GENERAL ELECTRIC

NUCLEAR ENERGY BUSINESS OPERATIONS
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MFN-080-85
HCP-021-85

May 31, 1985

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

Attention: Mr. Cecil O. Thomas, Chief
Standardization and Special Projects Branch

Gentlemen:

SUBJECT: PLANNED SUBMITTAL OF GENERIC LICENSING TOPICAL REPORT NEDE-30996-P "SAFER MODEL FOR EVALUATION OF LOSS OF COOLANT ACCIDENTS FOR JET PUMP AND NON-JET PUMP PLANTS"

The purpose of this letter is to inform you of General Electric's plans to submit a licensing topical report (NEDE-30996-P) under the NRC topical report program for review and acceptance of an improved generic LOCA model applicable to the BWR/2 (non-jet pump plants). This submittal will be an extension of the realistic model already approved for the BWR/3-6 (jet pump plants) contained in NEDE-23785 Volumes I, II and III.

Our plans and proposed schedule for this review have been discussed with the staff on several occasions, most recently in a meeting on March 27, 1985. At this meeting, the attached material was discussed and the NRC staff indicated that issuance of an SER by 9/86 was achievable.

The first use of this evaluation model will be GPU Nuclear Corporation's (GPUNC) Oyster Creek plant and the requested review schedule is based on GPUNC's planned utilization. Consistent with an approval of the new model and

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application methodology by September 1986, Oyster Creek specific LOCA calculations will be performed and completed in time to support Cycle 12 operation. Application of the new methods to this reload is needed because beginning with Cycle 11, the Oyster Creek core will be utilizing high energy fuel in order to achieve longer more economic operating cycles. The use of this high energy fuel leads to higher localized power peaking. This is especially true during the second cycle of operation (i.e., Cycle 12) since the burnable poison in the fuel is depleted. Current MAPLHGR limits, which are already somewhat restrictive, will inhibit efficient use of this fuel by requiring highly reactive fuel to be loaded near the core periphery (to minimize peaking) and/or causing periodic core power reductions in order to satisfy current limits. Approval of the improved LOCA model on the proposed schedule will allow better definition of MAPLHGR limits and maximize the operational benefits for Cycle 12 and beyond.

In order to expedite the review consistent with GPUNC needs and the efficient utilization of NRC, GPUNC and GE resources, the NRC technical review and program management staff agreed that preliminary submittals should be made as sections of the report are completed (see attached schedule). These preliminary submittals will document the major modeling tasks consisting of 1) model refinements, 2) model qualifications and 3) sample calculations and application methodology. These will serve as the basis for the early resolution of any NRC questions. At the appropriate time (see attached schedule), the preliminary material will be combined and submitted as a stand alone licensing topical report which can serve as a single reference for the improved BWR/2 LOCA model.

General Electric is committed to developing this model on the schedule provided; therefore, in accordance with the review fee schedule in 10CFR Part 170, a check for the $150 application fee is herewith submitted. If you have any questions or comments, please do not hesitate to contact me on (408) 925-3392.

Very truly yours,

H. C. Pfefferlen, Manager
BWR Licensing Programs

HCP:rm/A05282*

cc: J. N. Donohew (NRC)
M. W. Hodges (NRC)
R. B. Lee (GPUNC)
D. Moran (NRC)
B. Sheron (NRC)

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bcc: T. R. Augello
A. B. Burgess
J. L. Casillas
B. S. Shiralkar

GPUN/NRC

MEETING

IMPROVED BWR/2 LOCA MODEL

MARCH 27, 1985

HCP:RF/G03185*-1
3/18/85

PURPOSE

KICKOFF MEETING FOR NRC REVIEW OF BWR/2 LOCA MODEL IMPROVEMENTS

- DISCUSS APPROACH
- IDENTIFY INTERFACES
- AGREE ON SCHEDULE & ACTIONS

BACKGROUND

- o IMPROVED LOCA MODELS ACCEPTED FOR JET PUMP BWR APPLICATIONS

- o LOCA ANALYSES PLANNED OR UNDER DISCUSSION FOR A NUMBER OF JET PUMP PLANTS

- o EXTENSION TO BWR/2 WILL CORRECT CURRENT MODEL SHORTCOMINGS
  - EXTREMELY CONSERVATIVE OVER MAJORITY OF BREAK SPECTRUM
  - DOESN'T REPRESENT EXPECTED PLANT BEHAVIOR
  - NOT APPROPRIATE FOR OPERATOR GUIDANCE

- o GPUN/GE PROGRAM UNDERWAY (DISCUSSED WITH THE STAFF ON 7/18/84 AND 10/13/84)

EXTENSION TO BWR/2

- o GESTR MODEL
  - APPLICABLE; NO CHANGES REQUIRED
- o SAFER MODEL
  - REFINEMENTS FOR SPECIFIC GEOMETRICAL FEATURES AND PHENOMENA
- o MODEL QUALIFICATION
  - SIMILAR STRATEGY; UTILIZE DATA BASE APPLICABLE FOR BWR/2 (INCLUDE HIGH TEMPERATURE DATA TO ELIMINATE 1600°F LIMITATION)
- o APPLICATION PROCEDURE
  - APPLICABLE; NO CHANGES REQUIRED
- o STATISTICAL 95TH PERCENTILE CALCULATION
  - SAME METHODOLOGY; ACCOUNT FOR SIGNIFICANT BWR/2 PARAMETERS (INCLUDING HIGH TEMPERATURE EFFECTS)

APPROACH IDENTICAL TO JET PUMP PLANTS

MODEL REFINEMENTS FOR BWR/2

- o EXTERNAL RECIRCULATION LOOP MODEL
  - SIGNIFICANT LOOP VOLUME, HEAT CAPACITY
  - MODIFY LOOP MOMENTUM EQUATIONS
- o CORE HYDRAULIC MODEL REFINEMENT
  - DOWNFLOW
- o CORE HEATUP MODEL REFINEMENT
  - AXIAL CONDUCTION REWET
  - IMPROVED RADIATION MODEL
- o MECHANISTIC CORE SPRAY HEAT TRANSFER
  - SEPARATE DESCRIPTION OF DROPLETS, LIQUID FILM AND VAPOR
  - GRAY BODY ANISOTROPIC RADIATIVE HEAT TRANSFER
  - QUALIFIED AGAINST EXTENSIVE DATA BASE
- o ISOLATION CONDENSER

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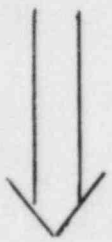
STATISTICAL CALCULATION

- SIGNIFICANT ADDITIONAL PARAMETERS IN MONTE CARLO ANALYSIS EXPECTED TO INCLUDE:
  - CORE SPRAY FLOW
  - METAL WATER REACTION
  - FUEL ROD INTERNAL PRESSURE

SUMMARY GE APPROACH

- o BUILD ON APPROVED SAFER/GESTR MODEL
- o MAINTAIN APPROVED APPLICATION METHODOLOGY
- o PREVIEW MODEL REFINEMENTS/DATA BASE/QUALIFICATION BASIS



FACILITATE BWR/2 LOCA MODEL REVIEW PROCESS

APPROVAL OBJECTIVE - BWR/2 APPLICATION TO 2200°F

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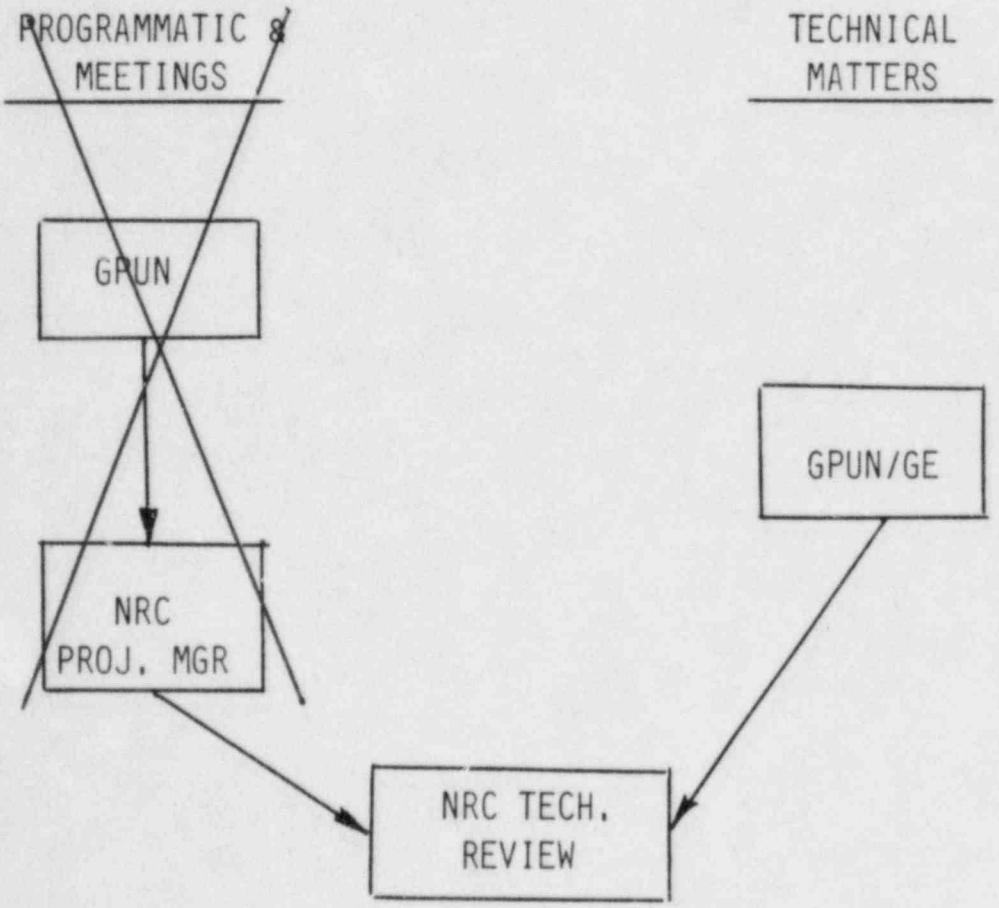
INTERFACES

GPUN OVERALL PROGRAM DIRECTION - R. B. LEE

GE TECHNICAL/LICENSING MATTERS - H. C. PFEFFERLEN

~~NRC PROJECT MANAGER - J. N. DONOHEW~~ D. HORAN

NRC TECHNICAL REVIEW - ~~(~~ JHERON / HODGES ~~?)~~



ANNOTATION PER 3/27/85 MEETING WITH NRC.

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PROGRAM SCHEDULE

INITIATE PROGRAM	3/1/85
COMPLETE MODEL REFINEMENTS	9/1/85
COMPLETE MODEL QUALIFICATION	12/1/85
COMPLETE SAMPLE CALCULATIONS	1/1/86
COMPLETE APPLICATION METHODOLOGY	3/1/86
DRAFT DOCUMENTATION AVAILABLE	3/1/86
ISSUE LICENSING TOPICAL REPORTS	6/1/86
MODEL TECH DESCRIPTION & QUAL. APPLICATION METHODOLOGY	
COMPLETE REVIEW & ISSUE SER (NRC)	ASAP

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PROPOSED APPROACH

- WORK CLOSELY WITH NRC TO EXPEDITE REVIEW
- IDENTIFY ISSUES EARLY AND RESOLVE PRIOR TO LTR SUBMITTAL
- EXTEND RSB REVIEW TO INCLUDE ALL MODEL REFINEMENTS
- NO ACRS REVIEW SINCE PREVIOUS APPROVAL OF APPROACH APPLIES.
- SPECIFIC ACTIONS:

- TECHNICAL KICKOFF MEETING	10/85
- PROVIDE PRELIMINARY INFORMATION	9/85 - 12/85
- PROVIDE DRAFT REPORTS	4/86
- FORMAL LTR SUBMITTAL	6/1/86
- TECHNICAL MEETINGS	AS REQUIRED
- ISSUE SER (NRC)	9/1/86

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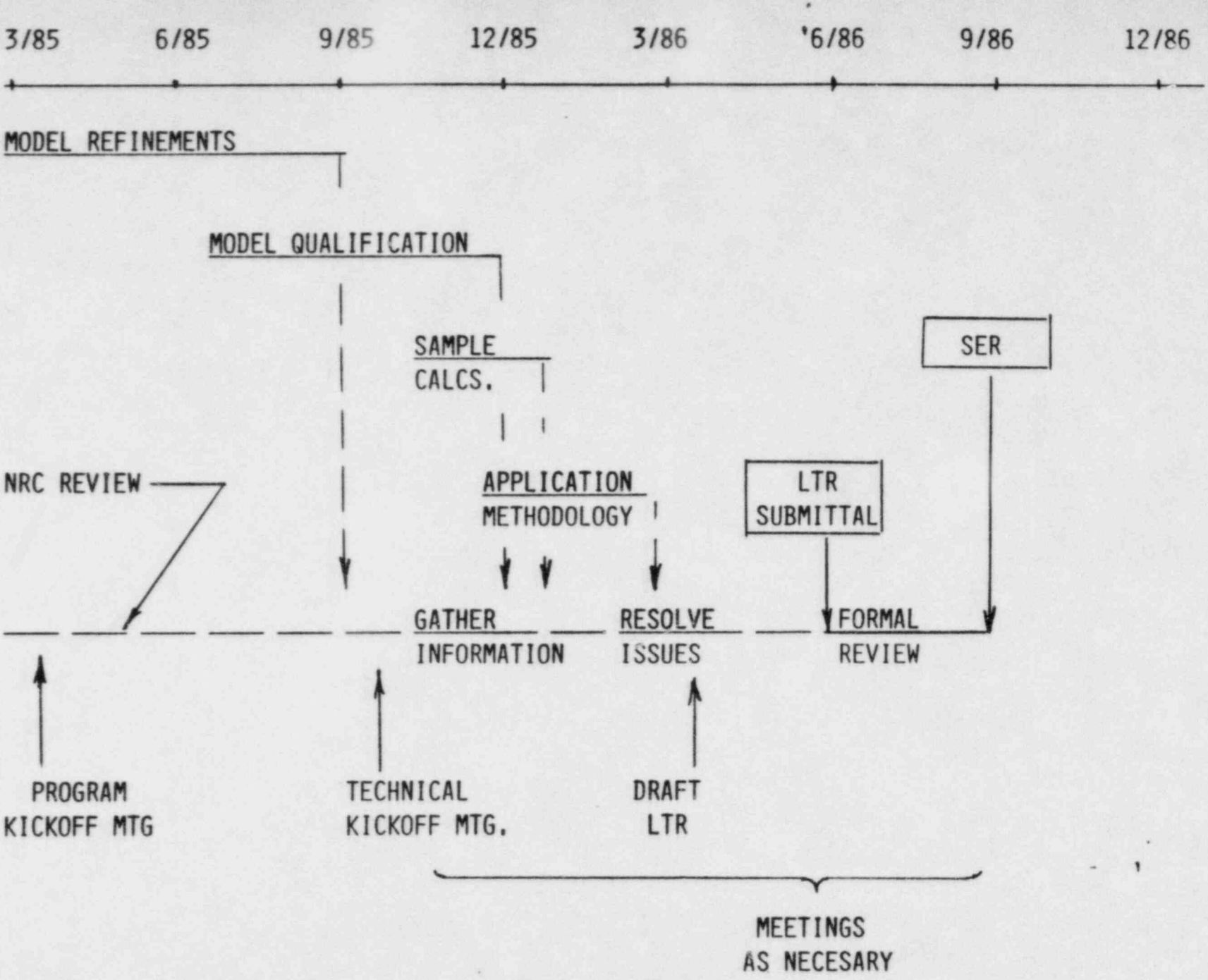

GPUN LOCA MODEL REVIEW

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3/18/85