

GENERAL ELECTRIC

NUCLEAR ENERGY
PROJECTS DIVISION

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MFN-190/79

July 27, 1979

U. S. Nuclear Regulatory Commission
Division of Project Management
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Attention: D. F. Ross, Deputy Director

Gentlemen:

SUBJECT: ACRS THREE MILE ISLAND-2 RECOMMENDATIONS (SET #2 -
May 16, 1979), GE RESPONSE TO NRC REQUEST FOR COMMENTS

Reference: Letter, D. F. Ross to Dr. G. G. Sherwood, "ACRS
Recommendations Set #2 - Relating to TMI-2 Accident,"
dated May 24, 1979.

The reference requested that General Electric provide the NRC Staff with a concise discussion and position on each of the specified ACRS recommendations (May 16, 1979) relating to the TMI-2 incident. The information provided would be used as a basis for Staff discussions in ACRS Subcommittee and Full Committee meetings on TMI-2. The attachment is the General Electric response and is provided for your information and use.

Based on discussions with your Staff, the General Electric response is provided in a format similar to that used in the comprehensive submittal to the Staff relating to the first set of ACRS recommendations - April 7, 18 and 20, 1979.

General Electric considers that the concerns and recommendations specifically identified as a result of the TMI-2 incident should not be related directly to the BWR design. Careful examination and/or dialogue should take place prior to the release any recommendations applicable to the BWR.

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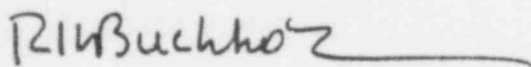
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It is noted that many of the subject recommendations relate to areas outside the NSSS scope. Consequently, the NRC-Staff should consider soliciting observations and plant unique insights from other parties.

General Electric believes that the enclosed information, supplemented by recent and past GE/NRC-Staff discussions and previous SAR docket submissions and responses provide sufficient basis for agreement with the General Electric conclusions. Please contact me if any clarification is required.

Very truly yours,



R. H. Buchholz, Manager
BWR Systems Licensing
Safety and Licensing Operation

RHB:bjr/848-849

Attachment: General Electric - Responses to ACRS Recommendations (Set #2 - May 16, 1979).

ATTACHMENT 1

GENERAL ELECTRIC COMPANY COMMENTS
RELATIVE TO
ACRS TMI-2 INCIDENT RECOMMENDATIONS
CITED IN
MAY 16, 1979 LETTERS

ACRS COMMENT

EXAMINE OPERATOR QUALIFICATIONS, TRAINING AND LICENSING, AND REQUALIFICATION TRAINING AND TESTING

GE OBSERVATIONS

- BWR COMPARABLY SIMPLE MACHINE TO START UP, MANEUVER OR SHUT DOWN RELATIVE TO OPERATOR ACTIONS
 - Inherently Self-Regulating; Basically Single Directional
 - Automatic, Redundant, Diverse Protective Features
 - Minimum Operator Involvement: Transient and Accidents

- GE INVOLVEMENT IS LIMITED TO SIMULATOR OPERATOR TRAINING
 - Licensee is Responsible for Operator Selection, Integral Training, etc.
 - GE Simulators [Morris (1970) and Tulsa (1980)] are Valuable Training Tools
 - Periodic Operator Requalification Training: Also Available GE Option

- GE-BWR TRAINING PROGRAM IS CONTINUALLY UPDATED AND UPGRADED WITH FEEDBACK
 - BWR Operator/Designer Experienced Training Staff
 - BWR Simulators Realistically Portray: Normal, Transient, Accident Events
 - Program Trains Operators to Develop Logical Actions: Observe, Understand, Think and Act Cautiously
 - Plant Operating Experience Feedback Continuously Incorporated

GE CONCLUSIONS

OPERATOR TRAINING PROGRAMS HAVE LONG BEEN RECOGNIZED AS AN IMPORTANT INTEGRAL PART OF SAFE REACTOR OPERATION. THE CONTINUAL UPDATING AND UPGRADING OF THE TRAINING PROGRAMS HAS BEEN UNIVERSALLY ENDORSED IN THE INDUSTRY.

POOR ORIGINAL

ACRS COMMENT

ESTABLISH FORMAL PROCEDURE FOR THE USE OF LICENSEE EVENT REPORT INFORMATION

GE OBSERVATIONS

- A REACTOR OPERATING EXPERIENCE FEEDBACK NETWORK IS IN-PLACE
 - Licensee's are Required to Report Off-Normal Operations
 - Public Tabulation of Incidents, Abnormal Events, etc., is Comprehensive
 - NRC IE Bulletin Releases Advise Other Licensees of Experiences and Request Considerations
 - CP, OP, and Reload Licensee's Reviews Factor in LER
 - Plant Special Incident Reviews are Expected
 - 10 CFR 21 Assures Honest and Response Action

- GE OPERATING AND CONSTRUCTION FEEDBACK SYSTEMS ARE ACTIVE AND ALERT
 - Plant and Project Service Organizations: Identify and Resolve Problems through Licensees
 - GE Personnel at Site Provide Daily Communications
 - GE Designers are Always Involved in Feedback Process
 - GE Recommendations are Provided to Licensee (e.g., SIL's) for Implementation
 - GE Plant Reliability/Availability Program is Intensely Being Pursued

GE CONCLUSIONS

VARIOUS PLANT OPERATING EXPERIENCE FEEDBACK PROGRAMS ARE IN-PLACE AND WORKING WELL.

INDUSTRY-WIDE PARTICIPATION IN THE ORGANIZATION AND IMPLEMENTATION OF A FORMAL PROGRAM (IF REQUIRED) IS SUGGESTED. FURTHER COMPLICATIONS BY SUCH A PROGRAM TO ALREADY OVER-BURDENED LICENSING PROCESS SHOULD BE AVOIDED.

ACRS COMMENT

CONSIDER FORMAL REVIEW OF OPERATING PROCEDURES RELATIVE TO SEVERE OPERATIONAL TRANSIENTS

GE OBSERVATIONS

- OPERATING PROCEDURES ARE CURRENTLY REVIEWED AND CONTROLLED
 - Normal, Transient and Accident Operations are All Considered
 - Safety Evaluations (Include all Operating Modes) are Bases of Operating Procedures and Technical Specifications
 - Start-up and Preoperational Test Programs Debug Procedures
 - Technical Specifications Define Operating Procedure Limits, Criteria, Objectives

- GE INVOLVEMENT IS LIMITED TO ASSISTING THE LICENSEE'S OPERATING STAFF IN FORMULATING PLANT UNIQUE OPERATING PROCEDURES
 - Licensee is Responsible for Operating Procedure Documentation, Integrating Total Plant Aspects, etc.
 - GE Start-up and Preoperational Services Are Available to Licensee
 - GE Assistance Takes Advantage of Plant to Plant Operating Procedures Improvements
 - GE Design, Analysis, and Performance Expectation Relative to Operating Procedures are Evaluated in SAR's. (e.g., Chapter 15 and NSOA Examinations)

GE CONCLUSIONS

FORMULATION OF PLANT OPERATING PROCEDURES IS A WELL REVIEWED AND CONTROLLED PROCESS. INDUSTRY-WIDE PARTICIPATION IN THE ORGANIZATION AND IMPLEMENTATION OF A FORMAL PROGRAM RELATIVE TO THE REVIEW OF OPERATING PROCEDURES (IF REQUIRED) IS SUGGESTED. FURTHER COMPLICATIONS BY SUCH A PROGRAM TO ALREADY OVERBURDENED LICENSING PROCESS SHOULD BE AVOIDED. REPLACEMENT OF THE CURRENT TECH SPECS WITH DETAILED FORMAL OPERATING PROCEDURES WOULD BE UNNECESSARY AND IS DISCOURAGED.

ACRS COMMENT

RE-EXAMINE COMPREHENSIVELY THE ADEQUACY OF DESIGN, TESTING, AND MAINTENANCE OF OFFSITE AND ONSITE AC AND DC POWER SUPPLIES.

GE OBSERVATIONS

- CURRENT REGULATIONS AND REVIEWS INTENSELY SCRUTINIZE POWER SYSTEMS
 - GDC's, RG's, SRP's and Industry Standards Already Assure Detailed Review and Reliable Performance
 - Long Been Major Safety Review Area
 - Did Not Appear to be TMI Concern/Issue
- BWR DESIGN IN FULL COMPLIANCE WITH REGULATIONS
 - Self Contained, Independent, Redundant On-site/Off-Site AC/DC Power Sources Demanded
 - Comprehensive Environmental and Seismic, Electrical, and Mechanical Standards are Required and Are Being Shown Adequate by Operating Experience
 - Strict Tech Spec Monitoring for On-Site Emergency Sources Are In-Place
- GE INVOLVEMENT IS GENERALLY LIMITED TO HPCS ON RECENT PLANTS
 - Licensee/AE Are Responsible for On-Site/Off-Site AC/DC Power Systems
 - GE Reliability and Prototype Test Program on HPCS: Completed and Exceeds Requirements
 - GE Design, Analysis, and Performance Expectations Relative to Plant Power Systems are Evaluated in SAR's. (e.g., Chapter 15 and NSOA Examinations)

GE CONCLUSIONS

CURRENT REVIEW LEVEL AND REQUIREMENTS APPEAR TO BE MORE THAN ADEQUATE AND HAVE BEEN FURTHER DEMONSTRATED BY OPERATING EXPERIENCE. CREDIT AND BENEFIT FOR RELIABLE OFF-SITE POWER SHOULD BE RECOGNIZED. THIS COMMENT DOESN'T APPEAR TO BE RELATED TO TMI COMPLICATIONS.

ACRS COMMENT

MAKE A DETAILED EVALUATION OF CURRENT CAPABILITY TO WITHSTAND STATION BLACKOUT

GE OBSERVATIONS

- CURRENTLY A PLANT CAPABILITY; NOT A REGULATORY REQUIREMENT
 - Previously Unidentified TMI Incident Concern
 - Loss of Both Onsite and Offsite AC Power: Rather Severe Demand
 - Involves Loss of Both Redundant, Independent Onsite and Offsite Sources: Highly Unlikely
 - Instant Degradation: Highly Unlikely
 - Continued Loss: Highly Speculative
 - Only Short Term Event Impacts are Appropriate for Consideration
- BWR DESIGN - CAPABILITY TO ACCOMMODATE: INHERENT FEATURE
 - At Least 4 Hr; Probably 20 Hr; Total Plant Accommodation
 - Minimum 8+ Hr Core Cooling Protection
 - BWR Internal Natural Circulation Feature Invaluable
 - HPCIS/RCIS/ICS Will Provide Automatic Core Cooling Make-Up Without AC Power
- GE INVOLVEMENT IS LIMITED TO DESIGN BASIS EVENTS AND SELECTIVE SHORT TERM CAPABILITY CONSIDERATIONS
 - Licensee is Response for Blackout Plant Operation
 - BWR Capability Studies for AC Blackouts, Black Startup, DC Blackouts, etc., Have Been Made Previously

GE CONCLUSIONS

CURRENT PLANT POWER SYSTEMS REGULATORY DESIGN REQUIREMENTS ARE DEMANDING. PLANT PERFORMANCE EXPERIENCE HAVE DEMONSTRATED THEIR ADEQUACY. BWR DESIGN HAS ALWAYS FEATURED ABILITY TO RIDE THROUGH SEVERE BLACKOUT SITUATION. THUS, NEED TO ELABORATE OR EXPAND THIS EVENT TO PLANT DESIGN BASIS, RATHER THAN INHERENT CAPABILITY, IS UNNECESSARY.

ACRS COMMENT

EXAMINE A WIDE RANGE OF ANOMALOUS TRANSIENTS AND DEGRADED ACCIDENTS
RELATIVE TO WATER HAMMER EFFECTS

GE OBSERVATIONS

- CURRENT REGULATIONS REQUIRE CONSIDERATION OF EVENT EFFECTS
 - DBA . . . Break/Blowdown Effects . . . Jet Impingements, Pipe Whips, Missiles
 - Transients . . . RCPB Internal Effects . . . Hydrodynamic, Pressure Differential, Phenomena (e.g., Steam Line Dynamics)
 - Static and Dynamic Effects . . . Separate and Combinations
- BWR TECHNOLOGY IS VERY FAMILIAR WITH WATER DYNAMIC EFFECTS
 - Applicant/GE Containment - Pool Dynamic Programs
 - GE Internals Monitoring Program
 - Applicant/GE RPV - Support Program
- BWR DESIGN ACCIDENT EVALUATION AND PROTECTION ADDRESSES A FULL SPECTRUM OF BREAKS AND DYNAMIC EFFECTS
 - Full Break Spectrum Analysis
 - Inside and Outside Containment Break Locations
 - Steam and Liquid Breaks
 - Dynamic Accident Effects Accommodation (e.g., Pipe Restraint)
 - Dynamic Accident Effects Prevention (e.g., ECCS Pipe Fill System)
- GE INVOLVEMENT IS GENERALLY LIMITED TO DEFINITION OF NSSS FAILURE EFFECTS
 - Licensee/AE are Responsible for Accommodate of Loads, Forcing Functions, etc.
 - GE and Licensee Sponsored Programs Relative to NSSS Transient and Accident Water Dynamic Effects Have Investigated and Bounded the Phenomena. (e.g., Pool Dynamic Programs)
 - At Site Confirmation Programs are Being Administrated by the Licensees

GE CONCLUSIONS

THE EXISTING BWR TRANSIENT AND ACCIDENT ANALYSES PROVIDE A COMPREHENSIVE EXAMINATION OF THE COMPLETE SPECTRUM OF BREAK TYPE, SIZE, AND LOCATION. DYNAMIC AS WELL AS STATIC EFFECTS ARE EVALUATED AND ACCOMMODATED. WATER HAMMER EFFECTS ARE CONSIDERED BY BWR DESIGNER AND ARE GIVEN SPECIAL ATTENTION.

ACRS COMMENT

PLAN AND DEFINE NRC ROLE IN EMERGENCY SITUATIONS

GE OBSERVATIONS

- LICENSEE/OWNER/APPLICANT EMERGENCY PLANS ARE COMPILED, REVIEWED, AND IN-PLACE AS REQUIRED BY REGULATIONS
- SPECIFIC DEFINITION OF NRC ROLE IN EMERGENCY SITUATIONS IS DESIRABLE
- NRC ACTIVITIES SHOULD COMPLIMENT EXISTING LICENSEE PROGRAMS
- ASSIGNMENT OF NRC-STAFF TECHNICAL ADVISORY TEAMS WITH A COORDINATED INTERFACE WITH PLANT LICENSEE PERSONNEL IS APPROPRIATE
- NEED FOR ADDITIONAL INVENTORY OF EQUIPMENT AND MATERIALS BEYOND CURRENTLY AVAILABLE AT PLANT FACILITY IS A NRC RESPONSIBILITY AREA

GE CONCLUSIONS

GE ENCOURAGES THE FORMAL DOCUMENTATION OF NRC INVOLVEMENT IN EMERGENCY SITUATIONS. THE IMMEDIATE DEFINITION AND IMPLEMENTATION OF THE NRC ROLE IS EXPECTED. THE COORDINATED INTEGRATION OF LICENSEE AND NRC PROGRAMS IS IMPORTANT. INDUSTRY-WIDE PARTICIPATION IN THE ORGANIZATION AND IMPLEMENTATION OF A FORMAL NRC ROLE IN EMERGENCY EVENTS IS SUGGESTED.

ACRS COMMENT

REVIEW AND REVISE LICENSEE EMERGENCY PLANS AND PROCEDURES

GE OBSERVATIONS

- A PLAN TO CALL UPON INDUSTRY-WIDE EXPERTISE DURING AN EMERGENCY SITUATION WOULD BE DESIRABLE.
- TMI INCIDENT DEMONSTRATED THE NUCLEAR INDUSTRY'S CAPABILITIES TO PROVIDE COOPERATIVE, RAPID, COMPREHENSIVE ASSESSMENT AND RECOMMENDATIONS
 - PWR Vendor Assistance
 - GE EWR Expertise Inputs
- THE CONCEPT OF A NUCLEAR INDUSTRY-WIDE "SPECIAL NUCLEAR INCIDENT ASSISTANCE TEAM" MIGHT WELL BE EXAMINED
- REEXAMINATION OF SPECIFIC PROCEDURES OR CRITERIA RELATIVE TO EARLY INCIDENT REPORTING MAY BE APPROPRIATE

GE CONCLUSIONS

GE ENCOURAGES THE PARTICIPATION OF INDUSTRY-WIDE PARTIES IN NEW PLANS AND PROCEDURES RELATIVE TO LICENSEE ASSISTANCE DURING SERIOUS INCIDENTS.

ACRS COMMENT

EXAMINE LESSONS LEARNED RELATIVE TO DECONTAMINATION, SURVIVABILITY, FAILURE MODES AND LONG-TERM PLANT RECOVERY.

GE OBSERVATIONS

- GE HAS BEEN INTENSELY REVIEWING TMI-INCIDENT IMPLICATIONS
 - Site Assistance and Support
 - San Jose BWR Design Parallel TMI Event Study
 - Actively Supporting EPRI - NUSAC Study Group
 - Provided BWR Responses to Utilities to Support NRC Reviews
 - ACRS Presentation and Recommendations Review
 - Evaluating All Appropriate TMI Related Documentation

- GE WILL BE EVALUATING "LESSONS LEARNED" OVER NEXT 6 MONTHS
 - Preliminary Findings Are Being Explored Relative BWR Design
 - GE Will Compile a "Recommendations Report" Later This Year

GE CONCLUSIONS

GE WILL JOIN WITH THE INDUSTRY AND THE NRC IN SHARING "LESSONS LEARNED" DIALOGUE FROM TMI INCIDENT. SUCH AN ACTION WILL DEMONSTRATE AGAIN TO THE PUBLIC OUR SELF-POLICING AND OPEN MINDEDNESS ATTITUDE AND CONCERN FOR SAFE AND EFFICIENT NUCLEAR POWER.

ACRS COMMENT

EXPEDITE RESOLUTION OF UNRESOLVED SAFETY ISSUES UTILIZING LICENSEE, CONSULTANT, AUGMENTED STAFF AND CONTRACTORS SUPPORT.

GE OBSERVATIONS

- GE ENDORSES THE SPEEDY AND EFFECTIVE IDENTIFICATION OF NEW TMI-RELATED REGULATORY CONCERNS.
- GE IS SELF-AUDITING ITSELF RELATIVE TO LESSONS TO BE LEARNED FROM THE TMI INCIDENT. GE WILL PARTICIPATE IN INDUSTRY-WIDE STUDY GROUPS (e.g., EPRI-NUSAC)
- GE WILL ENDEAVOR TO SUPPORT THE NRC-STAFF, ACRS, AND THE LICENSEE/APPLICANT IN THEIR TIMELY DISCUSSIONS AND RESOLUTIONS OF TMI RELATED INQUIRIES OR ISSUES.
- GE BELIEVES THAT THE APPLICANT/DOCKET RESPONSES SHOULD BE DIRECT AT COMPLIANCE WITH CURRENT OR NEW TMI-RELATED REGULATORY REQUIREMENTS
- GE CONSIDERS EXAMINATION OF NEW/ALTERNATE/POTENTIAL CRITERION OR REQUIREMENTS AND NEW SAFETY RESEARCH PROJECTS OR STUDIES TO BE NRC RELATED ACTIVITIES. THESE SHOULD BE SPONSORED, FUNDED AND POSSIBLY ADMINISTERED BY NRC AND NOT SUBJECT TO APPLICANT OR HIS AGENTS BURDEN OR RESPONSIBILITY.
- GE IS STILL HEAVILY INVOLVED IN THE RESOLUTION AND IMPLEMENTATION OF NON-TMI RELATED ISSUES.

GE CONCLUSIONS

GE WILL SUPPORT SPEEDY RESOLUTION OF TMI-RELATED NRC CONCERNS. GE WILL CONTINUE TO SUPPORT OUR CLIENT (LICENSEES, OWNERS, APPLICANTS) INDIVIDUAL AND COLLECTIVE NEEDS. SINCE THE RESOURCES OF THE NUCLEAR INDUSTRY ARE FINITE, IT IS IMPORTANT THAT THEY BE UTILIZED BY ALL PARTIES IN THE INTEREST AND BENEFIT TO ALL PARTIES. THE EFFECTIVE AND EFFICIENT USE OF RESOURCES IN THE IDENTIFICATION AND RESOLUTION OF TMI CONCERNS IS CRITICAL.

ACRS COMMENT

AUGMENT EXPEDITIOUSLY THE NRC STAFF CAPABILITY TO DEAL WITH PROBLEMS IN REACTOR AND FUEL CYCLE CHEMISTRY

GE OBSERVATIONS

- CURRENT REGULATORY REQUIREMENTS AND REVIEWS HAVE PREVIOUSLY EXAMINED THESE AREAS
 - Regulations, RG's, SRP's ... Conformances are Addressed in SAR's
 - No Major Unresolved Safety Issue are Presently Listed
- GE INVOLVEMENT IN THESE AREAS IS GENERALLY LIMITED TO THE CHEMICAL AND RADIATION EFFECTS OF NSSS EQUIPMENT
 - Considerations of Spray Additions, Radwaste Processing and Disposal, etc., are the Responsibility of Licensee/AE
 - GE Qualifies its NSSS Environment Specifications Which Include Singular and Combined Event Phenomena Impacts
 - GE Has Investigated and Reported Fuel/Coolant Chemistry Aspects
- APPLICATION OF TMI INCIDENT RELATED EFFECTS ASSOCIATED WITH THESE DISCIPLINES SHOULD TAKE INTO ACCOUNT BWR FEATURES WHICH PRECLUDE THE DEGRADATIONS EXPERIENCED AT TMI-2.
 - Assured Automated BWR Core Cooling Protection
 - BWR Multiple Radiological Barrier Integrity Always Maintained
 - Coolant/Radiation Effects are Minimal on BWR

GE CONCLUSIONS

PREVIOUS REVIEWS IN THESE AREAS HAVE BEEN COMPREHENSIVE AND COMPLETE. GE ENDORSES THE NRC-STAFF'S EXPEDITIOUS RESOLUTION OF ANY CONCERNS IN THESE AREAS.

ACRS COMMENT

RECONSIDER WHETHER SINGLE FAILURE CRITERION (SFC) ESTABLISHES AN APPROPRIATE LEVEL OF RELIABILITY FOR REACTOR SAFETY SYSTEMS

GE OBSERVATIONS

- SFC HAS PROVIDED ADEQUACY SAFETY PROTECTION
 - BWR, PWR Design Basis: Specified by Regulations, RG, etc.
 - SCF: Old DBA Requirement: Now New Transient Analyses Requirement
 - Recognized Engineering/Industry-Wide Safety Approach
 - Efficient Qualitative/Envelope Evaluation Tool
- SFC IS ACCOMPANIED BY OTHER DEMANDING, SUPPLEMENTAL REQUIREMENTS
 - "Worst Case" Initial Conditions
 - Conservative Performance Assumptions
 - Low Probability Event Combinations
 - Safety Equipment Utilization Only Credit
- TMI INCIDENT SFC ADEQUACY STILL PENDING
 - Initiating Event + SCF + Out-of-Service + Design Shortcoming
 - Five Initial Failures → Three Presently → ? Future
- COMMON-MODE-FAILURE APPROACH HAS BEEN STUDIED BY GE RELATIVE BWR SAFETY SYSTEMS
 - Qualitative, Semi-Quantitative Evaluation
 - Variations of Parameter: Operation, Maintenance, Diverse Design
 - BWR Profile: Looked Good; Reported in GE-LTR (1970)
- PROBABILISTIC, QUANTITATIVE APPROACH HAS BEEN STUDIED BY GE ON SELECTIVE BWR SYSTEMS
 - RPS, ECCS, RPV (Early 1970's)
 - ATWS, Control Rod Systems (Late 1970's)
- INDUSTRY-WIDE PROBABILISTIC ASSESSMENT STANDARD IS PRESENTLY BEING FORMULATED
 - WASH - 1400 Original Total Plant Study (Mid-1970's)
 - ANS Efforts ... NRR Proposals (Late 1970's)
 - ... Multiple and Common-Mode Failures Criteria (MFC, CMFC)
 - ... Fluid Syst. and Total Plant Failure Criteria
 - Correlation of Appropriate Data Limits Approach Attractiveness

GE CONCLUSIONS

CONSIDERABLE AMOUNT OF INDEPENDENT EFFORT HAS BEEN APPLIED TO SFC . . . QUALITATIVE EVALUATIONS. DEVELOPMENT OF PROBABILISTIC QUANTITATIVE (SFC, MFC, CMFC, etc.) EVALUATION METHODS AND CRITERION HAVE BEEN EXAMINED. APPLICATION OF TOTAL PROBABILISTIC SAFETY APPROACH SHOULD EVOLVE FROM INDUSTRY-WIDE PARTICIPATION PROGRAM.

ACRS COMMENT

CONSIDERATION SHOULD BE GIVEN TO AUGMENTATING CURRENT SAFETY RESEARCH BUDGET WITH NEW EMPHASIS ON EXPLORATORY ASPECTS, RATHER THAN CONFIRMATORY RESEARCH.

GE OBSERVATIONS

- GE HAS ALWAYS VIGOROUSLY PURSUED BOTH EXPLORATORY RESEARCH AND CONFIRMATORY TESTING RELATIVE TO THE EWR.
(Confirmatory - MSIV; HPCS; CRDS; MARK I; PIPE RESTRAINTS)
(Eg. Exploratory - ECCS; AITAS; MARK II and III; BLOWDOWN HT)
- GE IS CONTINUING TO SUPPORT OLD AND NEW SAFETY RESEARCH FACILITIES AND PROGRAMS
(- New High Flow Test Facility . . . (San Jose)
(Eg. - Mark III Test Apparatus . . . (San Jose)
(- Core Spray Distribution (Steam Environment) . . . (Lynn, Mass.))
- GE ENCOURAGES NRC SPONSORED AND FUNDED SAFETY RESEARCH
- GE WILL SUPPORT AND PARTICIPATE IN INDUSTRY-WIDE, NRC SPONSORED SAFETY RESEARCH PROGRAMS

GE CONCLUSIONS

GE EWR TRANSIENT AND ACCIDENT PHENOMENA SAFETY RESEARCH IS CONTINUING. GE ENCOURAGES NRC SPONSORED AND FUNDED SAFETY RESEARCH. A BALANCE BETWEEN EXPLORATORY AND CONFIRMATORY TESTING IS SUGGESTED.

ACRS COMMENT

PERFORM DESIGN STUDIES OF A FILTERED-VENTING OR PURGING OPTION FOR CONTAINMENTS UNDER SEVERE ACCIDENT CONDITIONS

GE OBSERVATIONS

- CURRENT CONTAINMENT REGULATORY REQUIREMENTS ARE COMPREHENSIVE AND CONSERVATIVE
 - Containment "Mitigates" Consequences of Serious Accident Threat Spectrum . . . By Prevention or Accommodation
 - 25% of All Regulations Directed at Containment Accommodation Via Integrity Maintain Requirement
 - Evaluations and Design Scrutinized by Conservative Requirements
 - Containment Performance Assured by Testing, Monitoring, Attention

- GE INVOLVEMENT IS GENERALLY LIMITED TO DESIGN BASIS AND PERFORMANCE ANALYSIS ASPECTS OF CONTAINMENT DESIGNS
 - Licensees/AE's Are Primary Responsible Agency for Containment Systems
 - GE Does Provide Containment Static and Dynamic DBA Pressure, Temperature, Radiological, and Leakage Analysis for Licensees
 - Ventilation, Atmospheric Control, Filtering Systems Are Supplied by Others

- BWR CONTAINMENT SYSTEMS: DEFENSE-IN-DEPTH AND MULTIPLE BARRIER PHILOSOPHY
 - Primary Containment - Pressure Suppression ... Self-Contained, Self-Servicing
 - Secondary Containment - Reactor Building ... Leakage Control, Filtering, Decay
 - Elevated, Controlled Release - Vents ... Off-Site Dilution/Reduced Effects
 - Qualified For All Site Environments and Implications (e.g., seismic flooding, wind)
 - Performance Demonstrated By Test and Monitoring

- BWR PRESSURE SUPPRESSION CONTAINMENT SYSTEMS PROVIDE EXTENDED CAPABILITY
 - Automatic Pressure, Temperature Reduction
 - Fission Product Treatment and Compartmentization
 - Engineered for Purge, Filtering Decay, Optimized Release
 - Designed with Substantial Failure Mode Margin (A Capability)

GE CONCLUSIONS

GE BELIEVES THAT THE CURRENT BWR CONTAINMENT SYSTEMS' DESIGN BASES AND EVALUATIONS PROVIDE COMPREHENSIVE, CONSERVATIVE PROTECTION TO THE HEALTH AND SAFETY OF PUBLIC UNDER ALL DESIGN BASE EVENTS. THESE SYSTEMS ALSO PROVIDE CONTINUED PROTECTION EVEN UNDER FURTHER DEGRADATED SITUATIONS.

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