleged a number of deficiencies with Thermo-Lag material including failure of Thermo-Lag fire barriers during 1- and 3-hour fire endurance tests, deficiencies in procedures for installation, nonconformance with NRC regulations for quality assurance and qualification tests, the combustibility of the material, ampacity miscalculations, the lack of seismic tests, the failure to pass hose stream tests, the high toxicity of substances emitted from the ignited material, and the declaration by at least one utility, the Gulf States Utilities Company (GSU) of the material as inoperable at its River Bend Station. The Petition also alleged that a fire watch cannot substitute for an effective fire barrier indefinitely and that the NRC staff has not adequately analyzed the use of fire watches.

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August 19, 1992

Based on these allegations, the Petitioners request emergency enforcement action to immediately suspend GSU's operating license for the River Bend Station pending a demonstration that the facility meets NRC fire protection requirements. The Petitioners also request the NRC issue a generic letter by September 5, 1992, which would require licensees to submit information to the NRC demonstrating compliance with fire protection requirements. Where facilities cannot demonstrate compliance, the Petitioner requests immediate suspension of the operating licenses for the affected facilities until such time as compliance with NRC fire protection requirements can be shown. The scope of the Petition was expanded by addenda of August 12, 1992, which requested that the NRC immediately suspend the operating licenses for Comanche Peak Unit 1, Shearon Harris, Fermi-2, Ginna, WNP-2, and Robinson and to issue a "stop-work" order regarding the installation of Thermo-Lag at Comanche Peak Unit 2.

The NRC staff has examined the issues stated in the Petition. The NRC staff also addressed Thermo-Lag fire barrier concerns in Information Notices (IN) 91-47, "Failure of Thermo-Lag Fire Barrier Material to Pass Fire Endurance Test," IN 91-79, "Deficiencies in Procedures for Installing Thermo-Lag Fire Barrier Materials," IN 92-46, "Thermo-Lag Fire Barrier Material Special Review Team Final Report Findings, Current Fire Endurance Testing, and Ampacity Calculation Errors," IN 92-55, "Current Fire Endurance Test Results for Thermo-Lag Fire Barrier Material," and 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."

In June 1991, the Office of Nuclear Reactor Regulation (NRR) established a special review team to investigate the safety significance and generic applicability of technical issues regarding allegations and operating experience concerning Thermo-Lag fire barriers at the River Bend Station. In the "Final Report of the Special Review Team for the Review of Thermo-Lag Fire Barrier Performance," which was an attachment to IN 92-46, the special review team made the following conclusions:

- The fire-resistive ratings and the ampacity derating factors for the Thermo-Lag 330-1 fire barrier system are indeterminate.
- Some licensees have not adequately reviewed and evaluated the fire endurance test results and the ampacity derating test results used as the licensing basis for their Thermo-Lag barriers to determine the validity of the tests and the applicability of the test results to their plant designs.
- Some licensees have not adequately reviewed the Thermo-Lag fire barriers installed in their plants to ensure that they meet NRC requirements and guidance such as that provided in Generic Letter 86-10, "Implementation of Fire Protection Requirements," April 24, 1986.
- Some licensees used inadequate or incomplete installation procedures during the construction of their Thermo-Lag barriers.

The Final Report, INs, and Bulletin are available for public inspection at the NRC's Public Document Room and Local Public Document Rooms.

The NRC staff has prepared an action plan to resolve technical issues on Thermo-Lag fire barrier systems. The action plan includes working with industry to identify the Thermo-Lag issues, coordinating efforts with the Nuclear Management and Resources Council (NUMARC) to resolve these issues, issuing inspection guidance to the NRC regional offices and conducting a testing program using small and large scale experiments to determine fire endurance performance and cable ampacity derating.

The NRC's "defense-in-depth" fire protection requirements rely on protecting safe shutdown functions by achieving a balance in (1) fire prevention activities; (2) the ability to rapidly detect, control, and suppress a fire; and (3) physical separation of redundant safe shutdown functions. The licensee can compensate for weaknesses found in one area by enhancing the protection capabilities of the remaining areas. The NRC foresaw cases in which fire barriers would be inoperable and required licensees, through technical specifications or approved fire protection plans, to provide compensation for the deficient condition. The concept of allowing alternative actions to compensate for an inoperable condition or component is used in various programs associated with the operation of nuclear power plants and has always been an integral part of NRC regulatory requirements.

Recent fire endurance testing described in Bulletin 92-01 confirmed that certain Thermo-Lag fire barrier configurations compromise one facet of the fire protection "defense-in-depth". The licensees established fire watches as a compensatory measure. Personnel assigned to fire watches are trained by the licensees to inspect for the control of ignition sources and combustible materials, to look for signs of incipient fires, to provide prompt notifications of fire hazards and fires, and to take appropriate actions to begin fire suppression activities. Therefore, fire watches compensate for the degraded fire barriers by providing enhanced detection capability to find fire hazards and, in the case of a fire, initiating suppression activities before the barrier's ability to endure a fire is challenged.

NRC regulations, facility operating license conditions, technical specification action statements, and the generic communications described above address the establishment of either continuous or periodic fire watches to compensate for deficiencies in the licensee's fire protection program. The NRC staff has carefully evaluated the issues associated with using Thermo-Lag material, including the use of fire watches to compensate for any degradation in the effectiveness of required fire barriers. Such actions constitute compliance with the overall NRC fire protection requirements, provide an adequate level of protection, and do not pose an undue risk to the health and safety of the public.

The Petitioners also make the legal argument that compliance with NRC requirements is necessary to ensure that licensed facilities operate safely. Licensees have implemented measures such as fire watches to compensate for the Thermo-Lag issues and have thereby ensured continued compliance with NRC requirements. It should be noted, however, that the failure to comply with a particular NRC requirement does not necessarily mean that there is no longer reasonable assurance of adequate protection of the public health and safety, particularly when the NRC staff has evaluated the area of alleged noncompliance and found that it does not pose an undue risk to the public health and safety.

On October 26, 1989, the licensee for the River Bend Station declared all Thermo-Lag fire barriers inoperable after an unsuccessful fire endurance test. The licensee immediately established fire watch patrols in compliance with the compensatory action required by the plant's technical specifications. These fire watch patrols have been in continuous operation since October 1989. The NRC staff has found compensatory actions, such as fire watches, continue to provide adequate protection of the public health and safety. Therefore, the NRC staff has concluded that the start-up of the River Bend Station from the current refueling outage need not be prohibited due to the issues related to Thermo-Lag fire barriers.

TU Electric also began a fire endurance testing program to qualify Thermo-Lag fire barrier systems for the Comanche Peak Steam Electric Station. Upon reviewing the results of the testing program, the licensee adjusted Unit 1 fire watch routes as a compensatory action on June 18, 1992. In Bulletin 92-01, the NRC staff discussed the testing sponsored by TU Electric and requested all licensees to identify the plant areas in which Thermo-Lag is installed and implement compensatory actions consistent with an inoperable fire barrier if Thermo-Lag was being used to protect wide cable trays or small conduits. The NRC staff found compensatory actions such as fire watches to be adequate.

The NRC staff and representatives of TU Electric have discussed the continued installation of Thermo-Lag at Comanche Peak Unit 2. The installation of Thermo-Lag in those configurations for which the licensee has high confidence that existing or planned testing will verify operability is a discretionary decision by TU Electric, i.e., it is undertaken at the applicant's risk that the Thermo-Lag will be found to not satisfy its performance requirements. In reviewing the application for an operating license for Unit 2, the NRC staff will ensure that issues related to Thermo-Lag at Comanche Peak Unit 2 are sufficiently resolved to ensure adequate protection of the public and health and safety. Therefore, the NRC does not find it necessary to issue an order to stop the continued installation of Thermo-Lag at Comanche Peak Unit 2 or to suspend the facility's construction permit.

The remaining facilities addressed by the Petition, Shearon Harris, Fermi-2, Ginna, WNP-2, and Robinson, were identified by the Petitioners as having installed Thermo-Lag in fire wall configurations. The Petitioners cite IN 92-55 as a basis for determining that the use of Thermo-Lag for this application results in the licensees being out of compliance with NRC regulations. In their responses to Bulletin 92-01, Rochester Gas and Electric and Carolina Power and Light, the licensees for Ginna and Robinson, stated that Thermo-Lag was not installed in those facilities. Based upon this information, no action with respect to Ginna or Robinson is warranted. The responses to Bulletin 92-01 for Shearon Harris, Fermi-2, and WNP-2 included descriptions of the compensatory actions taken regarding the use of Thermo-Lag to protect electrical cable trays and conduit.

The NRC staff recognizes that the performance of Thermo-Lag panels and other configurations not yet tested may not satisfy original design basis requirements. The staff considers the relative safety significance to be low for those applications of Thermo-Lag not addressed by Bulletin 92-01 and for which a definitive demonstration of effectiveness is not yet available. This initial assessment is based on the factors discussed in this letter which include the protection provided by other aspects of fire protection programs, such as detection and suppression capabilities, and the expected conditions associated with a real nuclear plant fire. In an actual fire situation, the fire resistance required of a barrier depends on the expected severity of the fire to which it is exposed. Typical nuclear plant fire loads are not great enough to produce a fire approaching the severity of a test fire. An actual fire at a nuclear power plant would yield a much slower temperature rise than did the test fire. Moreover, although the fire resistance ratings of certain Thermo-Lag fire barriers are considered indeterminate, the NRC staff has evidence that the barriers will provide some level of fire protection. In addition, most plant areas have controlled ignition sources, which helps reduce the occurrences of fires, and are equipped with other passive and active fire protection features which contribute to early fire detection and suppression activities. Therefore, the NRC has concluded that the Thermo-Lag fire barrier concerns being addressed by its staff and industry do not pose an immediate threat to public health and safety and does not find it necessary to suspend the operating licenses for Shearon Harris, Fermi-2, or WNP-2 facilities.

The NRC will perform additional small-scale tests at the National Institute of Standards and Technology (NIST) and will continue to assess the significance of its findings. However, the small-scale tests similar to those described in IN 92-55 are not qualification tests. Although the tests will give valuable insight into the thermodynamic behavior of the Thermo-Lag fire barrier material itself, they cannot be used in and of themselves to determine the fire resistance ratings of the various Thermo-Lag fire barrier systems. If testing sponsored by the NRC, an individual licensee, or an industry organization finds a configuration or application which might compromise the safe shutdown capability, the NRC will immediately take appropriate actions.

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The Petition alleges that Thermo-Lag emits extremely high amounts of hydrogen cyanide gas which could overcome fire watch personnel while performing their duty. NIST performed tests for the NRC staff in which it demonstrated that the products of the combustion of Thermo-Lag do not include high amounts of hydrogen cyanide. Fires in nuclear power plants would be expected to emit toxic gases from a variety of combustible sources and it has been determined that Thermo-Lag does not introduce unique concerns regarding either the quantity or composition of toxic materials. The NIST testing determined that the products of combustion of Thermo-Lag are comparable in toxicity to the burning of Douglas Fir lumber. Fire watches can perform their function of finding fires, notifying appropriate response personnel, and beginning fire suppression activities without sacrificing personal safety, including not being overcome by smoke and toxic gases. In addition, fire fighters and other utility personnel trained for fire brigades are taught proper techniques for fighting fires, including the use of self-contained breathing apparatus, when toxic gases are present.

The Petitioners have requested that the NRC issue a generic letter which addresses the various issues associated with the use of Thermo-Lag fire barriers. The NRC staff has not completed its processing of the draft generic letter 92-XX, "Thermo-Lag Fire Barriers," of February 11, 1992 in accordance with the staff's action plan and the Commission's policy and procedures, which call for a public comment period and a thorough analysis of the current regulatory requirements and the effect of any new requirements. Upon completing this process, the NRC will issue the final generic letter to all holders of operating licenses and construction permits for nuclear power reactors. During an August 12, 1992, public meeting with NUMARC, the NRC staff stated that it had considered the comments it had received on the draft letter, that it was preparing the final letter in accordance with the action plan, and that it assigned a high priority to issuing the letter. The NRC will issue the final generic letter in the near future.

The NRC staff has concluded that the immediate suspensions of the operating licenses for River Bend Station, Comanche Peak Unit 1, Shearon Harris, Fermi-2, Ginna, WNP-2, and Robinson facilities are not warranted. The NRC staff also determined that the issuance of a "stop-work" order or the suspension of the construction permit for Comanche Peak Unit 2 is not warranted. The NRC staff will, in the near future, issue the generic letter mentioned in the Petition. Issuance of the generic letter will be in accordance with the staff's action plan and the Commission's policy and procedures and, therefore, the request to accelerate the issuance of the generic letter is not deemed necessary. Accordingly, Petitioners' request for emergency relief is denied.

Mr. Michael Mariotte

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August 19, 1992

As provided by 10 CFR 2.206, the NRC will take appropriate action on the specific issues raised in the Petition within a reasonable time. I have enclosed a copy of the notice that is being filed with the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in black ink that reads "Thomas E. Murley". The signature is written in a cursive style with a large, sweeping flourish at the end of the name.

Thomas E. Murley, Director  
Office of Nuclear Reactor Regulation

Enclosure:  
Notice

U.S. NUCLEAR REGULATORY COMMISSION  
HOLDERS OF OPERATING LICENSES OR CONSTRUCTION PERMITS  
FOR NUCLEAR POWER PLANTS  
RECEIPT OF PETITION FOR DIRECTOR'S DECISION UNDER 10 CFR 2.206  
REGARDING THE USE OF THERMO-LAG 330 FIRE BARRIER MATERIAL

Notice is hereby given that the Nuclear Information and Resource Service and other organizations (Petitioners) have submitted to the U.S. Nuclear Regulatory Commission (NRC) on July 21, 1992, as supplemented by the addenda of August 12, 1992, a Petition pursuant to 10 CFR 2.206. Joining with the Nuclear Information and Resources Service in filing the Petition are the Alliance for Affordable Energy, Citizens Organized to Protect our Parish, Citizens for Fair Utility Regulation, Don't Waste New York, Citizens Against Radioactive Dumping, Coalition for Alternatives to Shearon Harris, Conservation Council for North Carolina, Safe Energy Coalition of Michigan, Steve Langdon, Essex County Citizens Against Fermi-2, Natural Guard, and Northwest Environmental Advocates.

The Petitioners alleged a number of deficiencies with Thermo-Lag material including failure of Thermo-Lag fire barriers during 1- and 3-hour fire endurance tests, deficiencies in procedures for installation, nonconformance with NRC quality assurance and qualification test regulations, the combustibility of the material, ampacity miscalculations, the lack of seismic tests, the failure to pass hose stream tests, the high toxicity of substances emitted from the ignited material, and the declaration by at least one utility, Gulf States Utilities Company, of the material as inoperable at its River Bend Station. The Petition also alleged that fire watches cannot

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substitute for an effective fire barrier indefinitely and that the NRC staff has not adequately analyzed the use of fire watches.

Based on these allegations, the Petitioners request that the NRC immediately suspend the operating licenses for the River Bend, Comanche Peak Unit 1, Shearon Harris, Fermi-2, Ginna, WNP-2, and Robinson facilities pending a demonstration that the facilities meet NRC fire protection requirements. The Petitioners also request the issuance of an order to stop the installation of Thermo-Lag at Comanche Peak Unit 2 or a suspension of the facility's construction permit. The Petitioners seek the NRC to issue a generic letter before September 5, 1992, requiring licensees to submit information to the NRC demonstrating compliance with fire protection requirements. Where facilities cannot demonstrate compliance, the Petitioners request immediate suspension of the operating licenses for the affected facilities until such time as compliance with NRC fire protection requirements can be shown. In a letter of August 19, 1992, I have determined that immediate action is not necessary regarding the matters raised in the Petition.

The Petition has been referred to the Director of the Office of Nuclear Reactor Regulation pursuant to 10 CFR 2.206. As provided by 10 CFR 2.206, the NRC will take appropriate action on the specific issues raised by the Petition in a reasonable time.

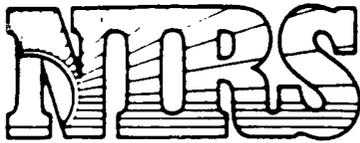
A copy of the Petition is available for inspection at the Commission's Public Document Room, the Gelman Building, 2120 L Street, N.W., Washington, D.C. 20555.

Dated at Rockville, Maryland, this 19th day of August 1992.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink that reads "Thomas E. Murley". The signature is written in a cursive style with a large, sweeping flourish at the end.

Thomas E. Murley, Director  
Office of Nuclear Reactor Regulation



# Nuclear Information and Resource Service

1424 16th Street, N.W., Suite 601, Washington, D.C. 20036 (202) 328-0002

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July 21, 1992

**James Taylor**  
Executive Director for Operations  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Taylor:

We file the enclosed petition under the terms of 10 CFR 2.206.

This petition calls for NRC enforcement action against Gulf States Utilities' River Bend reactor. Specifically, we demand that River Bend's operating license be suspended until it can demonstrate, through independent testing, that it meets NRC's fire protection regulations (10 CFR 50, Appendix R).

In addition, we demand that the NRC staff immediately issue Generic Letter 92-xx, February 11, 1992, and that any nuclear power plant which cannot prove, through independent testing, that it meets fire protection regulations be closed until it does meet them.

The enclosed petition elaborates on these points.

Because of the urgency of this situation, we request that the NRC respond to this petition by August 5, 1992.

Sincerely,

  
**Michael Mariotte**  
Executive Director

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*dedicated to a sound non-nuclear energy policy.*

EDO --- 007930  
92-04871-A-00

UNITED STATES OF AMERICA  
BEFORE THE NUCLEAR REGULATORY COMMISSION

PETITION FOR EMERGENCY ENFORCEMENT ACTION AND ISSUANCE OF GENERIC  
LETTER

**I. INTRODUCTION**

The Nuclear Information and Resource Service (hereinafter petitioner) hereby petitions the Staff of the Nuclear Regulatory Commission (NRC or Staff) for emergency enforcement action against Gulf States Utilities' (GSUs') River Bend nuclear power plant, which is operating in violation of NRC safety fire protection requirements.

In addition, the petitioners demand the immediate issuance of NRC Generic Letter 92-xx (draft issued February 11, 1992) which requires all licensees to provide information to verify that the fire-barrier Thermo-Lag 330 (Thermo-Lag) complies with all NRC requirements.

According to NRC documents, under fire conditions, the thermal degradation of an electrical raceway fire barrier system, such as the Thermal-Lag system, manufactured by Thermal Science, Inc. (TSI), could lead to both trains of safe shutdown systems being damaged by fire. This could significantly affect the plant's ability to achieve and maintain hot standby/shutdown conditions (see 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," June 24, 1992).

The failure of Thermo-Lag fire barrier during 1- and 3-hour fire endurance tests, the deficiencies in the procedures for installation, the non-conformances with NRC quality assurance and qualification tests regulations, the combustibility of the material, the ampacity miscalculations, the lack of seismic tests, the failure to pass hose stream tests, the high toxicity emitted from the ignited material, and GSU's statement that the Thermal-Lag material is "inoperable," are grounds for the immediate removal of the material and installation of a fire barrier that meets NRC regulations.

Since 1987, GSU identified that Thermo-Lag did not meet the acceptance criteria due to surface cracks, wear conditions and incomplete construction. In response to these conditions, the licensee declared the fire barrier inoperable and established fire watch patrols in accordance with Technical Specification 3.7.7.a. Since 1988 there have been numerous fire tests for GSU and elsewhere finding the Thermal-Lag material inoperable.

The fire watch was intended as a short-term, stop-gap measure, not as a final solution to the Thermal-Lag problem. A fire-watch is an additional way to detect a fire, like a fire detection alarm. A fire barrier is a different mode of safeguarding a reactor against fire. Thermo-Lag was intended to protect the wires from fire. Therefore, a fire watch duplicates fire detection while exposing the plant on the level of fire protection. In addition,

Thermo-Lag emits high levels of toxic gases (hydrogen cyanide) when ignited. An unequipped fire watch could easily be overcome by these gases.

Over the last three years GSU has tested retrofits and has not found one which meets NRC regulations. Therefore, the Thermo-Lag material should be replaced immediately to provide the level of safety as required by NRC regulations.

Because the River Bend Station violates the Commission's requirements for fire protection, the Commission can make no finding that there is reasonable assurance of no undue risk to public health and safety. The Petitioners therefore request that the Commission issue an immediately effective order suspending the facility's operating license, directing the licensee to cease power operation and placing the reactor in a cold shutdown condition. The plant should not be permitted to continue operation unless and until the defective Thermo-Lag material is replaced and inspections are shown to provide the requisite reasonable assurance of no undue risk to public health and safety. Because of the immediacy of the situation, the petitioners reserve the right to appeal to the Commissioners if the Staff does not reply by August 5, 1992.

Because many licensees have installed the suspect Thermo-Lag material, the NRC should immediately issue its February 11, 1992 draft Generic Letter on Thermo-Lag. This letter should require licensees to provide information to verify that Thermo-Lag complies with all NRC requirements, including those requirements not

addressed in the February letter like hose stream, combustibility, toxicity and seismic issues.

In addition, this letter should require that where installed fire barrier materials are shown not to meet NRC regulations, reactors must be immediately brought to a cold shutdown condition and not be allowed to restart until effective and tested fire barriers are in place.

## II. DESCRIPTION OF PETITIONERS

The Nuclear Information and Resource Service (NIRS) is a nonprofit organization whose work is related to nuclear power, radioactive waste and renewable energy. Members include Louisiana residents whose health and safety are put at direct risk by the unsafe operation of the River Bend reactor. With an office in Washington, DC, NIRS has been a participant in nuclear regulatory affairs, including rulemakings, enforcement actions and adjudications involving individual plant since 1978.

Citizens Organized to Protect our Parish (COPP) is an unincorporated, nonprofit community group which was formed in 1991 to address environmental and other concerns in West Feliciana Parish, Louisiana, as a result of the inability or unwillingness to do so on the part of local elected officials. River Bend is located in West Feliciana and most COPP members live within a 10 mile radius of the reactor.

The Alliance for Affordable Energy is a Louisiana non-profit

corporation focused on consumer and environmental protection. The Alliance has over 400 members throughout Louisiana, including in the area served by GSU. Since 1985, the Alliance has conducted research and education concerning, among other things, energy efficiency, renewable energy and fossil and nuclear electric generation technologies.

### III. THE NRC SHOULD EXERCISE ITS AUTHORITY TO IMMEDIATELY CEASE OPERATION AT RIVER BEND

This petition is brought before the Staff pursuant to the authority granted to it in 42 U.S.C. 2236, 2237 and 2282; and 10 CFR 2.200-2.205. It is the responsibility of the agency to assure that health and safety is protected. See, e.g. 42 U.S.C. 2133, 2134. Thus the Commission has stated that "...public safety is the first, last, and permanent consideration in any decision..." Power Reactor Development Corp. v. International Union of Electrical Radio and Machine Workers, 367 U.S. 396, 402 (1961), CLI-78-6.

Accordingly, public health and safety require the plant to cease operation immediately. 5 U.S.C. 558(c), 42 U.S.C. 2236b; 10 CFR 2.202(f), 2.204. As discussed below, the results from the Texas Utilities test (June 1992) and the GSU tests (1988, 1989, 1990) reveal risks in the operation of the River Bend nuclear power reactor not previously perceived or acted upon by the NRC. The use of Thermo-Lag material for fire protection poses an immediate and unacceptable risk to public health and safety.

### IV. GROUNDS FOR ENFORCEMENT ACTION

### **A. NRC Fire Protection Requirements**

Section 50.48(A) of Title 10 of the Code of Federal Regulations (10 CFR 50.48(a)) requires that each operating nuclear power plant have a fire protection plan that satisfies Appendix A to 10 CFR Part 50, General Design Criteria (GDC) 3, "Fire Protection." GDC 3 requires structures, systems and components important to safety be designed and located to minimize, in a manner consistent with other safety requirements, the probability and effects of fire and explosions.

NRC-approved plant fire protection programs as referenced by the plant operating license Conditions and Appendix R to 10 CFR Part 50, Section III G.1.a, "Fire Protection of Safe Shutdown Capability," require one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or the emergency control stations to be free from fire damage.

To ensure that electrical cabling and components are free from fire damage, regulations require the separation of safe shutdown trains by separation of cables and equipment and associated circuits of redundant trains by a fire barrier having a 3-hour rating, or enclosure of cable and equipment and associated non-safety circuits of the one redundant train in a fire barrier having a 1-hour rating. In addition to providing the 1-hour barrier, fire detection and an automatic fire suppression system are required to be installed in the fire area (See Section III G.2 of Appendix R to 10 CFR Part 50).

### **B. Importance of Fire Barrier**

A major fire damaging safe shutdown equipment occurred at Browns Ferry Nuclear Station in March 1975. The fire damaged 1600 electrical cables and caused the temporary failure of some critical core cooling systems. Since the Browns Ferry fire, some new regulations have improved fire protection and control, but there is still a great risk of core meltdown due to conflagration. According to the NRC report "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants" (NUREG-1150, December 1990), "previous probabilistic risk assessments (PRAs) have shown that fires are a significant contributor to the overall core damage frequency." (C-128) NUREG-1150 states that if there is a core melt, there is up to a 50% chance that it was caused by fire. The foremost reason for this high probability is that the fire event not only acts as an initiator, but can also compromise mitigating systems because of common-cause effects. The report also estimates that a typical reactor will have three to four significant fires over its operating lifetime.

In general, the fire-damaged areas most probable to cause core meltdown are the emergency switch gear room, auxiliary building, control room and cable vault/tunnel. Fires in these areas compromise an extremely high percentage of the total fire core damage frequency. In the cases of the emergency switchgear room, cable vault/tunnel and the auxiliary building, a reactor coolant pump seal loss-of-coolant accident (LOCA) leads to core damage. For emergency switchgear also, a fire induced loss-of-off-site power and failure of one train of the emergency service water (ESW)

system occurs. Random failure of other ESW trains result in station blackout and core damage. The fire itself fails cabling for both the high-pressure injection and component cooling water systems resulting in a seal LOCA. For the control room, a general transient with subsequent stuck-open power operated relief valve leads to a small LOCA, or a general transient occurs with smoke-induced abandonment of the area. Failure to control the plant from the auxiliary shutdown panel results in core damage.

NUREG 1150 concludes that four fire risk issues that are not covered in detail in this report "...also have the potential to increase the core damage frequency. They are: 1. Manual fire brigade effectiveness; 2. total environment survival; 3. fire barrier effectiveness (emphasis added) and; 4. fixed fire suppression system damage effects." (NUREG-1150, p.C-132). Thus the inoperability of the fire barrier Thermo-Lag increases the already high probability of fire-initiated core damage.

River Bend uses Thermo-Lag in critical safety-related areas like the cable chase room and numerous tunnels, including those that run under the Control and Auxiliary buildings.

### **C. Failure of Thermo-Lag**

Thermo-Lag fails to satisfy the requirements for a 1- and 3-hour fire barrier (Section III.G.2 of Appendix R to 10 CFR Part 50). At issue is not whether the fire barrier Thermo-Lag is in compliance with regulations. In fact, it is not. GSU and the NRC already have stated that the material is inoperable. At issue is

whether the fire watch should be allowed to continue while reconfiguration is contemplated. According to staff at River Bend, all possible reconfiguration have been tested and the only real alternative is replacement of Thermo-Lag. GSU has known about the inoperability of Thermo-Lag for more than five years. The NRC has known about the problem for more than two years. Thermo-Lag deficiencies are numerous and serious:

**1. River Bend submits Thermo-Lag Licensing Event Report (LER) (1987)**

By letter dated March 25, 1987, the licensee submitted LER 87-005 to report nonconforming conditions e.g. Thermo-Lag failure as a fire-barrier pursuant to 10 CFR Part 50.73. Subsequently, the licensee identified additional significant fire barrier deficiencies including removal of the inner layer of stress skin and ribs from the preformed panel. On July 29, 1988, the licensee conducted a three-hour fire endurance on a cable tray assembly covered with 1 inch Thermo-Lag panels with stress skin removed and ribs removed. The test results, which are documented on Industrial Testing Laboratories (ITL) Report 88-07-5982 and the licensee's Conditions Reports 88-0687 and 88-0608, show that the "as-installed" barrier failed on temperature rise in less than two hours. Although the licensee identified significant additional non-conforming conditions and declared additional barriers inoperable, as evidenced by numerous condition reports prepared after submittal of LER 87-005, there were no additional LERs. This is in violation

of 10 CFR Part 50.73 and made it impossible for the public or the NRC to know of the seriousness of the fire barrier problem at the time.

GSU has known of a Thermo-Lag problem since 1987, and has known that the fire barrier was inoperable since 1988. It was not until January 1990 that the NRC was presented with the evidence that Thermo-Lag was inoperable.

## **2. Thermo-Lag Fails Three Hour Fire Endurance Test (1989)**

On August 6, 1991 the NRC issued Information Notice (IN) 91-47, "Failure of Thermo-Lag Fire Barrier Material To Pass Fire Endurance Test," which provided information on the fire endurance tests performed by GSU on Thermo-Lag fire barrier systems installed on wide aluminum cable trays and associated failures.

According to tests conducted by Southwest Research Institute for GSU in October 1989, the 3-hour rated barrier had "catastrophic failure" within 1 1/2 hours. Circuit integrity failure occurred in the power cable at 47 minutes, the fire barrier enclosure disintegrated at 77 minutes and the Thermo-Lag collapsed after only 82 minutes.

## **3. TSI Cited for Poor Installation (1991)**

On December 6, 1991, the NRC issued IN 91-79, "Deficiencies In The Procedures For Installing Thermo-Lag Fire Barrier Material," which provided information on deficiencies in procedures that the vendor, TSI, provided for installing Thermo-

Lag. At this point the NRC had no idea how long the fire barrier would last under fire conditions and gave it an "indeterminate qualification."

TSI failed to include several essential application steps and precautions for installation in its manual. During initial construction for River Bend, ANCO installers deviated from the installation procedures by removing stress skin and ribs from the preformed Thermo-Lag panels.

An NRC fact finding visit to River Bend (Inspection Report, October 31, 1991) found severe deterioration of Thermo-Lag on a floor mounted conduit due to repeated water exposure in G tunnel.

During the NRC plant tour, the review team observed three fire barrier configurations that the licensee could not justify by either fire tests or analysis. These were: 1. a large horizontal barrier separating Fire Area PH1 from Fire Area PT1 in G tunnel, 2. a large cable tray enclosure in F tunnel, and 3. an instrument rack enclosure at elevation 98 of the control building. In addition, structural steel forming parts of the barriers are not protected to provide fire resistance equivalent to that required of the barriers. Section 9.5.1.2.12 of the River Bend USAR states: "Exposed structural steel which is part of the barriers is fireproofed." These configurations do not appear to comply with the requirements of Appendix R to 10 CFR Part 50.

#### **4. Thermo-Lag Cited With Non-Conformances (1992)**

In an inspection report issued March 26, 1992, the NRC sent a notice of non-conformance to TSI. Much of TSI's qualification testing was put in doubt. Some of the issues addressed were that TSI did not require in some cases verification of the maximum weight and minimum thickness of prefabricated fire barrier panels and conduit sections during final inspection.

The report also said that TSI's fire endurance qualification test plans did not provide complete instructions for fabricating the test specimens. Several dimensions were not specified and instructions for filling joints were not specific. Test records provided the as-built data for some of the information.

It was pointed out in the report that there is no record of TSI ever auditing Industrial Testing Laboratories Inc. (ITL) to support their role in qualification testing of fire barrier material. TSI had no written contract with ITL, which served as an independent observer for qualification tests actually conducted by TSI.

Finally, there is no documentation specifying calibration of furnace thermocouples used for qualification testing of fire barrier specimens for use in commercial nuclear power plants.

#### **5. Ampacity Calculation Errors (1992)**

On June 23, 1992, the NRC issued IN 92-46, "Thermo-Lag Fire Barrier Material Special Review Team Final Report Findings, Current Fire Endurance Testing, and Ampacity Calculation Errors." All cables when expected to be installed as bundles are evaluated

for ampacity derating per the electrical code to ensure against the loss of circuit integrity due to softening of the cable jacketing. An error in ampacity derating could cause cables to prematurely age, or, worse, overheat and ignite. This IN reports that TSI made a calculation error on the ampacity derating. TSI has not performed a qualified ampacity test to date. The Underwriters Laboratory (UL) report 86NK23826 file no. R6802 has been cited as "indeterminate" by the NRC because the test fixture was not assembled with UL personnel review or witness. A legal ampacity test was not found in the public records.

#### **6. Thermo-Lag Fails One Hour Endurance Tests (1992)**

Texas Utilities (TU) fire-tested one-hour rated Thermo-Lag for its Comanche Peak Station in June, 1992. The fire barrier failed many of the tests. The complete test results are proprietary, but NRC Bulletin 92-01 gives a summary of the tests.

- Cable inside the 3/4 conduit was thermally damaged in two locations and cable in the 1-inch conduit was damaged in one location.

- A 30 inch ladder back tray configuration was tested. The joint at the interface between the tray support and the tray showed problems at 17 minutes into the test and the joint fully separated in 41 minutes resulting in cable circuit integrity failure and fire damage to the cables.

Thermo-Lag did pass the junction box, 5-inch conduit and 12-inch cable tray tests. It should be added that the tests were

done in optimal conditions, unlike the conditions in the plant.

We also add that we strongly object to the notion that any test results of fire barriers be considered "proprietary." While the make-up of fire barrier substances themselves might properly be deemed proprietary, there is no justification--other than an industry desire to deceive, mislead, or hoodwink the public--for test results to be proprietary. We respectfully request the NRC staff to release full results of all fire barrier material tests.

#### **7. Thermo-Lag Combustibility (1992)**

According to the minutes of an NRC meeting on June 12, 1992, "Mr. Architzel [lead project manager on Thermo-Lag for NRC's Office of Nuclear Reactor Regulation] expressed concern that test results also indicated some flaming/combustion of the Thermo-Lag product itself, and noted that this introduced some question relevant to the effect on combustion loading and fire propagation."

In fact, combustion of Thermo-Lag occurred during the TU tests.

#### **8. Hose Stream Test Failure (1992)**

The June 1992 TU tests indicated that Thermo-Lag did not meet the acceptance criteria for hose stream. If Thermo-Lag could not endure a water hose stream during a fire, there is a high probability that fire suppression systems could "short-out" cables.

#### **9. Seismic Issue Not Addressed**

The seismic and geological siting criteria for nuclear power plants (10 CFR part 100, appendix A (c)) require that structure systems and components are those necessary to assure: "the capability to shut-down the reactor and maintain it in a safe shutdown conditions."

TSI has not performed third party seismic tests. As a heavy cementitious pre-formed plate, the product can break-up and act as a shear, severing cables necessary in safe shut-down. Moreover, if a seismic event should occur and the product shatters the cable tray, the safe shutdown is further jeopardized by fire incidence.

#### **10. Toxicity Issue Not Addressed**

The 10 CFR appendix R, section II, item (I) fire brigade training item A "the initial classroom instruction shall include: (3) the toxic and corrosive characteristics of expected products of combustion."

Thermo-Lag has been shown to emit extremely high amounts of hydrogen cyanide gas when exposed to fire. Fire watch personnel could discover a fire and be overcome by the toxic gases.

#### **V. STATEMENT OF THE LAW**

As discussed above, the River Bend nuclear power plant fails to comply with the NRC's requirement for fire protection. This

has been acknowledged by the NRC Staff and is demonstrated unequivocally by the evidence in the public record. Moreover, the Staff has performed no valid analysis that meets the Commission's narrow criteria for continuing to operate in the absence of compliance.

Compliance with NRC safety regulations is a prerequisite to safe operation of a nuclear power plant. In fact, as the NRC's Appeal Board has observed, regulatory compliance is the "sine qua non of adequate protection to the public health and safety." Maine Yankee Atomic Power Company (Maine Yankee Atomic Power Station), ALAB-161, 6 AEC 1003, 1009 (1973). Compliance may not be avoided

by arguing that, although an applicable regulation is not met, the public health and safety will still be protected. For, once a regulation is adopted, the standards it embodies represent the Commission's definition of what is required to protect the public health and safety.

Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 528 (1973).

The Commission's essential safety standards must be met, without regard to the cost or inconvenience of achieving compliance. 10 CFR 50.109. See also Union of Concerned Scientists v. NRC, 824 F.2d 108 (D.C. Cir. 1987).

## VI. NRC STAFF INACTION

Over the last year, the NRC has issued three Information Notices (IN 91-47, IN 91-79, IN 92-46) and required no written response or action. After the TU test (June 1992) failures of Thermo-Lag, the NRC issued Bulletin 92-01 (June 24, 1992) which requires all licensees to report within thirty days if Thermo-Lag is installed and, if so, where. It also requires notification if the fire-barrier is inoperable and what compensatory measures are being taken.

All the above information required by the bulletin was submitted to the NRC for River Bend in January 1990. Thus, the NRC has taken no action in the case of River Bend to resolve the problem of the inoperable fire-barrier except allowing a fire watch for four years. As indicated in NUREG-1150, an effective fire-barrier is critical to safe shut down during a fire and a 1- and 3-hour operable fire barrier is required by law. A fire watch cannot substitute for an effective fire barrier indefinitely.

River Bend is not using the defense-in-depth concept of echelons of safety systems to achieve the a high degree of safety for nuclear power plants. The defense-in-depth principle attempts to balance prevention, detection, protection and suppression. Each echelon is required to meet a minimum requirement, and River Bend's Thermo-Lag fire-barrier has been proven not to meet the minimum requirement. In the Federal Register notice that issued the proposed Appendix R to 10 CFR Part 50, the NRC stated: "The minimum fire protection requirements for nuclear power plants

must be established not only to identify fire hazards but also to protect against unacceptable consequences of fire (see Federal Register, Vol. 45, No. 105, May 29, 1980, pp.36082-36090.)." Exemptions to an operable fire-barrier, e.g. fire watch, eliminate an echelon of defense-in-depth. Thermo-Lag has been cited "indeterminate," thus the amount of time it can protect the cables is mere speculation. During a real fire, reactor staff will have no reliable time frame in working towards safe shutdown. It is unacceptable for the NRC to grant indefinite exemptions for fire-barriers, with the assumption that a fire watch would eliminate the chances of a significant fire, particularly when NUREG-1150 acknowledges that the typical reactor will experience three to four fires during its operating life.

No valid analysis has been performed showing that equivalent margins of safety have been achieved substituting a fire-barrier for a fire watch, thus justifying continued operation. The Staff has failed to justify continued operation through findings that River Bend achieves margins of safety equivalent to compliance with regulations. In addition, the Staff has not conducted a Safety Assessment of inoperable fire-barriers.

The NRC staff has recognized the generic implications of the repeated test failures of Thermo-Lag material (see draft Generic Letter 92-xx, February 11, 1992). However, the NRC staff has failed to issue this Generic Letter, apparently due to nuclear industry pressure. For example, on July 7, 1992, despite

overwhelming evidence of the failures of Thermo-Lag to pass meaningful tests, the nuclear industry trade association Nuclear Utilities Management and Resources Council (NUMARC) continued to badger the NRC staff to change its definition of Thermo-Lag from "inoperable" to "degraded." In addition, NUMARC repeatedly balked at the idea of requiring utilities to test their Thermo-Lag installations. NUMARC's so-far successful effort to keep the NRC at bay constitutes an unwarranted intrusion into the NRC's regulatory process and authority. Simply put, we ask the NRC staff to state exactly who is running this agency: NUMARC or the NRC?

#### **VII. REQUEST FOR RELIEF**

For the reasons enumerated above, the petitioners state that the following relief is required:

#### **Immediate Suspension of River Bend's Operating License Pending Demonstration of Regulatory Compliance.**

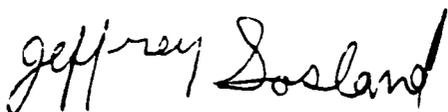
As discussed above, the River Bend nuclear power plant fails to comply with an array of fundamental NRC requirements for fire barrier. Full testing of Thermo-Lag materials has been accomplished at River Bend, and Thermo-Lag has flunked these test. Without an effective fire barrier, the risk of a serious meltdown is greatly increased. NRC regulations are in violation, and the public's health and safety is at great risk. River Bend's license must be suspended until Thermo-Lag materials are removed and replaced with a tested fire-barrier that meets all regulations.

**Issuance of Generic Letter On Thermo-Lag**

Approximately 80 reactors under the NRC jurisdiction use Thermo-Lag. A generic letter should be issued immediately which requires licensees to provide information to verify that Thermo-Lag systems comply with the NRC's requirements. This includes the requirements for qualification testing, installation, ampacity derating, combustibility, hose stream, seismic and toxicity. Where such systems, through testing, are found not to meet NRC regulations, operating licenses of those reactors must be immediately suspended until such time as effective and tested fire barriers have been installed.

We request that the NRC Staff respond to this petition by August 5, 1992.

Respectfully submitted,



Jeffrey Sosland

Nuclear Safety Project Director

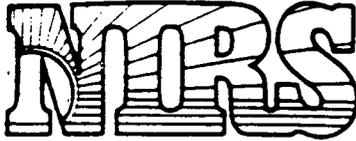
Nuclear Information and Resource Service



Michael Mariotte

Executive Director

Nuclear Information and Resource Service



cys: Taylor      Scinto  
 Sneizek      Milhoan  
 Thompson      Lieberman  
 Blaha

# Nuclear Information and Resource Service

1424 16th Street, N.W., Suite 601, Washington, D.C. 20036 (202) 328-0002

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 for identification only

August 12, 1992

James Taylor  
 Executive Director for Operations  
 U.S. Nuclear Regulatory Commission  
 Washington, DC 20555

Dear Mr. Taylor:

Enclosed is an emergency addenda to our 10 CFR 2.206 petition submitted on July 21, 1992, and an addenda based on new information.

We request a response to the emergency addenda before August 15, 1992, and a response to the addenda based on new information by August 31, 1992.

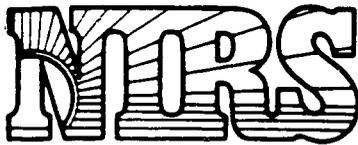
Thank you for your cooperation.

Sincerely,

  
 Michael Mariotte  
 Executive Director

~~9208310206~~

*dedicated to a sound non-nuclear energy policy.*



# Nuclear Information and Resource Service

1424 16th Street, N.W., Suite 601, Washington, D.C. 20036 (202) 328-0002

## EMERGENCY ADDENDA TO NIRS'

### PETITION FOR EMERGENCY ENFORCEMENT ACTION

OF JULY 21, 1992

### AND ADDENDA TO THE ORIGINAL PETITION

### BASED ON NEW INFORMATION

#### I. BACKGROUND

On July 21, 1992, the Nuclear Information and Resource Service (NIRS), Alliance for Affordable Energy, and Citizens Organized to Protect our Parish filed a petition, requesting emergency enforcement action, with the Nuclear Regulatory Commission (NRC) staff under provisions of 10 C.F.R. 2.206. Specifically, NIRS requested a suspension of Gulf States Utilities' (GSU) operating license for its River Bend reactor based on its use of a fire barrier material called "Thermo-Lag." Repeated testing of both the material as installed and retrofit configurations have conclusively demonstrated that this material, at River Bend, does not work, and does not meet the requirements of 10 C.F.R. 50.48(a), 10 C.F.R. 50 Appendix A and Appendix R. Thus, River Bend is in violation of NRC regulations.

The clear and present danger caused by GSU's failure to meet essential NRC safety regulations requires a suspension of the license until GSU removes and replaces its Thermo-Lag with a new fire barrier that can meet NRC's requirements.

In addition, NIRS requested that the NRC staff immediately issue Generic Letter 92-xx, February 11, 1992, which would institute a program of independent testing of Thermo-Lag fire barriers at every reactor which uses the material. Where such testing fails to prove that Thermo-Lag meets regulatory requirements, and thus leaves reactors in violation of NRC fire protection regulations, NIRS requested that those reactors be immediately shut down until such time as effective fire barriers are in place.

NIRS included in its petition a lengthy discourse on the history of the failures of Thermo-Lag as installed, and of the NRC's own acknowledgement of the tremendous risk posed by fires in most

reactors' overall core meltdown risk.

Because of the urgent nature of this problem, NIRS requested a response from the NRC staff by August 5, 1992.

## II. NRC RESPONSE AND NIRS' REPLY FOR ADDITIONAL ACTION

As of August 10, 1992, the NRC staff has not responded to NIRS' petition of July 21, 1992. We must assume that the NRC staff is still considering its response to this petition.

River Bend has been in an extended maintenance/repair outage, which began in March 1992. It would be illogical for the NRC staff to seek more time in which to render a decision on our petition, but still allow River Bend to restart. This would, in effect, be a negative decision on our petition.

To the best of our knowledge, GSU intends to restart River Bend on or about August 15, 1992. By allowing restart, the NRC staff would, in effect, be denying our petition. If this is the case, NRC staff should say so, and we will appeal that decision. There is no rationale, other than subterfuge, for NRC staff to claim to be both considering our petition and to allow River Bend to restart.

It would be impossible for GSU to remove and replace its Thermo-Lag while in an operational mode. And it makes no sense whatsoever to allow River Bend to restart, only to cause it to close and enter another outage three weeks later to replace its Thermo-Lag. Indeed, our petition was timed to ensure that River Bend would not restart, and that the necessary modifications could be made while River Bend was already in a maintenance outage.

It has been more than five years since the problems with Thermo-Lag at River Bend were first confirmed by GSU. Five years of fire watches, violation of NRC fire protection regulations, and inadequate protection of the public. We repeat our insistence that River Bend not be allowed to restart until its Thermo-Lag is removed and replaced. And under no conditions can River Bend be allowed to restart until the NRC staff has even made a decision on our petition. This would indicate dishonesty and deception of the highest order, and can only be viewed as arbitrary and capricious.

In the case of issuance of Generic Letter 92-xx (February 11, 1992), we must admit some puzzlement over why the NRC cannot go ahead and send this letter to the nation's utilities. After all, the letter was written more than six months ago, and intervening events--including several tests of Thermo-Lag in various configurations--have only added to the sense of urgency to resolve this outstanding safety problem. In short, Thermo-Lag has continued to fail independent tests while the NRC has not to this date produced any acceptable fire tests of Thermo-Lag, and the NRC staff refuses to act to protect the public's health and safety. However, we will wait 30 more days before pursuing further action to bring

about independent testing at most utilities.

We continue to believe that the NRC staff wishes to do the right thing, and grant our petition. Thus, we are not at this time submitting an appeal to the NRC Commissioners.

### III. ADDENDA TO NIRS PETITION OF JULY 21, 1992

Substantial new information has come to NIRS' attention since the filing of our 10 C.F.R. 2.206 petition on July 21, 1992. This new information has caused us to modify our petition as follows. A number of co-petitioners are joining NIRS in this addenda. A description of the co-petitioners appears in section IV.

1. The NRC staff must issue an immediate "stop-work" order to Texas Utilities regarding Thermo-Lag installation at Comanche Peak Unit-2 and a suspension of the operating license of Comanche Peak Unit-1.

Despite the ongoing controversy over the use of Thermo-Lag, and the results of failed tests of Thermo-Lag in configurations used at Comanche Peak Unit-1, as documented in NRC Bulletin 92-01, June 24, 1992 (Failure of Thermo-Lag 330 Fire Barrier System To Maintain Cabling In Wide Cable Trays and Small Conduits Free From Fire Damage), our sources indicate that as many as 54 utility, contractor, and/or subcontractor personnel continue to install Thermo-Lag at Comanche Peak Unit-2.

Moreover, the NRC staff, on or about August 1, 1992, issued an extension of the construction permit for Comanche Peak Unit-2, despite its awareness of the problems of Thermo-Lag and of NIRS' petition for issuance of Generic Letter 92-xx (February 11, 1992) which calls into serious question the adequacy of Thermo-Lag as a fire barrier material. In addition, even with the "enhanced test configurations" used for the Comanche Peak tests, Thermo-Lag failed hose stream test requirements.

The NRC staff cannot seriously have considered justifying a finding of "no significant impact" to allow issuance of this extension of the construction permit. In fact, on August 1, 1992, the NRC staff was aware that Thermo-Lag, particularly in its configuration at Comanche Peak, does not meet NRC fire protection requirements.

Indeed, the NRC staff used color photographs of failed tests of Thermo-Lag, in Comanche Peak's configuration, at a July 7, 1992 meeting between NRC and NUMARC (Nuclear Utilities and Management Resources Council) to emphasize staff's determination to take decisive action on Thermo-Lag.

Why, then, would NRC allow extension of Comanche Peak Unit-2's construction permit, in full knowledge that Texas Utilities is continuing to install Thermo-Lag, which, through testing, is known to be clearly in violation of the NRC's fire protection

regulations?

We respectfully request that the NRC staff issue an immediate "stop-work" order regarding continued installation of Thermo-Lag at Comanche Peak Unit-2. Although it is not this petition's intent to stop all construction at Comanche Peak, if, under the provisions of 10 C.F.R. 2.206, we may only seek a full suspension of the construction permit, then we hereby request such a suspension until all Thermo-Lag is removed and replaced with a tested, effective fire barrier material.

In addition, based on the test results documented in NRC Bulletin 92-01, June 24, 1992, we request an immediate suspension of the operating license of Comanche Peak Unit-1, until such time as its Thermo-Lag fire barrier material has been removed and replaced with a tested, effective fire barrier.

We add that fire protection and Thermo-Lag problems are nothing new at Comanche Peak. The first independent testing of Thermo-Lag was performed for Comanche Peak in 1981--a test which Thermo-Lag failed. In early 1990, Texas Utilities was cited by the NRC for a 1989 incident in which a quality control inspector filed a non-conformance report indicating that Thermo-Lag at Comanche Peak did not meet thickness specifications. The subsequent harrassment of this inspector "may have had a chilling effect on other licensee or contractor personnel," according to a January 31, 1990 letter from NRC official C.I. Grimes to W.J. Cahill, Jr., executive vice president of Texas Utilities.

The inadequacy of the "temporary" fire watches espoused by the NRC as its answer to declaring Thermo-Lag "inoperable" (on June 24, 1992) can also be readily seen at Comanche Peak. On March 28, 1991, a \$50,000 fine was proposed for Texas Utilities for the "widespread falsification" of fire watch records, "involving 26 individuals directly or indirectly." In other words, utility personnel were claiming to have performed fire watches, but did not do so.

2. The NRC must issue immediate suspensions of the operating licenses of Shearon Harris, Fermi-2, Ginna, WPPSS-2, and Robinson.

On July 27, 1992, six days after the filing of NIRS' initial petition, the NRC issued Information Notice 92-55 (Current Fire Endurance Test Results for Thermo-Lag Barrier Material). This notice documented new NRC testing of Thermo-Lag, in a firewall configuration.

According to this notice, to achieve a "passing" grade the Thermo-Lag fire barrier would have had to keep temperatures on the unexposed site to 250 degrees Fahrenheit above ambient in both a one-hour and a three-hour test mode.

However, according to these NRC-sponsored tests, in the one-hour

test, temperatures on the unexposed side (i.e. the "protected" side) reached not 250 degrees above ambient (approximately 325 degrees), but 1716 degrees Fahrenheit, within 45 minutes. In fact, the Thermo-Lag itself caught on fire, and added heat to the furnace in which the material was being tested. Average temperatures reached 1206 degrees, the panels burned completely through in two locations, and 85% of the unexposed surface was blackened.

For the three-hour test, the Thermo-Lag on the unexposed side reached "only" 432 degrees, with an average temperature of 403 degrees. This, too, indicates a failure of the Thermo-Lag to meet regulatory requirements, although apparently there was no evident electrical cable damage. However, NIRS has learned that the NRC's test itself was faulty, in that the NRC did not remove certain edge sections of the stress skin, as would be done under normal installation, before conducting this test. Removal of these sections likely would have resulted in a greater failure of this test.

Further, we note that the Thermo-Lag material tested by the NRC varied greatly in its thickness. According to specifications, the three-hour Thermo-Lag fire barrier material is one-inch thick. Yet the three-hour material tested by the NRC varied from 1.09 to 1.56 inches thick--or up to more than 50% thicker (and, presumably, more effective) than the specified installation. The one-hour (half-inch) material varied from 0.54 to 0.72 inches. This indicates either an appalling lack of quality control (with the company unable to provide even the NRC with material with a precision within a half-inch on a one-inch specification) or a desire to present the best face possible for these tests.

The combination of the failure to remove certain edge sections of the stress skin and the tremendous variability of the size of the Thermo-Lag tested brings into grave question the adequacy of these NRC-sponsored tests, particularly the three-hour test. Indeed, this test must be considered faulty, and must be re-done. There is absolutely no reason to believe, based on this test, that the three-hour firewall configuration of Thermo-Lag is any more effective than the clearly-failed one-hour configuration.

It is NIRS' understanding that five reactors--Shearon Harris, Fermi-2, Ginna, WPPSS-2 and Robinson--now use Thermo-Lag in a firewall configuration. Other than the NRC's tests described above, in which Thermo-Lag failed miserably or in which the test results were so skewed as to be meaningless, there is no independent testing that would demonstrate that Thermo-Lag in a firewall configuration meets NRC fire protection requirements.

As a result of this July 27, 1992 Information Notice, NRC cannot make a finding that these four reactors are in compliance with NRC regulations. Indeed, every indication is that these plants are seriously out of compliance with regulations and present a clear

hazard to the public's health and safety.

We remind the NRC that its own reactor safety documents, particularly NUREG-1150 (Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants, December 1990) conclude that fires represent a major initiator of core meltdowns. Because risk is measured as a function of probability times consequences, every plant which operates in violation of fire protection requirements increases risk to the American public.

In this case, the risk is clear: the only independent tests on the firewall configuration of Thermo-Lag demonstrate that not only is this material ineffective as a fire barrier, it could actually increase damages from a fire by catching fire itself. Because the above-mentioned reactors use this configuration, we respectfully request that their licenses be suspended until an effective and tested fire barrier is in place.

As we noted in our initial petition, fire watches are a wholly inadequate substitute for fire barriers. At best, they are a temporary response for those plants for which adequate testing of Thermo-Lag has not yet been accomplished. In the case of the plants listed above, testing has demonstrated non-compliance with regulations and replacement of the Thermo-Lag fire barriers must be undertaken to meet the regulation. Fire watches cannot possibly provide the required one-hour and three-hour fire barrier requirement and are thus acceptable only as a temporary measure while the plants are shut down to replace the Thermo-Lag. Further, as noted in the Comanche Peak case above as well as at various reactors in New England over the past 18 months, there is a demonstrated history of missed fire watches, falsification of documents, and a general utility attitude of not taking fire watches seriously that further undermines the credibility of this "solution."

#### IV. DESCRIPTION OF PETITIONERS

The Nuclear Information and Resource Service (NIRS), lead petitioner, is as described in our original petition of July 21, 1992.

Citizens for Fair Utility Regulation (CFUR) is an unincorporated group of individuals residing in Texas, including Tarrant, Hood and Somervell counties. Several members reside within a few miles of the Comanche Peak nuclear power plant. CFUR was organized in 1976 and is funded by voluntary donations. It has a mailing list of over 350 supporters, a governing board of seven members, with board meetings monthly which are open to all members as well as the public. CFUR was an intervenor in the licensing hearings on Comanche Peak from 1979 until 1982 and has intervened before the Texas Public Utility Commission.

Don't Waste New York (DWNY) is a statewide organization composed

of more than 4,000 members concerned about nuclear power and radioactive waste. Several members live within a few miles of the Ginna reactor.

Citizens Against Radioactive Dumping is a 501(c)(4) non-profit organization with a membership located primarily in Cortland County, New York. Its several hundred members are concerned with all nuclear reactors and radioactive waste generation in New York State.

The Coalition for Alternatives to Shearon Harris (CASH) is a 501(c)(4) organization founded in 1986 to express widespread citizen opposition to construction and operation of the Shearon Harris nuclear power plant. CASH set up chapters in Chatham, Orange, Durham, Harnett, Lee, and Wake counties.

For more than twenty years, the Conservation Council of North Carolina has lobbied the North Carolina and federal legislatures on a variety of environmental issues. The Council is a 501(c)(4) organization with members across the state of North Carolina.

The Safe Energy Coalition of Michigan (SECOM) is a non-profit grassroots group based in southeastern Michigan. Since 1977, SECOM has advocated the use of safe energy technology and the termination of nuclear power. The coalition has lobbied the Michigan Public Service Commission for fair rate structures on behalf of ratepayers, and appeared before the NRC Commissioners in 1985 in opposition to the full-power license for Fermi-2.

Member of Parliament Steven Langdon (Essex-Windsor, Ontario) has been a member of the Canadian Parliament for eight years and sits on the House of Parliament Finance Committee. He represents Canadian citizens within 12 kilometers of the Fermi-2 reactor.

Essex County Citizens Against Fermi-2 (ECCAF) was formed in 1987 after a merger of a citizens group in Amherstburg, Ontario and the Downwinders Alliance. ECCAF has organized petition drives, community events and participated in Fermi evacuation and safety hearings on behalf of Essex County, Ontario residents.

The Natural Guard is a South Carolina-based environmental foundation that provides resources for the peace, justice, and environmental movement in South Carolina. Founded in 1978, the Natural Guard does not have membership, but joins the work of any individual working to nonviolently defend the Earth and its inhabitants from exploitation.

Northwest Environmental Advocates (NWEA) is a regional nonprofit environmental organization which has been working since 1969 to restore the environmental quality of the Columbia River Basin. Originally the Coalition for Safe Power, the organization changed its name in 1987. NWEA has 4,000 supporters in the Pacific

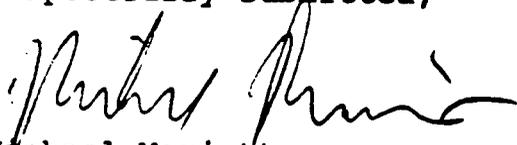
Northwest, with members who reside within 50 miles of WPPSS-2. Since its inception, NWEA has been working to inform the public of the risks posed to human health and the environment from nuclear facilities, including the Trojan reactor, WPPSS-2, the Hanford nuclear weapons complex, and proposed nuclear reactors throughout Oregon and Washington.

V. RELIEF REQUESTED

Under the provisions of 10 C.F.R. 2.206, NIRS, and co-petitioners, request that:

1. A stop-work order on installation of Thermo-Lag, or, if necessary, a suspension of the construction permit, be issued for Texas Utilities' Comanche Peak Unit-2.
2. The operating licenses of Texas Utilities' Comanche Peak Unit-1, Carolina Power & Light's Shearon Harris and Robinson reactors, Detroit Edison's Fermi-2 reactor, Washington Public Power Supply System's WPPSS-2 reactor, and Rochester Gas & Electric's Ginna reactor be immediately suspended until such time as effective and tested fire barriers are in place.
3. Gulf States Utilities' River Bend reactor must not be allowed to restart pending an NRC staff decision on NIRS' petition of July 21, 1992. We repeat our request that River Bend's license be suspended until a tested and effective fire barrier is in place.
4. Generic Letter 92-xx (February 11, 1992) must be issued in a timely fashion. We request that this letter be issued before September 5, 1992.

Respectfully submitted,



Michael Mariotte  
Executive Director  
Nuclear Information and Resource Service  
August 12, 1992