GT9990305A

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

RECEIVED
ACRS/ACNW
US NRC

OCT - 2 2003

September 30, 2003

MEMORANDUM TO: John T. Larkins, Executive Director
Advisory Committee on Reactor Safeguards

FROM: Suzanne C. Black, Director
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation

SUBJECT: BACKGROUND INFORMATION FOR PRESENTATION REGARDING GENERIC SAFETY ISSUE 189 - SUSCEPTIBILITY OF ICE CONDENSER AND MARK III CONTAINMENTS TO EARLY FAILURE FROM HYDROGEN COMBUSTION DURING A SEVERE ACCIDENT

Attached is the Background Information for the presentation scheduled for the November 2003 ACRS meeting regarding Generic Safety Issue 189, "Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident," for distribution.

Licensees, stakeholders and members of the general public will be invited to attend.

Attachment: As stated

CONTACT: Greg Cranston
415-2073

GT-999

Background Information for Generic Safety Issue 189 - Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident

1. Purpose for Proposed ACRS Meeting:

   a. To provide ACRS an update regarding the proposed resolution of Generic Safety Issue (GSI) -189: "Susceptibility of Ice Condenser and Mark III Containments to Early Failure from Hydrogen Combustion During a Severe Accident.
   b. To provide ACRS the opportunity to receive comments from and exchange information with licensees and other interested stakeholders to facilitate making a decision regarding GSI-189 prior to making a recommendation to the Commission.
   c. Provide NRR's recommendation and basis for the resolution of GSI-189.

2. Brief History:

   a. Under station blackout (SBO) conditions, PWR ice condenser and BWR Mark III containments are vulnerable to failures (high conditional containment failure probability) from hydrogen (H2) deflagrations or detonations, failures that would otherwise be prevented if the existing H2 igniter system were energized.
   b. In the process of making risk informed changes to 10CFR50.44,"Combustible Gas Control," it was determined that the vulnerability of ice condenser and Mark III containments should be pursued as a Generic Safety Issue.
   c. Consistent with Management Directive 6.4, "Generic Issues Program," the Office of Nuclear Regulatory Research (RES) conducted a technical assessment.
   d. RES briefed the ACRS on the results of the GSI-189 technical assessment on June 6, 2002, and November 7, 2002, stating that further regulatory action by NRR was warranted for ice condenser and Mark III containments. RES also stated that they considered qualitative benefits, such as defense-in-depth, public confidence, and regulatory coherence, in their recommendation to pursue further action to provide backup power to one train of igniters for both ice condenser and Mark III plants.
   e. In a letter to the Commission dated November 13, 2002, the ACRS stated that they agreed with RES that further regulatory action by NRR is warranted.
   f. ACRS recommended implementation through the licensees' Severe Accident Management Guidelines (SAMG) rather than using a Rule or Order.
   g. NRR responded to the ACRS in a letter from the EDO on January 30, 2003, stating that the NRR staff would engage the affected stakeholders in developing additional information related to implementing various alternatives, including an option of using the severe accident management guidelines.
   h. A Public Meeting was conducted on June 18, 2003, to receive feedback from licensees and other stakeholders regarding the need to provide a backup power supply to the H2 igniters and the NRC's consideration of Rulemaking to resolve the issue.
      i. Licensees did not think providing a backup power supply for the igniters was the best use of their resources, i.e., not cost effective. They felt the resources could be better spent on prevention rather than mitigation.

ATTACHMENT

   ii. Licensees did not think the use of SAMGs were appropriate if the backfit was required since they would have to take action earlier in the event to ensure backup power was available when needed.

i. NRR has completed its review and recommends providing a backup power supply to the H2 igniters.

3. Generic Safety Issue Background and Comments.

a. Basis for GSI-189: The generic issue was proposed (Memorandum to John Flack, Chief, Regulatory Effectiveness and Human Factors Branch, Division of Systems Analysis and Regulatory Effectiveness, RES, from Mark Cunningham, Chief, Probabilistic Risk Analysis Branch, Division of Risk Analysis and Applications, RES, "Information Concerning Generic Issue on Combustible Gas Control for PWR Ice Condenser and BWR Mark III Containment Designs," August 15, 2001, in response to SECY 00-198, "Status Report on Study of Risk-Informed Changes to the Technical Requirements of 10 CFR Part 50 (Option 3) and Recommendations on Risk-Informed Changes to 10 CFR 50.44 (Combustible Gas Control)." This SECY paper explored means of making 10 CFR 50.44 risk-informed. As a part of this, the paper recommended that safety enhancements that have the potential to pass the backfit test be assessed for mandatory application through the generic issue program. Consequently, Generic Safety Issue (GSI)-189 was approved and assigned to RES for technical assessment.

b. RES Recommendation: RES completed their technical assessment in 2002, briefed the ACRS on GSI-189 on June 6, 2002, and November 7, 2002, and briefed the ACRS Thermal Hydraulic Phenomena and the Reliability and PRA Sub-committees on November 5, 2002, stating that further regulatory action by NRR was warranted for ice condenser and Mark III containments. RES also considered qualitative benefits, such as defense-in-depth, public confidence, and regulatory coherence, in their recommendation to pursue further action to provide backup power to one train of igniters for both ice condenser and Mark III plants. Additionally, RES pointed out that the cost benefit analysis did not consider potential benefits due to averting some late containment failures or averted costs related to external events.

c. ACRS Recommendation: In a letter to the Commission dated November 13, 2002, the ACRS stated that they agreed with RES that further regulatory action by NRR was warranted for ice condenser and Mark III containments. The ACRS suggested that the form of action be through the use of plant-specific severe accident management guidelines (SAMG). The ACRS did not think that Rulemaking or an Order was needed. Responding to the ACRS letter, a letter from the EDO stated that the NRR staff would engage the affected stakeholders in developing additional information related to implementing various alternatives, including an option of using the severe accident management guidelines.

d. NRR Recommendation: NRR is recommending adding a backup power supply for one train of H2 igniters, either a small portable generator and cabling or a pre-staged small generator with installed cable, conduit, panels and breakers.

e. Licensee Comments: A Public Meeting was held on June 18, 2003, to discuss and receive comments on GSI-189. At that meeting the licensees stated that:

i. They did not think using SAMGs was viable because SAMGs are not implemented until late in the accident sequence and power to the igniters may be needed sooner necessitating that procedures be incorporated into the EOPs with the associated additional burden (surveillance testing, inclusion in the Maintenance Rule, periodic testing, etc.).

ii. They did not think that the portable generator was viable since operator action to install a portable generator and hook it up could be time consuming and distract operators from more critical activities associated with mitigating the accident. (Note: NRR is basing its recommendation on a pre-staged system that would only require closing a breaker with procedures incorporated into EOPs, but does not preclude the licensees from using the lower cost portable system similar to the system used at San Onofre Nuclear Generating Station for a different severe accident with SBO scenario).

iii. They did not think installing backup power for the H2 igniters was the most cost effective use of their resources and that the resources could be better spent on prevention rather than mitigation. (Note: Reducing core damage frequency or the probability of an event occurring does not prevent the accident or the possible loss of the reactor containment. It only reduces the probability and, therefore, ignores the defense-in-depth philosophy).

4. Technical Background

a. Susceptible Plants and Basis for Susceptibility:

In 1985, PWR ice condenser and BWR pressure-suppression Mark III containments were retrofitted with AC-powered igniters to provide controlled burning of combustible gases over the time period of production to limit the concentration and preclude a detonation. The backfit did not include a backup power supply for the igniters to provide power during a SBO. Since 1985 there have been significant advances in the understanding of the risk associated with the production and combustion of hydrogen within the primary containment structure during reactor accidents. The potential impact on public health and safety resulting from the better understandings of the risk came to light in response to SECY-00-0198, dated September 14, 2000. For most accident sequences, the hydrogen igniters can deal with the potential threat from combustible gas buildup. The situation of interest, and the basis for GSI-189, occurs only during accident sequences associated with SBOs where all normal and emergency AC power is lost.

Under station blackout (SBO) conditions, the PWR ice condenser and BWR Mark III containments are vulnerable to failures from hydrogen (H2) deflagrations or detonations, failures that would otherwise be prevented if the existing H2 igniter system were energized.

Operating Experience With SBO Events or Precursors to SBO Events

An SBO occurs when all onsite AC power sources fail during a loss of offsite power (LOOP). The discussion below shows that loss of all onsite AC power and offsite power are events that should be expected to occur, based on past operating experience.

Per NUREG/CR-5500, Volume 5, "Reliability Study: Emergency Diesel Generator Power System, 1987-1993," September 1999, the mean probability estimate for the common cause failure (CCF) of the emergency diesel generators (EDGs) is 1.2E-2 per demand. Between 1987 and 1993, as reported in NUREG/CR-5500, there were 20 accident sequence precursors in which either no EDG was available to provide emergency power or a CCF of multiple EDGs occurred. These events had a conditional core damage probability (CCDP) that ranged from 2E-6 to 9E-4. Eleven of those precursors, reported at nine different power plants, including a plant with an ice condenser containment and a plant with a Mark III containment, had a CCDP greater than 1E-4.

During the period from 1980 to 1996, for 116 nuclear power plants with 1189 critical years, there have been 46 cases of plant-centered sustained LOOP incidents at operating nuclear power plants (NUREG/CR-5496, "Evaluation of Loss of Offsite Power Events at Nuclear Power Plants: 1980-1996," November 1998). The mean time to recovery was 85.4 minutes. This translates into a frequency of sustained events of 4E-2 per unit critical year. Additionally, over the same period, there were 10 cases of severe-weather-related sustained LOOP incidents at plants operating and shutdown. This translates into a frequency of 9E-3. The mean time to recovery for weather-related events was 1,258 minutes, or just over 20 hours.

During that same period, there were 16 SBO events in which the power plant had no AC electrical power from any source. Two of the SBOs occurred when the plant was at power and lasted a few minutes.

Susceptible Plants

The 13 susceptible units are: 4 dual unit PWR ice condenser containment stations - McGuire, Catawba, DC Cook, and Sequoyah; the single unit PWR Watts Bar ice condenser containment plant; and, 4 single unit BWR Mark III containment plants - Grand Gulf, River Bend, Clinton, and Perry.

Basis for Susceptibility

For the majority of PWRs with large dry or sub-atmospheric containments, containment loads associated with hydrogen combustion are non-threatening. However, it was discovered in the study associated with NUREG/CR-6427, "Assessment of the DCH [direct containment heating] Issue for Plants with Ice Condenser Containments," that, for ice condenser containments, the early containment failure probability is dominated by non-DCH hydrogen combustion events, due to the relatively low containment free volume and low containment strength in these designs. These containments rely on the pressure-suppression capability of their ice beds, and, for a design-basis accident, where the pressure is a result of the release of steam from blowdown of the primary (or secondary) system, an ability to withstand high internal pressures is not needed.

FIGURE 1

Conditional Containment Failure Probabilities for Ice Condenser Containments		
	SBO - Igniters Not Available	Non SBO - Igniters Available
NUREG 1150	0.15	0
NUREG/CR-6427	0.9	0

NUREG/BR-0058 states the measure of containment performance to be used in safety goal evaluations is that the conditional probability of early containment failure not be greater than 0.1 to meet the performance screening criteria. The conditional probability of containment failures associated with SBOs and the loss of the igniters would be reduced to below 0.1 with the addition of backup power.

In a beyond-design-basis accident, where the core is severely damaged, significant quantities of hydrogen gas can be released. To deal with large quantities of hydrogen, the ice condenser containments are equipped with AC-powered igniters, which are intended to control hydrogen concentrations in the containment atmosphere by initiating limited "burns" before a large quantity accumulates. In essence, the igniters prevent the hydrogen (or any other combustible gas) from accumulating in large quantities and then suddenly burning (or detonating) all at once, which would pose a threat to containment integrity.

For most accident sequences, the hydrogen igniters can deal with the potential threat from combustible gas buildup. The situation of interest for this generic safety issue only occurs during accident sequences associated with station blackouts, where the igniter systems are not available because they are AC-powered. Thus, this does not affect the frequency of severe accidents, but does affect the likelihood of a significant release of radioactive material to the environment should such an accident occur.

The issue also applies to BWR Mark III containments, because they also have a relatively low free volume and low strength (comparable to those of the PWR ice condenser designs) and are similarly potentially vulnerable in an accident sequence associated with station blackout. Consequently, the Mark III designs are equipped with hydrogen igniters just as are the PWR ice condensers. The Mark I and Mark II designs are also pressure-suppression designs, but are operated with the containment "inerted," i.e., the drywell and the air space above the suppression pool are flooded with nitrogen gas and a nitrogen makeup system maintains oxygen level below a set limit by maintaining a slight positive nitrogen pressure within the primary containment.

FIGURE 2

Conditional Containment and Drywell Failure Probabilities for Mark III Containments				
Reactor Coolant System Pressure at Breach	Igniters Not Available		Igniters Available	
	Containment Fails	Containment and Drywell Fail	Containment Fails	Containment and Drywell Fail

High	~0.5	~0.2	Containment Failure Not Related to Combustible Gas - Probability Same as Igniters Not Available	
Low	~0.5	~0.2	~0.01 - 0.02	~0.01

Additionally, per the acceptance guidelines in RG 1.174, when the calculated increase in LERF is in the range of 10E-7 to 10E-6 per reactor year, the change will be considered only if it can be reasonable shown that the total LERF is less than 10E-5 per reactor year. And, when the calculated increase in LERF is greater than 10E-6 per reactor year, the change will normally not be considered. Not having a backup power supply corresponds to a change in LERF shown in the Table below. Though RG 1.174 talks about an increase in LERF the same criteria should be applicable to a change that would cause a corresponding decrease in LERF.

<u>FIGURE 3</u>

Change in LERF					
Ice Condenser Containments	SBO CDF x change in CFP = Change in LERF				
	Conditional Containment Failure Probability (CCFP)		Change in CCFP	SBO CDF	Change in LERF
	Without Igniters	With Igniters			
NUREG-1150	0.15	0	0.15	1.5E-5	2.3E-6
NUREG/CR-6427	0.9	0	0.9	6.7E-6	6.0E-6
Mark III Containments					
Containment & Drywell	0.2	0.01	0.19	3.9E-6	7.4E-7
(Note: With only a containment failure the radioactive release is significant but not considered a LERF since suppression pool scrubbing occurs with drywell intact.)					
Containment	0.5	0.02	0.48	3.9E-6	1.9E-6

b. <u>Technical and Cost/Benefit Assessment</u>:

At the request of RES a technical assessment was conducted by: (1) Brookhaven National Laboratory (BNL) to perform the benefits analysis; (2) Information Systems Laboratories (ISL) to perform the cost analysis; and, (3) Sandia National Laboratories (SNL) to perform targeted plant analysis. RES staff has also worked with cognizant NRR staff throughout the development of this technical assessment.

For these analyses, initiating events, core damage frequencies (CDF), conditional containment failure (CCF) probabilities, and release categories were extracted from existing studies. The severe accident progression scenarios, including conditional containment failure probabilities, were based primarily on NUREG-1150, "Severe Accident Risk: An Assessment of Five US Nuclear Plants." The conditional probability of early failure (CPEF) of containment was taken from NUREG/CR-6427, "Assessment of the DCH [direct containment heating] Issue for Plants with Ice Condenser Containments." Some plant specific analysis data was also used from Duke Power PRAs and the Sequoyah (ice condenser) and Grand Gulf (Mark III) plants. The combination of this data was then used to develop a benefit-cost analysis that enveloped all the plants.

The technical assessment quantified the reduction in the conditional containment failure probability associated with combustible gas (H2) control being available during station blackout (SBO) events, which was then converted to a dollar value based on the expected values for averting public exposure (at $2,000/rem) and offsite property damage associated with the availability of combustible gas control. These averted costs (benefits) were then compared to the overall cost for the implementation and maintenance of several alternative safety enhancements to determine if there was a potential cost beneficial back-fit.

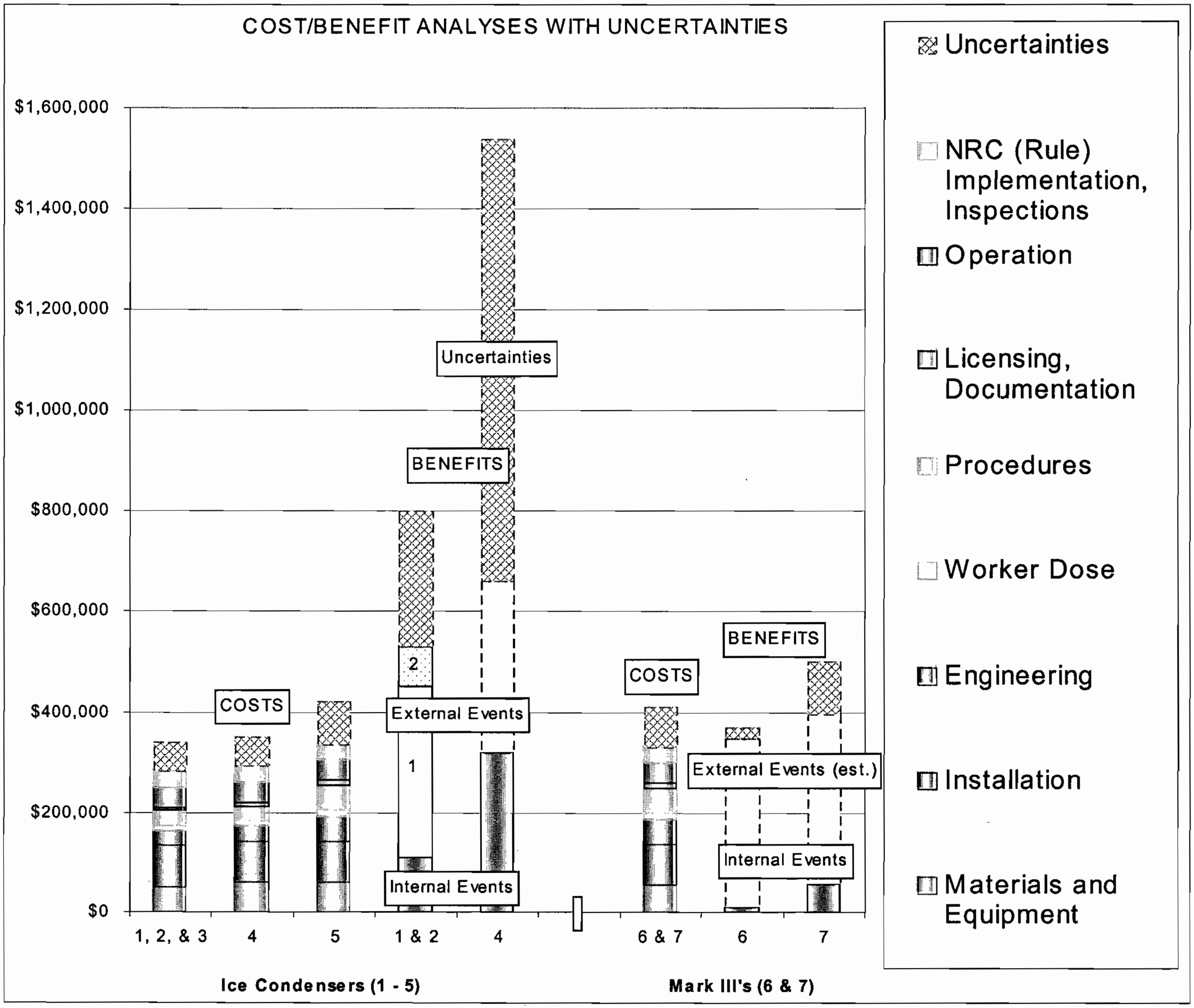
The costs were associated with the installation, maintenance, and operation of a backup AC power supply to the igniters. The backup power supply options included: (1) a small, portable backup power supply for the igniters (low-cost option); (2) a small, pre-staged (installed) backup power supply for the igniters with installed panels, cables and raceway; and, (3) for the ice condenser containments, a large pre-staged backup power supply for the igniters and the recirculation fans with installed panels, cables, and raceway. The analyses also determined that recirculation fans were not required for proper igniter system operation and, therefore, the large pre-staged power supply is not being recommended.

The results of the cost-benefit analysis conducted by RES as part of the technical assessment showed large uncertainties and variations in the averted costs (benefits) and, consequently, were not definitive. Though the mean values generally resulted in a net negative benefit, when uncertainties were considered the benefit varied between large net positive and net negative values.

Also, the cost-benefit analysis did not consider some potential benefits which were difficult to estimate. These included the benefit of avoiding some late containment failures and averted costs associated with some subsets of externally initiated SBO events. External event data was provided for two of the ice condenser plants. Consequently, a decision regarding whether or not to install a backup power supply for the combustible gas igniters could not be made based solely on the results of the quantitative cost-benefit analyses provided in the RES reports.

Using the external event data provided in the RES reports but not used in the cost-benefit calculations, NRR determined that including external event data does have a significant effect on the cost-benefit analysis. Using both internal and external event data (the external event data for the two ice condenser plants was used as generic data for all the plants) resulted in all plants showing net positive benefits (using point values) for both the portable generator and pre-staged generator modifications. See Figure 4 below.

FIGURE 4



Notes:
1. The external event value for ice condenser plant 1 is shown above in the external event column labeled '1'. This same external event value was used for ice condenser plant 4 and for Mark III plants 6 & 7 and is shown as a dashed column because it is an estimated value for those plants.
2. The external event value for plant 2 was slightly larger than for plant 1 and that additional value is added to the external event column and labeled '2' in the external event column for plants 1 & 2.
3. As shown in Figure 4, if only internal events are considered, as was the case in the analyses done for RES, there is a net negative benefit for most plants. However, when considering external events the net benefit is positive for all plants.

5. Regulatory Assessment

From a regulatory standpoint requiring the installation of a backup power supply for the combustible gas igniter system can be supported by applying the Defense-in-Depth philosophy and the Backfit Rule.

a. Defense-in-Depth Considerations

Defense-in-depth is a critical aspect of NRR's evaluation of this issue because of the uncertainties in the PRA analysis and because a postulated SBO could fail multiple barriers (fuel, reactor coolant system boundary, and the containment for both the ice condenser and Mark III plants). As pointed out in the analyses done for RES, there are significant uncertainties in both the cost and benefit calculations done for RES which can shift the benefit from a net negative number to a net positive number. Additionally, all applicable contributors, such as external events, were not included in the analyses. This is why NRR agreed with RES and ACRS that applying the defense-in-depth philosophy is applicable and appropriate here. One of the prime reasons for defense-in-depth is to manage uncertainties. Adding a backup power supply provides that defense-in-depth to compensate for those uncertainties.

The proper role of defense-in-depth in a risk-informed regulatory scheme provides compensation for inadequacies, incompleteness, and omissions of risk analyses, which are collectively referred to as uncertainties. Defense-in-depth measures are those that are applied to the design or operation of a plant to reduce the uncertainties in the determination of the overall regulatory objectives to acceptable levels. The uncertainties that are intended to be compensated for by defense-in-depth include all uncertainties (epistemic [related to knowledge] and aleatory [related to luck]). Not all of these are directly assessed in a normal PRA uncertainty analysis.

There are significant uncertainties in the analyses conducted for RES that cause the net benefit values to shift from hundreds of thousands of dollars negative to hundreds of thousands of dollars positive. Additionally, the technical analyses identified potential averted costs that were not evaluated, because of their difficulty to quantify, that could provide additional averted costs (benefits). These included avoiding late containment failures, cost impact on the other (no-accident) unit of a two-unit plant, and the effect of external events (seismic and fire, for example).

Regulatory Guide (RG) 1.174 states: "The defense-in-depth philosophy . . . has been and continues to be an effective way to account for uncertainties in equipment and human performance." Per the RG 1.174, PRA can be used to help determine the appropriate extent of defense-in-depth, which is equated to a balance among core damage prevention, containment failure prevention, and consequence mitigation.

When a comprehensive risk analysis is not done, or cannot be done, traditional defense-in-depth considerations should be used or maintained to account for uncertainties. Further, the evaluation should consider the impact of the proposed licensing basis change on barriers (both preventive and mitigative) to core damage, on containment failure or bypass, and on the balance among defense-in-depth attributes. Risk analyses for external events, which can be a large contributor to averted costs, were not done or not available for the Mark III containments nor for some of the ice condenser containments.

The addition of backup power for the igniters was reviewed by NRR to ensure consistency with the three principles of the defense-in-depth philosophy: (1) a reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation, (2) system redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (accomplished by adding a diverse, backup power supply for the igniters during a SBO), and (3) the independence of barriers is not degraded (containment integrity remains independent of normal and emergency AC power for combustible gas control during SBO since the igniters would be powered from the diverse, backup power supply).

Safety is enhanced by maintaining defense-in-depth associated with primary containment by significantly reducing the conditional containment failure probability associated with SBO. Adding a backup power supply for the igniters compensates for the uncertainties identified in the technical analyses and assessments described above and is consistent with the defense-in-depth philosophy.

b. Backfit Rule

If the uncertainties associated with the averted costs (benefits) are considered in the cost benefit analysis rather than the mean values, the cost-benefit analysis results in a net positive benefit. Using only the mean values generally results in a net negative benefit. However, as provided in the Backfit Rule (10CFR50.109, "Backfitting"), paragraph (a)(3), the net benefit does not have to be positive. The criteria is that the safety enhancement provide a substantial increase in the overall protection of the public health and safety with implementation costs that are justified in view of that increased protection. NRR believes that the installation of a back-up power supply provides a substantial increase in the overall protection of the public health and safety by significantly reducing the conditional probability of containment failure and does so at a justifiable cost (~ $300K for the pre-staged system and less than $200K for the portable system).

Without considering uncertainties but including both internal event averted costs (benefits) and the averted costs associated with external events (using point values for external events), the cost-benefit analysis results in a net positive benefit for all plants regardless of whether the portable or pre-staged backup power supply system is used, which meets the Backfit Rule criteria.

6. Regulatory Options

Several regulatory options were reviewed to determine how to best support NRR's position and the recommendation from RES and ACRS to pursue further action to provide backup power to one train of igniters for both ice condenser and Mark III plants. The following options were considered.

a. Order - A proceeding instituted by the Commission to modify a licence or to take such other action as may be proper. Since the order involves the modification of a 10CFR50 license and is a backfit, the requirements of 10CFR50.109, "Backfitting", shall be followed, unless the licensee has consented to the action required.

Orders are usually used for urgent, compliance issues that affect a small number of plants. Orders have little if any public involvement. In this case NRR feels that the requirements of the Backfit Rule can be met. However, this issue is not urgent nor a compliance issue (it is a safety enhancement).

b. Generic Communications

Generic Letters (GL) transmit information and usually require action or response. Generic letters address only technical issues. Generic letters are published in the Federal Register for public comment and are not issued without prior staff interaction with the industry and the public. A GL can request action. If the licensee declines to perform action requested by the GL, a staff evaluation using the Backfit Rule criteria determines whether a requirement for action should be imposed by the NRC through an Order or Rulemaking. A GL can be used to require a licensee to implement a change to the plant if it is a compliance issue.

This backfit is a safety enhancement and not a compliance issue. At the Public Meeting on June 18, 2003, the licensees did not indicate that they would provide a backup power supply voluntarily. The licensees stated that they felt their resources could be better spent on accident prevention rather than on accident mitigation and were not convinced at that time that the modification was cost beneficial.

Bulletins are used to address significant issues that also have great urgency (The Charter of the Committee to Review Generic Requirements defines urgent as an issue which the proposing office rates as urgent to overcome a safety problem requiring immediate resolution or to comply with a legal requirement for immediate or near-term compliance and waives the public comment phase.).

This is a non-urgent safety enhancement.

Information Notices inform the nuclear industry of significant, recently identified, operating experience that relate to safety, safeguards, or environmental issues on which licensees consider action as appropriate. Information Notices do not convey or imply new requirements or new interpretations, and do not request actions.

Circulars relate to safety, safeguards, or environmental issues and require no reply.

Regulatory Issue Summaries (RIS) broadly transmit technical and regulatory information and may not require action or response. The NRC communicates with the nuclear power industry on a variety of matters for which no response or action is requested. A RIS documents NRC endorsement of the resolution of issues addressed by industry-sponsored initiatives, solicit voluntary licensee participation in staff sponsored pilot programs, inform licensees of opportunities for regulatory relief, announce staff technical or policy positions not previously communicated to the industry or not broadly understood, and address all matters previously reserved for Administrative Letters.

c. Rulemaking - A requirement issued by the Commission that indicates a need for a rule change. Usually reserved for non urgent issues that affect a large number of plants. Provides for public and stakeholder involvement and comments. NRR is currently pursuing this option.

d. Licensee Voluntary Initiative

In conjunction with the RES and ACRS recommendation that further regulatory action by NRR was warranted to pursue the installation of a backup power supply system for ice condenser and Mark III containments, ACRS recommended that the NRR staff engage the affected stakeholders to have them implement the backup power supply using licensee Severe Accident Management Guidelines (SAMG).

The use of SAMGs was discussed with the licensee at the Public Meeting on June 18, 2003. The licensees stated that they did not think they could use SAMGs as a method to activate the backup power supply system since implementation of SAMGs occurs late in the accident sequence and power to the igniters might be needed sooner. The licensees felt that they would have to incorporate backup power procedures in their Emergency Operating Procedures (EOP).

Prior to committing to a modification, the licensees stated that plant specific differences and plant specific data should be considered. The analyses done for RES used generic data with some specific data from Sequoyah and Grand Gulf for the averted cost (study) and used both generic data and data from the licensees to determine the costs. Also, the licensees provided a list of areas needing additional definition of system design basis requirements in areas such as Maintenance Rule applicability, system testing requirements, design for external events, fire protection, environmental qualifications, safety related equipment interface requirements, and 50.59 requirements. NRR feels that the information already available provides adequate information to pursue the addition of a backup power supply for the igniter system and can provide system design requirements to the licensees.

7. Primary Contacts

a. Technical Lead - Greg Cranston (GVC), NRR/DSSA/SPLB, O-11H22, 415-2073.
b. Project Manager - L. Mark Padovan (LMP), NRR/DLPM/LPD3-1, O-8G5, 415-1423.