DELAYING WITH FIRE:
THE SHEARON HARRIS NUCLEAR PLANT AND 14 YEARS OF FIRE SAFETY VIOLATIONS

SUMMARY

Fire represents up to 50% of the risk for catastrophic accidents in the U.S. nuclear power industry[1] That risk calculation assumes fire regulations are being obeyed. Fire can cause operators to lose control of the nuclear reactor and its complex safety systems, leading to overheating of the reactor fuel and large releases of radioactivity.

The U.S. Nuclear Regulatory Commission (NRC) has allowed the Shearon Harris Nuclear Plant in Wake County, NC, and others, to operate in clear violation of federal fire safety regulations put into place following a seven-hour fire at Alabama's Browns Ferry plant in 1975, where only heroic action and sheer luck averted a catastrophic radiation accident.

"In recent years, it's one of the most serious problems to come along," *said Steven Sholly, senior consultant at MHB Tech. Associates, a San Jose, Calif. firm that advises [NRC] regulators.* ***"It's something that will have to be dealt with in the short-term, not the long-term."*** Raleigh News & Observer August 25, 1992

Note the date of that statement. It refers to serious design flaws at dozens of nuclear plants, and a widely deployed fire protection material deemed "inoperable" by the NRC in 1992 after being exposed by an industry whistleblower years earlier. Later, additional fire barrier materials – which are designed to slow the spread of fire, and protect electrical cables that operate hundreds of valves, pumps and motors – were also found to be ineffective.
The regulatory response by the NRC has been irresponsible and dangerous. Industry influence over Congress and NRC management has kept the agency playing along with plant owners as they have routinely disregarded efforts to coax them into compliance. The challenges of fire safety are compounded by the risks posed by intentional acts, whether by sabotage, outside attack, or a deranged insider. Compliance with existing fire protection regulations is a matter of national security.

Some plant owners have corrected fire vulnerabilities. However Harris has been in violation of federal fire regulations since at least 1992, and ranks worst in the nation in at least two critical fire safety criteria.

At Shearon Harris, commitments to correct the fire vulnerabilities have been made, then ignored, in a cycle of endless delay over the years, even as more violations continue to be discovered. A 2005 inspection became at least the 10th time Harris reported new violations, adding to a list totaling scores of unprotected components needed to safely shut down and cool the reactor in the event of a plant fire.

Shearon Harris has already had several fires in its 19 years. One, called a "major fire" by an industry publication, was caused by an electrical short. It required 30 firefighters, and caused a plant outage lasting for weeks.

But instead of protecting its electrical cables (and the plant has hundreds of miles of cabling), Harris owner Progress Energy has used illegal, unapproved "interim compensatory measures" that rely on workers to detect fire and perform heroically to save the reactor. Just like the small, "temporary

use" spare tire on a car, such actions were intended to be used for hours or days – not 14 years. NRC admits these measures add risk, but still allows plants to operate without restoring full fire protections as required by law.

Meanwhile, the nuclear industry has vigorously lobbied NRC to relax the fire regulations. But despite years of pressure, since late 2005 some NRC fire engineers have insisted it is too dangerous to allow continued use of illegal "interim" measures that had neither been verified nor authorized. One NRC engineer told Harris officials at that time: ***"We are concerned that your plant might not be safe."***[2]

Now, however, rather than finally order compliance with the current fire safety rules by requiring the replacement of faulty fire barriers, the NRC is poised to allow plant owners to work toward a new regulatory scheme based on the statistical likelihood of a serious fire.

Progress Energy proposes to seek a license amendment in 2008 that would allow years to study Harris' fire vulnerabilities, and to make unspecified modifications that would bring the plant into compliance with the new regulations by 2015. That would make a total of 23 years that Harris has failed to obey regulations that supposedly govern a leading risk factor for a severe nuclear accident.

By comparison, problems affecting electricity generation (revenue) are corrected promptly. After each of the nine sudden reactor shutdowns at Harris between 2002 and 2005, Progress worked quickly to restore operations within days or weeks.

It is apparent that safety is *not* the $9 billion/year corporation's "top priority" as is so often claimed by its officers and 50-person public relations team. Each year, Progress spends more – on executive compensation, public relations, lobbying and targeted philanthropy to polish its corporate image than the $10 million one-time cost to replace faulty fire barriers.

And for the NRC – which spends only 22 months to approve license extensions for aging nuclear plants but years to enforce safety rules – it seems that keeping owner revenue flowing takes priority over correcting vulnerabilities that could render entire states uninhabitable.

That places NRC among the growing list of federal agencies which, in recent years, have neglected to protect the public against weakened levees, poor emergency planning, mine disasters, leaking oil pipelines, and other hazards. Will the NRC lead the nation's next post-disaster "lessons learned" exercise?

Although its current operating license runs until 2026, Shearon Harris plans to apply late this year for a 20-year extension without having corrected its fire safety violations. After 14 years of delay, we believe the company has no intention of correcting the vulnerabilities.

As industry watchdog organizations, we today file for Emergency Enforcement action demanding the NRC: 1) immediately suspend Shearon Harris's license until all fire safety violations are corrected, OR; 2) fine Harris $130,000 per violation each day it operates until compliance with current law is verified by NRC – without relying on regulatory bypasses such as "interim" fire watches and operator actions.

We are willing to negotiate allowing the plant to remain open based on a firm timetable for Harris to correct its multiple fire violations no later than its next refueling outage in the fall of 2007. This allows sufficient time for

planning the work needed to correct fire violations, and may require an extended outage.

Any further "study" of the Harris fire problem is irresponsible, and violates both federal regulation and the NRC's mandate. It seems clear that NRC's intention is to "correct" the 14-year noncompliance by Harris by allowing more years of delay under a different regulatory guise.

We insist that all deliberations on this petition must exceed NRC's normal, closed process, with hearings in the vicinity of the Harris plant.

Finally, we put NRC on notice that to even accept an application from Progress Energy seeking to add 20 years to Harris' operating license without first resolving all open violations of federal safety regulations will be resisted to the fullest extent via all available legal and civic avenues.

Fourteen years is long enough to "delay with fire" at Shearon Harris.

BACKGROUND ON FIRE RISK

The risk of a radiation catastrophe caused by fire at nuclear plants has been quantified repeatedly by the NRC since the 1970s. The primary danger is not that fire would collapse buildings that house reactors, nuclear waste or other radiation sources. The hazard is that fire could cause operators to lose control of the nuclear reactor and/or its complex cooling and safety systems, leading to overheating of the reactor fuel and potentially large releases of radioactivity. As early as 1990, NRC staff reported that:

"… based on plant operating experiences over the last 20 years it has been observed that typical nuclear power plants will have three to four significant fires over their operating lifetime. Previous probabilistic risk assessments (PRA) have shown that fires are significant contributors to the overall core damage frequency, contributing anywhere from seven percent to 50 percent of the total, considering contributions from internal, seismic, flood, fire, and other events. There are many reasons for these findings. ***The foremost reason is that like many other external events, a fire event not only acts as an initiator but can also compromise mitigating systems because of its common-cause effect.*** *[emphasis added]"* [3]

The "safe shutdown" of a nuclear plant occurs when control rods are inserted properly into the core of the reactor, halting the nuclear reaction. It is dependent on more than 20 different systems that must function correctly. A number of these same systems are required to operate for days afterward to remove residual decay heat from the core and prevent the incorrect operation of equipment, which could also cause a severe accident.

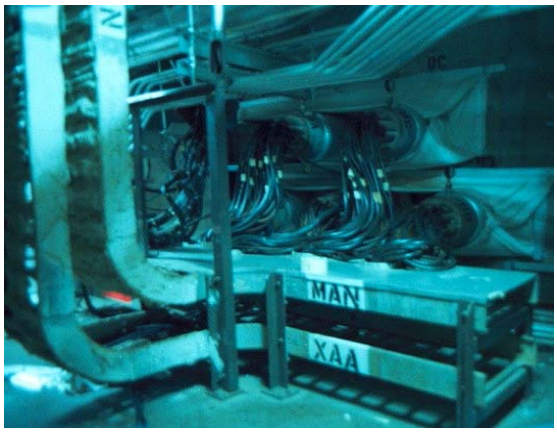
Electrical cables that these systems depend upon are spread out among many different fire zones of the plant, most of them funneling back through a "cable spreading room" and to the control room. Redundancy of safe shutdown electrical circuits is required. U.S. nuclear plants each have hundreds of miles of electric cables, much of it running side-by-side in cable trays (metal channels) that are open on top.

Maintaining the functionality of these electrical systems is critical to ensuring the safe operation of hundreds of valves, pumps, motors and other safety equipment. According to NRC fire protection regulations, when both the primary and redundant electrical circuits appear in the same fire zone, one is required to be protected by either:

1) a qualified 3-hour fire barrier system;
2) a qualified 1-hour fire barrier system in conjunction with smoke detectors and automated sprinkler systems, or;
3) a minimum distance of twenty feet of separation between the electrical cable trays or conduits, with no intervening combustibles, in conjunction with the placement of detection and automated suppression between the electrical systems.[4]

These provisions are in place so that no single fire can completely disable reactor safe shutdown equipment. Alternately, a plant owner must submit a safety analysis, along with a request for exemption from these required physical fire protection features, for NRC approval.

For fire protection planning, the Harris plant – a large industrial facility – is separated into 32 fire areas. Thus, there are myriad challenges to protecting a nuclear plant from fire, and each plant has an onsite, part-time fire brigade that trains with local fire departments.



Power cables run through trays, conduits and tunnels, impeding the ability to inspect them, and to detect and suppress fires.

Visual and physical access to fire areas is often problematic – for humans, mechanical systems and physical fire protection features designed to detect and suppress fires. For example, many tiers of electrical cables run through tunnels, are buried behind pipes, or in cable trays stacked one behind the other.

CAUSES OF NUCLEAR PLANT FIRES

Human error has caused many of the nuclear industry's fires, which can be initiated and fed by flammable fluids such as fuel and lubricant oils, paints and other transient materials, and by hydrogen gas. Perhaps the greatest risk is a fire caused by electrical equipment – including the power cables themselves. The Union of Concerned Scientists has concluded that fires become more likely in aging nuclear plants as protective materials for electrical cables – the jacketing, or insulation – deteriorate.

Factors impacting the longevity of cable jacketing include: original quality of manufacturing and installation; exposure to steam, pressure, heat, and radiation; physical stress at corners and in narrow openings; and electrical loads. Many cables at Harris, such as those operating large pumps, valves and other safety equipment, are high amperage, which creates high heat loads that add stress to cable jacketing. Even very small holes or splits in the jacketing – at seams or junctions – can be problematic because they get worse as the material oxidizes. Inspection is impossible over many of the miles of cabling.

Any openings in the jacketing can lead to an electrical short, which creates an unregulated circuit that, if not corrected by circuit breaking equipment, can lead to power surges many times higher than normal, resulting in intense heat and ignition of combustible materials. Cable jacketing at Harris is made from different substances, some of which can become flammable with sufficient heat. If cables catch fire due to a short or other reason, the cable jacketing can ignite and rapidly spread the fire down the cables and

into other areas.

Similarly, a fire that breaches inoperable fire barriers can burn away cable jacketing, exposing energized circuits, creating electrical shorts and the maloperation of safe shutdown equipment.

The greatest danger posed by fire – or even "shorts" on their own – is that it can cause loss of the ability by plant operators to immediately shut down the reactor from the control room, or to operate the hundreds of cooling system components necessary to prevent the fuel in the reactor core from overheating. Damage to electrical circuits can cause a valve or other component to not open on remote command; it can also cause "spurious actuation," for example, valves opening when they should remain closed. Either malfunction can lead to loss of core cooling. A June 9, 2006 document by Progress Energy lists 23 plant systems having a role in the ability to safely shut down the reactor, with two additional systems vital to protecting the reactor core from overheating following shutdown. (See Attachment 1)

At Shearon Harris, multiple reports and other documents referenced in Attachment 1 reveal scores of inspection findings where critical cooling system equipment is left unprotected. A Licensee Event Report on October 28, 2005 repeatedly refers to the potential for "hot-induced shorts." It contains dozens of references to unprotected primary and/or emergency equipment-spread across dozens of fire areas, which, in the event of fire, could lead to a severe nuclear accident.

The NRC has identified but not solved what is termed a "circuit analysis" problem: Under certain conditions an electric current can arc from one cable to an adjacent one. The circuits are more likely to cross connect, causing false positive or false negative readings, or rendering shutdown controls useless. As nuclear plants age, this problem is likely to become more prevalent.

The challenges of fire safety are compounded by the risk posed by intentional acts, whether by sabotage, outside attack, or a deranged insider. Since 9-11, national security experts have consistently identified nuclear plants as potential targets, and critics warn that despite industry pretenses, defense requirements have been limited to unrealistic levels due to plant owners' pressure on NRC to minimize costs. It does not take an in-depth knowledge of the rules for nuclear safeguards to realize that even if the direct action of an attacker were thwarted, in many scenarios an attack could lead to fires. The problem could be compounded by loss of lighting, smoke, explosions and gunfire, impeding the ability of plant workers to mitigate damage to unprotected safety systems (inability to open locked doors, access critical tools, etc). In the event of an attack by air, there is no way to predict how jet fuel would flow and burn as a transient combustible inside various Vital Areas within a nuclear plant.

A recent decision by the Federal 9th Circuit Court of Appeals stated that the NRC must begin considering the consequences of acts of terrorism in all licensing proceedings as part of the review under the National Environmental Policy Act (NEPA). The decision concludes:

"NRC's position that terrorist attacks are 'remote and highly speculative' as a matter of law is inconsistent with the government's efforts and expenditures to combat this type of terrorist attack against nuclear facilities."[5]

Subsequent to that decision, other challenges of NRC actions have included a demand for an assessment of the risk from terrorism. It is reasonable for the NRC to now consider the unpredictable dangers of fire during a terrorist attack when addressing Shearon Harris' longstanding non-compliances with federal

requirements.

IGNORING REGULATORY REQUIREMENTS AND SAFETY

Federal law mandates that nuclear power station operators physically protect emergency backup electrical systems (power, control and instrumentation cables) needed to remotely shut down the reactor and maintain safety systems from the control room.[6] The regulatory provision requires the physical fire protection of electrical cabling to be independently tested to American Society for Test and Measurement standards for rating as qualified fire barriers. Such fire protection systems are to be designed, installed and maintained to resist the passage of flame and hot gas, thus protecting encased electrical cables from excessive temperatures and allowing them to operate for safe shutdown.

As previously stated, federal regulations administered by the NRC require "redundant" control systems. This prescriptive fire code was put in place for U.S. plants following the fire at Alabama's Browns Ferry plant in 1975, and was intended to provide the best assurance than no single fire can destroy control room operators' ability to safely and remotely shut down the reactor and continue operating the motors, pumps, valves and other equipment necessary to continue cooling the core.

The Browns Ferry fire demonstrated that a high number of circuit failures can occur in a relatively short time period, in that case within 15 minutes from the ignition of insulating material in the cable trays.
As stated, regulatory requirements provide for only three accepted methods of protecting at least one shutdown cable train during a postulated fire when the two trains are located in the same fire area.

In 1992, the majority of US nuclear power plants, including Shearon Harris, were found to have installed "inoperable" Thermo-Lag 330-1 fire barriers to protect safe shutdown systems.[7] The company manufacturing the bogus fire barrier material had falsified its independent testing reports for the fire rating of the material; subsequent independent testing conducted by NRC determined that combustible Thermo-Lag fire barriers failed standardized industry fire tests in half the required time, rendering reactor safety systems unprotected against fire. In plant safety evaluations, many Thermo-Lag installations must now be counted as part of some rooms' combustible loading – fuel for a fire.

In 1997, Shearon Harris made commitments to the NRC staff to remove and replace, or upgrade, the inoperable fire barrier material and re-route redundant trains of electrical cable from fire zones containing the primary electrical trains.[8] Subsequent NRC inspections in 1998 determined that Harris had missed multiple opportunities to identify the problem earlier.[9]

In late 2000, NRC identified additional Thermo-Lag fire barriers in the cable spreading room that also did not meet the requirements for either three-hour or one-hour rated fire barriers Additional violations were noted in 2001 for inoperable Thermo-Lag fire barriers still remaining between the B Train Switchgear Room and the Auxiliary Control Panel Room. Similarly, in 2002, Shearon Harris was discovered to have left "unprotected redundant shutdown components in an alternative shutdown room" in lieu of operator manual actions.[10]

"The Individual Plant Examination of external events indicated the ignition frequencies in these areas are significant"
NRC to Shearon Harris, Feb. 3, 2000 [11]

In 1999, in the course of identifying the adequacy of other fire barriers in addition to Thermo-Lag 330-1 the NRC found two more questionable fire barrier systems – HEMYC and MT – that also did not provide adequate protection as required by standardized fire endurance tests. Its finding in a 2000 report after inspecting Shearon Harris was that HEMYC was not qualified to protect cable trays or conduits and MT was not qualified for conduits.[12] Instead of being qualified as a fire barrier for a one-hour fire endurance rating, HEMYC barriers failed by allowing the passage of fire and hot gas to cables systems within as early as fifteen minutes in standardized tests.[13]

HEMYC failed two lab tests in 2005, leading an NRC fire engineer to tell Harris officials during a September meeting, ***"Our concern is that your plant might not be safe."***[14]

"Shearon Harris, about 25 miles southwest of Raleigh, has more of the insulation than any other nuclear plant in the nation – a 6,500 linear feet – and faces spending $6.5 million to $9.75 million to replace it, said Rick Kimble, a spokesman for Progress Energy."
Raleigh News & Observer, June 10, 2005

That one-time expense is far exceeded by Progress' annual charitable contributions; fixing fire violations is feasible, it's just not a business priority.

Over the years, Progress Energy has repeatedly promised the NRC that it would fix these failures to comply with the fire safety requirements. In January 2002, it reported to the agency that *"Harris is committed to restoring compliance in a timely manner.*[15]

An October 28, 2005 Licensee Event Report to the NRC became at least the 10th time that Harris reported new violations of fire regulations. In that report, Progress Energy told NRC that it plans to correct the violations by November, 2010 – three years later than promised in a March 21 report – saying it will rely on "design changes or other methods approved by NRC to restore compliance." The report also refers to many "original design issues," violations that have existed at Harris since it opened in 1987.

Harris' commercial operating license was issued on January 12, 1987, and in condition 2.F. of that license, it states that *"the company shall implement and maintain in effect all provision of the approved fire protection program as described in the Final Safety Analysis Report (FSAR) for the facility … The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of fire."* This expressly included the III.G.2 provisions for cable separation and fire barriers in association with detection and suppression.

During the 1999 triennial inspection, the utility relied on different fire barriers, HEMYC and MT, to comply with the one-hour and three hour fire endurance requirements. Even though HEMYC had been qualified by its manufacturer at that time, the NRC Staff expressed reservations about its effectiveness and concluded that both barriers were insufficient to meet the III.G.2 standards. The NRC notified Shearon Harris, and the entire industry, that HEMYC/MT was not effective. MT is used as a three-hour fire barrier at Shearon Harris and only one other plant in the country.

"INTERIM" MEASURES FOREVER

Many plants such as Harris have been in flagrant violation of fire regulations since 1992, basically a case of industry's "civil" disobedience and an embarrassment for the

NRC – being a federal agency wielding essentially no authority over the industry it supposedly regulates. The response by many plant owners to the various fire barrier deficiencies was basically to stonewall corrective actions for years and, in the end, to decide to sacrifice the electrical systems to fire and instead rely on sending somebody into potentially hazardous fire zones in last ditch efforts to manually operate safe shutdown equipment. Rather than spend the funds to upgrade or replace the fire barriers or reroute cables, Progress and other reactor operators chose to gamble with public health and safety with inappropriate compensatory actions and unapproved and largely unanalyzed manual actions.

1. Fire Watch Patrols

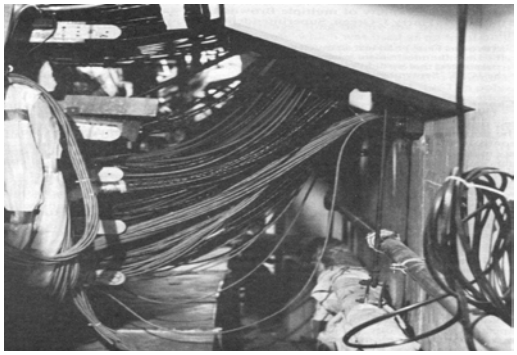
To compensate for failed physical fire barrier systems throughout the plants, between 1992 and roughly 1998, Harris and other plants began hiring personnel as round-the-clock roving patrols to look out for smoke and fire along safety related cable trays and conduits throughout their facilities.

NRC originally intended that fire watches be stationed temporarily, for example as "extra eyes" during welding operations. They were never intended to be used as extensively and indefinitely as is being done at Harris.

Former NRC Commission Chairman Ivan Selin testified before Congress that fire watches are intended for no more than six months and certainly not over a period of years.[16]

Fire watch patrols are inappropriate as a replacement for a fire barrier because a person cannot compensate for the absence of a physical fire protection feature that is designed and positioned to prevent damage to electrical circuits by resisting the passage of fire. A fire watch is more appropriately put into place to compensate for lack of smoke detection. Even then, roving fire watch patrols (24/7) are only in any given fire zone for minutes in an hour.

Fire watches over extended periods of time have been the subject of numerous failures even as "compensatory" actions, including: falsification of fire watch reports; "nesting," (evidence that roving fire watch personnel have hunkered down during their shift with drugs and alcohol); and even a heroin overdose at the Turkey Point nuclear power station in Florida.



Hundreds of miles of electrical cables run through dozens of fire zones in a typical U.S. nuclear plant.

The October 28, 2005 report from Harris also said the plant would continue using "interim" measures, including fire watches in at least 14 fire areas to compensate for ***"some of the potential safety consequences … pending permanent resolution of the identified conditions" in 2010.*** (See Attachment 5)

2. Heroic Actions

Another measure used for years at Harris, in lieu of compliance with fire regulations, is called Operator Manual Action (OMA). If a safe shutdown circuit fails, control room operators would direct someone into one or more fire areas to perform detailed, written procedures to manually turn on or off equipment – pumps, valves, motors – needed to shut down the reactor and maintain cooling, possibly for several days. Such actions could be required in areas involving fire, smoke, darkness, radiation,

and gunfire or explosions.

NRC discovered in 1999 that Harris and others were using OMAs – without prior approval – to compensate for the failed fire barriers or lack of minimal cable separation between redundant systems. There is nothing in the fire regulations that would accommodate these procedures without prior NRC approval; NRC confirmed to the industry on May16, 2002 that OMAs were allowable only when pre-approved through the license exemption process.

Harris never gained such exemptions, but NRC continues allowing it and other plants to operate with these unapproved and largely unanalyzed measures that have never been authorized, verified, nor subjected to timed trials that would help gauge their effectiveness.

The Shearon Harris plant illegally relies on over 100 sets of complex manual procedures designed to prevent a meltdown in the event of a fire, the most in the U.S. One such set of actions at Harris would require the successful completion of 55 separate steps by one worker. (See Attachment 6 for a sample of OMA procedures)

It is clear that reliance on operator manual actions substantially increases the risk of reactor core damage from a fire. The NRC's 2003 rulemaking plan acknowledged that …

"replacing a passive rated fire barrier or

automatic suppression system with human performance activities can increase risk." [17] It further states that *"where operator manual actions are relied upon to ensure safe shutdown capability,* ***these operator manual actions may not be feasible when factors such as complexity, timing, environmental conditions, staffing and training are considered."***

The National Fire Protection Association refuses to support OMAs in place of prescriptive qualified fire barriers, and as the fire risk leading to unsafe shutdown became more and more likely, one NRC official characterized the widespread problem: ***"this condition is similar to the condition Browns Ferry was in prior to the 1975 fire."***[18]

The December 20, 2002, NRC triennial fire inspection of Harris found that Progress Energy's blanket method for dealing with problem electrical cables was to allow for the circuits required for control room operation of safe shutdown equipment to remain unprotected.

Instead of providing physical fire protection, Progress had substituted the required actions with unapproved OMAs – illegal measures that may not work if called upon:

"Only if no operator manual action could be found would Harris physically protect the cables. Consequently, the licensee had over 100 [sets of] local manual operator actions that they relied upon for hot shutdown. The licensee did not request deviations from the NRC for these actions." [19]

In recent years, the NRC has cited numerous examples when even these compensatory measures themselves were not being applied adequately. (See Attachment 1: 8/14/01, 1/28/02, 1/31/03, 5/5/03)

A REGULATORY END-RUN THAT MUST BE STOPPED

In 2003, under pressure from the industry, the NRC proposed to issue a "Direct Final Rule" that would relax the enforcement of current prescriptive fire protection regulations for safe shutdown systems without public comment, and essentially codify the years of 10 CFR 50 Appendix R III.G.2 violations

retroactively.[20]

The actions of Nuclear Information and Resource Service and the Union of Concerned Scientists stopped the direct final rule from being issued, forcing the agency to instead issue a proposed rule for public comment. The agency received hundreds of public comments in opposition to the industry substituting dubious manual actions for passive physical fire protection systems. The industry opposed the rulemaking because it did not go far enough in granting blanket approval to licensees' manual actions without time trials to determine their reliability. The NRC staff had no choice but to recommend that the proposed rule making be dropped. In February 2006, the Commission withdrew the proposal.[21]

Meanwhile, the Commission has allowed the "interim" compensatory measures until compliance is achieved through "alternative shutdown methods" requiring NRC review and approval of exemptions from 10 CFR 50 Appendix R III.G.2.

NRC is now offering the industry another deal. Last year, two plants – Shearon Harris and Duke Power's Oconee – became pilot plants for a method to establish fire protection procedures developed by the National Fire Protection Association (NFPA) Standards Council in 2001. The NFPA Standard 805 set forth a risk-informed fire protection standard.[22] NRC issued a regulatory guide setting forth how nuclear plants could voluntarily adopt the NFPA standard. By April 2006, some 40 nuclear plants intended to transition to the new rules over a period of several years, putting off fire safety compliance even further.

A number of concerns have surfaced regarding reliance on a risk-informed, performance-based standard instead of a prescriptive standard. One chief example is that fire modeling is still widely and professionally disputed for its reliability. For example, it depends on reliably accounting for all the combustibles that can burn in any given fire area. Deliberate acts of arson and terrorist attacks on reactors that introduce transient combustibles like jet fuel can not be reliably risk informed. So while the new approach can reduce the number of exemptions – and consequently the regulatory requirements – on the industry and the NRC, it potentially raises safety and security risks by abandoning prescriptive fire protection regulations that would otherwise make up a central part of the plant security infrastructure.

Rather than requiring compliance with federal safety regulations, the NRC continues to rely on issuing a blanket enforcement discretion policy in which recalcitrant utilities receive "non-cited" violations but are not required to comply with the rules. NRC now says it intends to "work with" utilities during the indefinite period of transitioning to new fire risk informed regulation:

"In addition to the 3-year discretion period, the staff may grant additional extensions to the discretion policy item for a specific plant item(s) with adequate justification (e.g., modification can only be implemented during an outage) on a case-by-case basis." [23]

In the case of Shearon Harris, on June 10, 2005 Progress Energy told NRC it plans to submit a request in May 2008 to amend its license to comply with the new 805 regulations. On August 11, 2005, it told NRC the transition to 805 would be "completed" in 2009. But on March 27, 2006, Progress' updated schedule shows that 34% of plant modifications to comply with the new 805 regulatory scheme would not be completed until the plant's 16th fueling cycle, scheduled for 2015 (Attachment 1).

But the industry is not content just to gain years of further delay, nor to fully analyze fire

risks. In December 2005, NRC staff reported that "industry representatives" (apparently referring to Progress Energy, Duke Energy, and/or the Nuclear Energy Institute] intend to limit their "risk-based" analysis, and that if NRC persists in requiring analyses that include risks of cooling system failures following reactor shutdown, it would be a "show stopper."

Apparently the industry is confident that it can continue to veto or ignore NRC policy.

SERIOUS FIRES AT HARRIS

At least three serious fires at Harris have apparently been related to electrical equipment. On October 9, 1989, a major fire at Shearon Harris – caused by an electrical short – burned for three hours and required response by 30 firefighters. The fire ran 100 feet down an electrical cable, causing a hydrogen leak and explosion, and damaging transformers and three floors of the turbine building.

In addition, Progress Energy's Brunswick plant suffered a September 2000 fire that destroyed one of two main transformers. (See Attachment 3 for more on Harris fires)

These fires – and scores of others at U.S. plants -- prove that electrical malfunctions do cause serious safety problems. However, what should have been a wake up call for Shearon Harris, and the entire nuclear industry, has never been addressed head-on. Fire safety remains a continuing, unresolved and unnecessary vulnerability at these industrial facilities, which are complex and dangerous even when all regulations are adhered to.

CONCLUSION

It seems clear that if NRC followed its own rules, Shearon Harris' fourteen-year violation of fire safety regulations would add another instance to the long list of U.S. nuclear plant outages required to restore minimum safety margins. But despite the 2002 near-miss at the Davis Besse Nuclear Plant, where NRC prioritized utility profits over public safety, the agency remains poised to become yet another federal regulator whose neglect of its public duty leads to widespread harm.

As industry watchdogs on behalf of the public, we hereby submit a 2.206 Emergency Enforcement Petition, concluding and demanding that the U.S. Nuclear Regulatory Commission must:

Issue an Order requiring the immediate suspension of the operating license for the Shearon Harris Nuclear Power Plant until such time that all fire safety violations affecting safe shutdown functions as designated under current law are brought into compliance. This shall be accomplished without reliance on regulatory bypasses, such as indefinite compensatory measures.

OR IN THE ALTERNATIVE:

Issue penalties to the Shearon Harris Nuclear Power Plant for the maximum allowable amount of $130,000 for each and every violation for each day the plant operates until compliance with the fire protection regulations is achieved and verified by NRC.
We have notified NRC of our willingness to consider negotiation allowing the plant to remain open, but based only on establishment of a firm timetable – not to exceed 12 months – to finally and completely correct its multiple fire violations in accordance with current law.

Such a timetable would accommodate Harris' next refueling outage, now scheduled for the

fall of 2007, allowing sufficient time for planning the work needed to correct fire violations. Replacing faulty fire barriers and rerouting electrical circuitry could prolong the outage for several months, but the danger from electrical fires would be, and must be, significantly minimized. Since Progress Energy management responds when revenues are at stake, financial penalties should expedite action and finally lower the risks to the regional public.

Any further "study" of the Harris fire problem – such as pursuing the NFPA 805 regulatory scheme, constitutes an irresponsible delay, and a violation of both federal regulation and the NRC's mandate under federal law. It seems clear that NRC's intention is to "correct" the 14-year noncompliance by Harris by allowing infinite delay under a different regulatory guise.

Progress Energy has known of the fire protection violations since at least 1992; it has obviously made a business decision not to fix them. Other plants have made the corrections. For a $9 billion/year corporation such as Progress Energy, correcting fire violations must become a priority.

As shown in the cover letter to this report, NC WARN, the Nuclear Information & Resource Service, and the Union of Concerned Scientists are petitioning the NRC to take this Emergency Enforcement Action pursuant to 10 CFR § 2.206 to this effect. We are also requesting separate investigation by the NRC Inspector General, the Government Accountability Office and Congressional oversight committees into NRC's negligence in enforcing fire protection regulations at US nuclear plants.

We insist that deliberations on this petition must exceed NRC's normally closed, industry-friendly proceedings, and be conducted with a full public process. This must include hearings in the vicinity of the Harris plant, and resolution of all uncertainties regarding the agency's agenda for protecting the public against fire safety violations.

Finally, we put NRC on notice that to even accept an application from Progress Energy seeking to add 20 years to Harris' operating license without first resolving all open violations of federal safety regulations flies in the face of common sense, state law governing corporate activities, and basic public values. Any such efforts will be resisted to the fullest extent via all available legal and civic avenues.

Fourteen years is long enough to "delay with fire" at Shearon Harris.

List of Attachments

1. Shearon Harris Fire Protection Abridged Chronology, Union of Concerned Scientists July 2006 (See entire 16-page chronology at www.ncwarn.org)
2. News & Observer/AP Article August 25, 1992 "N-Plants Keep Watch On Fire-Retardant Material"
3. Partial listing of electrical fires at Harris and Brunswick plants
4. Inside NRC article on major fire at Harris in 1989
5. Licensee Event Report October 28, 2005 (See the report on www.ncwarn.org)
6. Shearon Harris OMA procedures: sample listing "Summary of Number of Local Manual Action Steps to be Performed Outside of the Control Room to Achieve and Maintain Hot Standby"
7. New York Times: NRC Ponders Rule Change (reflecting industry lobbying and heroic actions/OMAs). November 29, 2003

Notes (see additional references in Attachment 1)

1. US NRC, NUREG-1150, Vol 2, Appendix C October 1990
2. http://www.ncwarn.org/media/NR-10-05-2005-FireTestFails.htm/. NRC confirmed to a reporter with the Raleigh News & Observer that the statement was made by an NRC engineer, but could not confirm it was the person identified in the release.
3. US NRC, NUREG-1150, Vol 2, Appendix C October 1990
4. Code of Federal Regulations, 10 CFR 50 Appendix R II. G.2
5. San Luis Obispo Mothers for Peace et al v. NRC and Pacific Gas and Electric Company No. 03-746 28,_ F.3d_(9th Cir. June 2, 2006)
6. Code of Federal Regulations, 10 CFR 50 Appendix R II. G.2
7. Bulletin No. 92-01, "Failure of Thermo-Lag 330 Fire Barrier systems to Maintain Cable in Wide Cable Trays and Small Conduits Free From Fire Damage", NRC, June 24, 1992.
8. "Completion of Licensing Action for Generic Letter 92-08 'Thermo-Lag 330-1 Fire Barriers', dated December 17, 1982 for Shearon Harris Nuclear Power Station, Unit 1", U.S. NRC, June 3, 1997, and "Closeout Documentation Regarding NRC Generic Letter 92-08, 'Thermo-Lag 330-1 Fire Barriers." CP&L, August 28,1997.
9. "Shearon Harris Nuclear Power Plant-NRC Supplemental Inspection Report 50-400/02/08", page 4 in an undated attachment to an email from NRC to NRC Region 2, July 25, 2002.
10. Ibid p. 5
11. http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/REPORTS/har_1999013.pdf.
12. NRR Response to Task Interface Agreement (TIA) 99-0028, Shearon Harris Nuclear Power Plant, Unit 1 – Resolution of Pilot Fire Protection Inspection Fire Barrier Qualification Issues (TAC No. MA 7235), August 1, 2000.
13. Information Notice 2005-07, "Results of HEMYC Electrical Raceway Fire Barrier System Full Scale Fire Testing", US NRC, Attachment 1 page 1 of 3
14. http://www.ncwarn.org/media/NR-10-05-2005-FireTestFails.htm/. NRC confirmed to a reporter with the Raleigh News & Observer that the statement was made by an NRC engineer, but could not confirm it was the person identified in the release.
15. Slides dated January 31, 2002, by Carolina Power & Light Company for pre-enforcement conference with NRC.
16. "Fire Safety at Nuclear Power Stations", Hearing Before the Subcommittee on Oversight

and Investigations of the Committee On Energy and Commerce, House of Representatives, 103rd Congress, March 3, 1993
17. SECY03-100, "Rulemaking Plan on Post-Fire Operator Manual Actions," NRC, June 17, 2003, p. 4
18. "White Paper for Manual Actions", John Hannon, Chief PSB/DSA/NRR, NRC, Letter to Alex Marion, Nuclear Energy Institute, November 29, 2001 and Report No. 50-400/02-11, Facility: Shearon Harris, NRC Inspection Report, US NRC, 2003
19. Report No. 50-400/02-11, Facility: Shearon Harris, NRC Inspection Report, US NRC, 2003
20. "Draft Criteria for Determining Feasibility of Manual Actions to Achieve Post-Fire Safe Shutdown", Federal Register, Vol. 68, No. 228, pp. 66501-66503 (November 26, 2003).
21. RIN 3150 SECY 06-0010 Withdraw Proposed Rulemaking – Fire Protection Program Post-Fire Operator Manual Actions, US NRC February 8, 2006.
22. "Performance-Based Standard for Fire Protection for Light-Water Reactor Electric Generating Plants, 2001 Edition", NSPA 805, January 2001.
23. NRC Regulatory Issue Summary 2006-10

NC WARN: NC Waste Awareness & Reduction Network

is a grassroots non-profit using science and activism to tackle climate change and reduce hazards to public health and the environment from nuclear power and other polluting electricity production, and working for a transition to safe, economical energy in North Carolina.

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Nuclear Information & Resource Service

NIRS/WISE is the information and networking center for citizens and environmental organizations concerned about nuclear power, radioactive waste, radiation, and sustainable energy issues.

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