UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

May 9, 1989

The Honorable Lando W. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: NUREG-1150, "SEVERE ACCIDENT RISKS: AN ASSESSMENT FOR FIVE U.S. NUCLEAR POWER PLANTS"

During the 349th meeting of the Advisory Committee on Reactor Safeguards, May 3-6, 1989, we discussed the second draft of NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," with members of the staff. We also had the benefit of the documents referenced.

Although we have not had an opportunity for more than a brief look at this second draft, we have been asked to recommend uses to which it could be put before the completion of the peer review as organized by the NRC staff. At this time, on the basis of a cursory examination, we can recommend only that, if its conclusions are used, they should be examined very carefully in light of the criticisms leveled at the initial draft. For the most part, criticism of the initial draft focused on what has come to be called the Level II portion of the probabilistic risk assessments (PRAs) discussed in the report. It would appear on this basis that prior to peer review of this second draft, information and insights that may come from the Level I portion of the report can be given more credence than those from other parts of the PRAs. We observe, however, that the core-damage frequencies reported do not take into account a number of external accident initiators that in other contemporary PRAs have appeared as major contributors to the risk calculated.

Of some interest to us, in connection with staff usage, are comments from some segments of the staff that might be expected to use either the results or the insights derived from the report. During the past month we have observed the following:

> During our April 6-8, 1989 meeting, the Director of the Office of Nuclear Reactor Regulation reported on a major effort being considered to reduce the risk that he believes is associated with the interfacing-systems LOCA. We observed that the draft NUREG-1150 report did not identify this as a major risk contributor. He responded that he was skeptical of the results of PRAs. He felt

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that, if his current concerns are borne out by further investigation, this issue is important enough that it should be resolved before the individual plant examination (IPE) program is completed.

Also during our April 6-8, 1989 meeting, we discussed with members of the staff from the Office of Nuclear Regulatory Research the performance of motor-operated valves (MOVs) in nuclear power plants. They presented a study, performed at Brookhaven National Laboratory, which they are using as partial justification for requiring a major program of testing, maintenance, and repair of MOVs in operating plants. The report concludes that the core-damage frequency for boiling water reactors (BWRs), taking into account what they now believe to be the performance of MOVs, is more than an order of magnitude greater than the core-damage frequency for BWRs reported in the draft NUREG-1150. On the basis of the staff's conclusion regarding this matter, they are recommending an extensive program which they believe will enhance valve performance. They consider this problem so important that it too should not wait for the IPE program. They are convinced that NUREG-1150 does not represent properly what they view as a major risk contributor.

We conclude from these experiences that it may be worthwhile, in the review process, for those responsible for NUREG-1150 to solicit comments from other elements of the staff which might be expected to use the results of the report.

In summary, on the basis of a very preliminary review, the insights and the results of the second draft of NUREG-1150 should be used with considerable caution before the planned peer review has been concluded. We expect that more credence might be given to the Level I parts of the PRAs than to Levels II and III. However, we repeat that some of the Level I results have already been called into question by other parts of the staff.

Sincerely,

Forrest J. Remick
Chairman

References:

1. U.S. Nuclear Regulatory Commission, NUREG-1150, "Reactor Risk Reference Document," Volumes 1, 2 and 3, Draft issued for comment, dated February 1987
2. U.S. Nuclear Regulatory Commission, NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," Volumes 1 and 2 (Second Draft for Peer Review), dated April 17, 1989 (Pre Decisional)
3. Memorandum dated April 18, 1989, for the Commissioners from V. Stello, Jr., Executive Director for Operations, SECY-89-121, Subject: Transmittal of NUREG-1150, Second Draft for Peer Review
4. Memorandum dated February 17, 1989, for the Commissioners from V. Stello, Jr., Executive Director for Operations, SECY-89-058, Subject: Status Report and Preliminary Results of NUREG-1150
5. Memorandum dated December 8, 1988, for the Commissioners from V. Stello, Jr., Executive Director for Operations, SECY-88-337, Subject: Plans for Future Review of NUREG-1150

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WASHINGTON, D. C. 20555

May 9, 1989

The Honorable Lando W. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: GENERIC LETTER RELATED TO OCCUPATIONAL RADIATION EXPOSURE OF SKIN FROM HOT PARTICLES

During the 349th meeting of the Advisory Committee on Reactor Safeguards, May 3-6, 1989, we reviewed the referenced draft generic letter, including a draft Interim Standard on Occupational Dose for Skin from Beta Radiation Emitted from a Hot Particle. Our Subcommittee on Occupational and Environmental Protection Systems, its consultants, and invited expert, Dr. Dade W. Moeller, discussed this matter during a meeting held on April 20, 1989 with representatives of the NRC staff, the National Council on Radiation Protection and Measurements (NCRP), and the Nuclear Management and Resources Council (NUMARC). We also had the benefit of the documents referenced.

During the past few years, high sensitivity personnel contamination monitoring equipment has been installed in most nuclear power plants to improve their radiation protection programs. This has resulted in the occasional discovery of microscopic hot particles on workers' skin and clothing at many nuclear power plants. (Fragments from Stellite faced components containing cobalt-60 and irradiated fuel fragments are the most common hot particles.) It is clear that hot particles have always been around nuclear power plants but generally were not detected. We have been told that there is no evidence that these hot particles have caused workers any adverse health effects. The staff has concluded that the existing 10 CFR Part 20 limits intended for exposures of large areas of skin (7.5 rem per quarter for skin of the whole body and 18.75 rem per quarter for the extremities) are overly restrictive when highly localized exposure results from a hot particle. The staff plans to amend 10 CFR Part 20 to provide a less restrictive limit for exposure of the skin by hot particles. Until this amendment to 10 CFR Part 20 becomes effective, the staff proposes to use the interim standard, that is enclosed in draft form with the generic letter, in taking enforcement actions.

Industry representatives have been expressing concern since 1987 that, as a result of the current interpretation of the regulation, an unduly high level of attention and emphasis is being given to hot particle doses at nuclear power plants. These representatives have indicated that this situation is causing unnecessary fear and concern among nuclear power plant workers. We believe this to be a very serious issue. Industry has also provided data showing that workers could be exposed to substantially less whole-body

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radiation (from sources other than hot particles) by setting a more realistic hot particle exposure limit. In order to avoid what the staff is considering as "overexposures" from hot particles, licensee radiation protection programs require that workers be monitored frequently for hot particles during work in areas that have the potential for hot particle exposures. This more frequent monitoring increases the time workers spend in radiation areas to complete a given task and thus increases whole-body radiation exposures. The results of an industry survey reported by NUMARC indicate that implementation of a more realistic limit (discussed below) for hot particle exposure would result in an estimated reduction in whole-body dose of 5 to 45 person-rem per year per nuclear power plant unit. (For 1987, the average total collective dose per unit was 420 person-rem.)

Other concerns expressed by industry are cost related (reduced worker productivity and the need for more health physics technicians), increased radwaste volume, impact on SALP ratings, and potential insurance and legal considerations.

Industry representatives have emphasized that a change in the NRC position would not result in a decrease in the protection of workers or the general public nor in the controls that have been established to prevent hot particles from being transported off-site.

The staff, in March 1987, asked the National Council on Radiation Protection and Measurements (NCRP) to study the health significance of exposure from hot particles on the skin and to provide recommendations based on the findings of this study. (NCRP has an international reputation for excellence in the field of radiation protection and has been chartered by Congress to work with federal agencies and others in developing guidance in radiation protection matters.) A five-person NCRP subcommittee made this study, and the NCRP provided a report entitled, "Recommendations on Limits of Exposure to 'Hot Particles' on the Skin" to the staff on June 17, 1988. This report was subsequently reviewed and approved by the full 75-member NCRP.

The NCRP recommendations are "based on ensuring that ulceration of minute areas of the skin" does not occur. The risk of radiation-induced skin cancer from exposure to a hot particle was not considered to be significant or controlling by NCRP. NCRP's recommended exposure limit for particles less than 1 mm in diameter is 1E+10 beta particles emitted from the surface of the particle. (This limit is expressed as 75 microcurie-hours where one beta particle is emitted per disintegration.) They recommend that any overexposed individual be provided with follow-up medical evaluation with respect to skin ulceration. Depending on particle size and isotopic composition, this results in a dose limit ranging from 300 to 800 rad. To place this dose in perspective, a 2000 rad dose is the accepted limit for radiotherapy treatment involving large areas of the skin. This limit is also based on avoiding skin ulceration.

In its June 17, 1988 transmittal letter, NCRP stated that its recommendations may be considered "firm" (subject to final editorial changes) and "may be

used and quoted as appropriate." This letter indicated that the NCRP report would be published in final form in the fall of 1988. The staff subsequently raised a number of technical and philosophical questions with respect to the NCRP recommendations that are currently in the process of being answered. NCRP also requested that NUMARC provide comments on the NCRP report.

NUMARC's comments supported NCRP's approach to the hot particle problem but pointed out what NUMARC believed to be considerable conservatism used in the NCRP recommendations. As a result of the staff and NUMARC comments, there is no firm schedule for final publication of the NCRP report.

The staff plans to revise appropriate sections of 10 CFR Part 20 to limit hot particle exposure of the skin and will consider the final NCRP recommendations and recent research results. However, the staff recognizes that it will be at least two years until this revision can become effective and believes that it is appropriate to use an interim standard in the exercise of its enforcement discretion regarding hot particle exposures.

The staff considered implementing the recommendations in the NCRP report in its interim standard for skin exposures to hot particles. However, the staff decided, for a variety of reasons cited in the draft generic letter, that it would be inappropriate to implement these NCRP recommendations at this time. Instead, the interim standard enclosed with the draft generic letter, in effect, changes the limit for exposure of the skin to radiation from hot particles from 7.5 rem (skin of the whole body) or 18.75 rem (skin of the hands and forearms, and feet and ankles) per calendar quarter to 50 rad per hot particle exposure.

Recommendations

We do not endorse the staff's proposal to issue the generic letter and interim standard in its present form. Industry, in its presentation to us, has made a strong case that the proposed interim standard for hot particle exposure would provide very little relief in addressing the hot particle problem and believes that the interim standard should be based on the NCRP recommendations.

The staff, on the other hand, has obvious difficulty in basing an interim standard on an unpublished NCRP report. Accordingly, we recommend that staff senior management take an active role in effecting a timely resolution of remaining outstanding issues with NCRP so that its report may be published. The staff should then develop on an expedited basis an interim standard based on the NCRP recommendations. Based on what we have been told, we believe that this interim standard could be completed by September 1989. To the extent the standard differs from the NRCP recommendations, the staff's reasons for such modifications should be clearly and completely documented. Also, the staff concurrently should move ahead with its planned revision of 10 CFR Part 20 rulemaking on this subject.

There are two additional items concerning the draft generic letter and interim standard that we believe should be corrected in the final interim standard.

First, the draft interim standard fails to define a hot particle with respect to size for purposes of regulatory control. This is a very important issue, since the size of the exposed area of skin is central to the determination as to whether the exposure limits for large areas of skin or hot particles should be used. NCRP uses 1 millimeter as the maximum size that should be used in implementing its recommendations. We believe that this issue needs to be clarified in the final version of the interim standard and in the planned revision of 10 CFR Part 20 on hot particles.

Second, we recommend that the regulatory concept contained in Section 4, Occupational Exposure Limit, of the draft interim standard be reconsidered. The section states that the NRC will not issue a notice of violation (NOV) for a single hot particle exposure (less than the proposed limit) to an individual during a calendar quarter. It further states that the staff may issue an NOV if any individual is exposed to two or more hot particles during a single event or to hot particles in two or more separate events during a calendar quarter. This policy appears to be an unnecessary and complicating feature of the draft interim standard given the existing regulatory requirements of 10 CFR Part 20.201, Surveys, which requires that licensees must perform "adequate surveys." It is also inconsistent with the staff's position that hot particle exposures are not to be added to skin dose for record-keeping purposes and are not themselves additive unless they occur in the same location on the skin.

We intend to follow the progress of the interim and final resolutions of this difficult and controversial issue and will provide you with further comments as appropriate.

Sincerely,

Forrest J. Remick
Chairman

References:

1. Letter dated February 9, 1989 from J. H. Sniezek, Office of Nuclear Reactor Regulation, to E. L. Jordan, Committee to Review Generic Requirements, Subject: Generic Letter and Interim Standard Concerning Hot Particle Exposures of Skin
2. Letter dated June 17, 1988 from W. R. Ney, National Council on Radiation Protection and Measurements, to R. E. Alexander, Office of Nuclear Regulatory Research, transmitting NCRP Report 80-1, "Recommendations on Limits of Exposure to 'Hot Particles' on the Skin" (draft of June 1988/Rev. 3)

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

June 15, 1989

The Honorable Lando W. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: NRC THERMAL-HYDRAULIC RESEARCH PROGRAM

During the 350th meeting of the Advisory Committee on Reactor Safeguards, June 8-10, 1989, we reviewed the NRC's plan for continuing thermal-hydraulic research as related to the design and operation of nuclear power plants. This matter was also considered by our Subcommittee on Thermal Hydraulic Phenomena at a meeting on May 23, 1989. During these meetings, we had the benefit of presentations by representatives of the Office of Nuclear Regulatory Research (RES). We also had the benefit of the documents referenced. The Committee last commented to you on this subject in our report of June 7, 1988.

Thermal-hydraulic research has always been a central and major part of the NRC's research program. Much of the work was inspired by the perceived need to better understand hypothetical large-break loss-of-coolant-accidents (LB-LOCAs) and the performance of emergency core cooling systems (ECCS). Experiments and analytical models, such as the RELAP and TRAC codes, have confirmed compliance with the ECCS rule. Continuing research on LB-LOCAs culminated with a 1988 revision to the ECCS rule which permits licensees to use more accurate means of analysis and makes possible certain safety and operational improvements in existing plants. NRC contractors have demonstrated a methodology that can be used to estimate the magnitude of uncertainty associated with code predictions.

In addition, the experimental information base and the codes have been found useful in assessing and predicting the consequences of transients and small-break loss-of-coolant-accidents (SB-LOCAs) which are now recognized to be much more risk significant than the LB-LOCAs. The codes are also being used to analyze the early stages of severe accident scenarios.

Proposed Research Program

We understand the continuing NRC program in thermal-hydraulic research to have two principal purposes:

- Bring development of the major computer codes to a successful completion.

- Maintain, within the NRC and its contractors, a capability for thermal-hydraulic analysis sufficient to deal with safety and regulatory concerns that might arise in the future. This includes the continuing availability of a cadre of experts.

RES representatives indicated these general purposes would be realized through achievement of several specific objectives:

- The major codes will be maintained indefinitely and some further development will be carried out. The scope and depth of further development seems not to have been decided. Apparently, it will include appropriate reactions to new data from foreign experimental programs and assessments which are expected to continue for some time. It may also include a review and redevelopment of the important constitutive equations in the codes.

- The current experimental programs related to specifics of the Babcock and Wilcox (B&W) nuclear steam supply (NSS) system will be completed. Beyond this, any further experimental programs will be carried out at universities, rather than by the creation or operation of any major facilities at national laboratories. Relatively inexpensive "integral" facilities, of scope similar to the facility now operating at the University of Maryland, are being considered as contrasted with what have been called "separate effects" facilities. These would be mockups of specific NSS systems and of an advanced LWR (600 MWe size) design.

- An expanded program of applications research is planned. Apparently, much of this activity is expected to be in response to issues that arise from experiences with operating plants. But, it will include preparation of input data for several more plant types than are now available to the NRC. This will permit more rapid analysis than would otherwise be possible in response to future safety or regulatory issues. This program may also include exploratory, in-depth studies of a range of possible transients for a variety of plants.

In addition, two other specific program elements were mentioned:

- A further demonstration of the "Code Scaling, Applicability, and Uncertainty" methodology will be carried out for an SB-LOCA with RELAP5/MOD2, similar to that recently completed for an LB-LOCA.

- Improvements will be made to the NSS system process models now incorporated in training simulators at the NRC Technical Training Center. This will permit more accurate simulation of off-normal scenarios for the study of emergency and accident management procedures.

Before commenting on these research proposals, it is pertinent to consider two statements made by the NRC staff at the May 23, 1989 Thermal Hydraulic Phenomena Subcommittee meeting, because the ideas expressed have an influence on our recommendations:

> A representative of the Office of Nuclear Reactor Regulation said, "NRR is not relying extensively on the codes to address current licensing issues."
>
> A representative of RES said, "Codes have now reached an acceptable level of accuracy and maturity... further development is not likely to produce major changes in our understanding of [plant] performance or [accident] consequences."

ACRS Recommendations

We agree with the general objective of the research program to maintain, within the NRC and its contractors, a capability for thermal-hydraulic analysis sufficient to deal with safety and regulatory concerns that might arise in the future. Also, we agree with the general level of funding projected for the next several years. However, we believe there is too much emphasis on further development of the existing codes in the planned program. Maintenance of the needed NRC capability is more a matter of ensuring the availability of a cadre of experienced and expert analysts and access to the general body of experimental data, than it is of improving or even ensuring the availability of large systems codes. The Committee reiterates its comments in the report of June 7, 1988, that "marginal improvements that could be made [in the codes] over the next few years by extrapolating the recent levels of development work will not be sufficient to attain a significantly higher plateau of code accuracy and validation."

To accomplish this general purpose, we recommend a program of four primary elements:

(1) Code Development

> Maintain the present large system codes, TRAC-PF1/MOD1, RELAP5/MOD2, TRAC-BWR, and RAMONA-3B, for an indefinite period. Limit improvements only to those required by: (a) the discovery of important errors or (b) crucial new information from the foreign experimental and assessment programs or the B&W testing program. Do not undertake major new restructuring or "zero-based" improvements to the constitutive equations or numerical algorithms in these codes. We are not convinced by the arguments given for the need to develop TRAC-PF1/MOD2 and RELAP5/MOD3. It is our view that the proposed modifications will not substantially improve the codes.

Instead, consideration should be given to the development of a new type of systems code that will be more useful for analysis of extended plant transients involving interactions of plant systems. The Committee also made this recommendation in its June 7, 1988 report. TRAC and RELAP were originally designed to analyze the LB-LOCA, a rapid and severe reactor transient, in great detail. There is a need for a more empirical and efficient analytical tool. We envision a code that would be able, for example, to make a rapid and sufficiently accurate analysis of the power oscillations observed last year at the LaSalle County Station, Unit 2 plant. Such a code would be more akin to advanced simulator codes than to TRAC and RELAP. The BWR code (HIPA) now in use at Brookhaven National Laboratory is an example of the type of code we are suggesting.

(2) Experimentation

The staff proposal to develop relatively inexpensive "integral" test facilities at universities is sound. We see this as consistent with our recommendation for a new type of systems code. We agree that it would be inappropriate to build several such facilities at one time. A gradual approach is warranted. The first such new facility might be one that would incorporate features of the advanced LWR designs. Also, it will be better to completely assess the benefit that has been obtained from tests with the University of Maryland facility mentioned above.

In addition, a small program to deal with more fundamental research should be maintained. These are experiments of the sort that have been previously called "separate effects" tests. An effort should be made to develop a consensus among experts as to which particular phenomenon should be investigated. At this time, we suggest consideration be given to the investigation of:

- fluid-elastic instability related to vibration of tubes in U-tube steam generators,
- departure from nucleate boiling with oscillating flow and power in BWRs,
- dynamic instabilities and loads on valves.

(3) Data Analysis

A major effort is needed to organize data from test programs into a useful form other than the large systems codes. In particular, with the 2D/3D, ROSA-IV, and the B&W test programs all coming to closure, measures are needed to ensure that these expensive and valuable bodies of data are preserved and used. In addition, older data from, for example,

the FIST and FLECHT programs can be of greater value if they are effectively organized into more useful forms.

(4) Applications Research

A program in this area should include three elements:

- Analysis of transients indicated to be of interest as a result of plant operating experience.
- Preparation of input data decks for several classes of plants so that turnaround time for analyses in response to experience is shortened.
- Analysis of transients that are indicated by PRA or other sources of information to be of particular interest, but which are not presently well understood. We suggest the following for consideration:
  - feed and bleed scenarios
  - secondary depressurization scenarios

Finally, we suggest that RES broaden its perspective as to what other research in the thermal sciences should be included in its program, rather than being limited to the traditional scope of concerns in thermal-hydraulic areas. We suggest that it include studies of a broad range of thermal and fluid transport issues related to reactor safety.

ACRS Members William Kerr and Forrest Remick did not participate in the review of this matter.

Sincerely,

David A. Ward
Acting Chairman

References:

1. U.S. Nuclear Regulatory Commission, draft SECY Paper: "Status and Plans for Thermal Hydraulic Research Conducted by the Office of Nuclear Regulatory Research," provided to the ACRS in May 1989
2. U.S. Nuclear Regulatory Commission, NUREG-1252: "Nuclear Power Plant Thermal-Hydraulic Performance Research Program Plan," Office of Nuclear Regulatory Research, July 1988

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

July 18, 1989

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: PROPOSED STAFF ACTIONS REGARDING THE FIRE RISK SCOPING STUDY (NUREG/CR-5088)

During the 351st meeting of the Advisory Committee on Reactor Safeguards, July 13-14, 1989, we discussed with representatives of the NRC staff the proposed actions delineated in SECY-89-170, "Fire Risk Scoping Study: Summary of Results and Proposed Staff Actions," for dealing with various recommendations resulting from the Fire Risk Scoping Study. Our Subcommittee on Auxiliary and Secondary Systems met on July 12, 1989 with members of the NRC staff and the Sandia National Laboratories to discuss this matter. We also had the benefit of the documents referenced.

One of the significant findings of the scoping study is that fire PRAs do not normally address fire vulnerabilities in several important areas, including: (a) fire-induced alternate shutdown/control room panel interactions, (b) smoke control and manual fire-fighting effectiveness, (c) adequacy of fire barriers, and (d) seismic/fire interactions. The staff agrees with this finding and is currently considering including an effort in the Individual Plant Examination for External Events (IPEEE) program to search for such vulnerabilities. Also, we understand that the staff's External Events Fire Subcommittee is developing appropriate guidance for dealing with these issues. We consider these actions reasonable.

In SECY-89-170, the staff has concluded that no new fire-protection research is needed at this time. The need for additional research will be reconsidered following final definition of the fire-related parts of the IPEEE program later in 1989, the peer review of NUREG-1150 fire analyses, and further discussions with the Committee. We plan to comment on the need for further research in the fire-protection area after receipt of the IPEEE guidance document for examination of fire-related effects.

Additional remarks by ACRS members William Kerr and Charles J. Wylie are presented below.

Sincerely,

Forrest J. Remick
Chairman

Additional Remarks by ACRS Members William Kerr and Charles J. Wylie

We recommend that the staff require the use of armored electrical cable in advanced light-water reactors. There are more than 20 years of U.S. electric utility experience which demonstrates its advantages in both nuclear and fossil electric generating plants. There is extensive experience with armored cable in naval and maritime vessels and in chemical plants. The British are requiring its use in the Sizewell B plant.

The armor makes it significantly more difficult for external heat sources to kindle and to propagate fires within the cables. It is practically impossible to kindle and propagate a fire from internal short circuits and overloads. Armor provides a high degree of mechanical protection for the cable. It also provides shielding against external electromagnetic fields. This feature becomes more important as the application of solid-state components in power plants increases. It is particularly important in providing protection against electromagnetic pulses generated by lightning.

References

1. SECY-89-170, dated June 7, 1989, "Fire Risk Scoping Study: Summary of Results and Proposed Staff Actions" (Predecisional)
2. U.S. Nuclear Regulatory Commission, NUREG/CR-5088, "Fire Risk Scoping Study: Investigation of Nuclear Power Plant Fire Risk, Including Previously Unaddressed Issues," Sandia National Laboratories, January 1989
3. Memorandum, dated December 28, 1988, from Frank P. Gillespie, NRR, for Eric S. Beckjord, RES, Subject: "Fire Risk Scoping Study: Summary of Results and Proposed Research Action"

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

November 20, 1989

The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: DRAFT SUPPLEMENT NO. 2 TO GENERIC LETTER 88-20, "ACCIDENT MANAGEMENT STRATEGIES FOR CONSIDERATION IN THE INDIVIDUAL PLANT EXAMINATION PROCESS"

During the 355th meeting of the Advisory Committee on Reactor Safeguards, November 16-18, 1989, we discussed the subject document with the NRC staff. We also reviewed a draft NUREG/CR report entitled, "Assessment of Candidate Accident Management Strategies," that the staff proposes to send as an enclosure with the supplement to the generic letter. We had the benefit of these documents which are referenced. Our Subcommittee on Severe Accidents met on September 20, 1989 to discuss this matter.

We conclude that the information in these two documents will be useful to licensees in the process of performing Individual Plant Examinations, and we agree that the documents should be issued.

The draft NUREG/CR report referred to describes strategies for accident management that are said to be PRA based. However, the report does not include information on the risk reduction that might be attributed to the strategies. This information would be useful to those considering the strategies. We recommend that this information be added if it is reasonably retrievable from existing sources.

We observe that a number of the strategies described in the draft NUREG/CR report either overlap or are very similar to the content of the emergency operating procedures that are either being developed or are already in place in many plants. We believe that labelling these procedures as accident management strategies where others label them as emergency operating procedures is likely to lead to confusion on the part of both the NRC staff and the industry.

Sincerely,

Forrest J. Remick
Chairman

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References

1. U.S. Nuclear Regulatory Commission, "Accident Management Strategies for Consideration in the Individual Plant Examination Process," Draft Supplement No. 2 to Generic Letter 88-20, dated November 8, 1989 (Predecisional)
2. U.S. Nuclear Regulatory Commission, "Assessment of Candidate Accident Management Strategies," Draft NUREG/CR Report (Unnumbered), Prepared by BNL, October 1989