JUL 26 1982

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DCS
DCS-016

Docket Nos.: 50-416/417

MEMORANDUM FOR: A. Schwencer, Chief, Licensing Branch No. 2, DL

FROM: D. Houston, Project Manager, Licensing Branch No. 2, DL

SUBJECT: SUMMARY OF JULY 14, 1982 MEETING WITH MP&L ABOUT HUMPHREY'S MARK III CONTAINMENT CONCERNS

On July 14, 1982, a meeting was held in Bethesda, Maryland to discuss Mr. John Humphrey's concerns about the Grand Gulf Mark III containment system. These concerns were given in a transcript of a previous meeting held on May 27, 1982, and reported in our meeting summary dated June 16, 1982. This meeting (July 14) was attended by representatives of NRC, MP&L, GE, A-Es and consultants (See Attachment 1).

The purpose of this meeting was to review MP&L's action plan and schedule for resolution of these containment concerns. The details of the action plan and schedule are given in the meeting handout (Attachment 2). A total of 46 issues were listed: 16 to be analyzed and submitted for review by August 19, 1982, an additional 22 by October 1, 1982, and the remaining 8 by November 1, 1982. In the August 19 submittal, MP&L would also provide a justification for full power operation for all items (30) not analyzed. MP&L discussed the benefits of postponing the August 19 submittal. From a licensing position with a tentative Commission briefing scheduled for early in September, we could not grant any slippage in the August submittal date. The staff did agree to review the list of 46 issues and prioritize them so that the August submittal would be more effective.

The staff discussed the NRC interest in a Peer Review Group to evaluate these concerns and the approach to resolution. MP&L was asked to pursue this matter with the other Mark III owners and attempt to establish such a group.

The forthcoming meetings in San Jose, California were discussed. On July 22, GE and the BWR Owner's Group will meet with Mr. Humphrey. NRC was invited to attend as an observer and the Containment Systems Branch indicated they would send a representative. On July 29 and 30, the ACRS subcommittee on Fluid Dynamics will meet to discuss these same containment concerns. A tentative agenda is attached (Attachment 3). A detailed agenda for Item VII of the ACRS meeting is given in the last three pages of the MP&L handout (Attachment 2).

D. Houston, Project Manager
Licensing Branch No. 2
Division of Licensing

Attachments: As stated
cc: See next page

OFFICE			LB#2:DL			LB#2:DL	
SURNAME			DHouston:kab			ASchwencer	
DATE			7/ /82			7/ /82	

MEETING SUMMARY DISTRIBUTION:

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J. Kudrick
F. Eltawila
C. Hale (Reg. IV)
D. Bucci (ACRS)
G. Quittschreiber (ACRS)
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Mr. Alan G. Wagner
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Attendance List

NRC-MP&L MEETING ON CONTAINMENT CONCERNS

July 14, 1982

Bethesda, MD

NRC

M. Fields
J. Kudrick
F. Eltawila
C. Hale (Region IV)
D. Bucci (ACRS)
G. Quittschreiber (ACRS)
D. Houston

MP&L

J. Richardson
S. Hobbs
L. Dale
B. Evans

Nutech

O. Williams

NNC

L. Kornblith

GE

L. Richardson
H. Townsend
M. Davis
L. Koke
A. Smith
D. Gluntz
R. Villa

Bechtel

P. Kochis
D. Fouts
R. Trickovic
O. Doyle

Quadrex

R. Valandani

Attachment 2

GGNS/NRC MEETING
HUMPHREY CONCERNS
JULY 14, 1982

- INTRODUCTION
- MP&L ACTION PLAN
  - DESCRIPTION OF PROPOSED ACTION
  - SCHEDULE
- ADDITIONAL HUMPHREY CONCERNS (6/17/82 LETTER)
- ACRS AGENDA/PRESENTATIONS
  - NSSS/AE INTERFACE
  - GENERIC EFFORTS/REVIEW GROUPS
- SUMMARY

MP&L 7/16/82 SUBMITTAL

ACTION PLAN MATRIX

Cross References Action Plans to Original Issues and NRC Information Requests

ACTION PLAN

- Lists Issues Covered
- Action Planned to Resolve
- Schedule for Completion

JUSTIFICATION FOR FULL POWER LICENSE

Provides Justification for Full Power License for Issues not Scheduled for Submittal on 8/19/82.

NEW ISSUES RESOLUTION

Provides Responses to New Issues from 6/17/82 Letter from Humphrey to NRC

MAJOR CATEGORIES

I. LOCAL ENCROACHMENTS

II. PERTURBATIONS IN LOAD DEFINITION CAUSED BY ANNULAR VENTS

III. UNACCOUNTED FOR RELIEF VALVE EFFECTS

IV. SUPPRESSION POOL TEMPERATURE STRATIFICATION

V. DRYWELL TO CONTAINMENT BYPASS LEAKAGE EFFECTS

VI. RHR PERMISSIVE ON CONTAINMENT SPRAY

VII. CONTAINMENT PRESSURE RESPONSES

VIII. CONTAINMENT AIRMASS EFFECTS

IX. DRYWELL AIRMASS EFFECTS

X. WEIRWALL OVERFLOW

XI. OPERATIONAL CONTROL OF DRYWELL TO CONTAINMENT DIFFERENTIAL PRESSURE

XIV. CONTAINMENT SPRAY BACKFLOW

XVI. EFFECT OF SUPPRESSION POOL LEVEL ON TEMPERATURE MEASUREMENT

XIX. EFFECTS OF CHUGGING FROM LOCAL ENCROACHMENTS AND ADDITIONAL SUBMERGENCE

I. LOCAL ENCROACHMENTS

1. FURNISH DETAILS OF 1-DIMENSIONAL ANALYSIS WHICH PREDICTED 20% INCREASE IN POOL SWELL VELOCITY.

   OCTOBER 1, 1982

2. USE 2-DIMENSIONAL CODE TO MAKE BETTER PREDICTIONS OF POOL SWELL VELOCITY.
   - ADD BUBBLE MODEL TO SOLA
   - SHOW POOL VELOCITY DECREASES NEAR ENCROACHMENTS
   - USE EMPIRICAL DATA TO ESTABLISH BREAKTHROUGH

   OCTOBER 1, 1982

3. EVALUATE NEW SUBMERGED STRUCTURE LOADS BASED UPON NEW POOL VELOCITY PROFILES.
   - COMPARE POOL VELOCITIES NEAR ENCROACHMENTS WITH CLEAN POOL
   - SHOW LOADS WITHIN CURRENT DESIGN BASIS

   NOVEMBER 1, 1982

5. EVALUATE BOUNDING LOADS ON HCU SUPPORT STEEL PROVIDED BY LATERAL MOVEMENT OF POOL SWELL FROTH.

   OCTOBER 1, 1982

II. PERTURBATIONS IN LOAD DEFINITION CAUSED BY ANNULAR VENTS

1. EVALUATE A HARDWARE MODIFICATION WHICH SEALS THE VENT PRODUCED BY THE ANNULUS BETWEEN THE SAFETY RELIEF VALVE DISCHARGE LINE (SRVDL) AND THE SRVDL SLEEVE.

2. SEAL IS AN EXPANDABLE ELASTOMER.

3. SEAL WILL WITHSTAND MAXIMUM TEMPERATURE PRESSURE, RADIATION AND OTHER ENVIRONMENTAL PARAMETERS.

OCTOBER 1, 1982

III. RHR HEAT EXCHANGER RELIEF VALVE EFFECTS

1. CALCULATE VENT CLEARING LOADS FOR RHR HEAT EXCHANGER RELIEF VALVES.
   OCTOBER 1, 1982

2. PROVIDE DETAILED INFORMATION ON OPERATION, ROUTING, DESIGN CAPACITY, AND PERFORMANCE OF ALL RELIEF VALVES WHICH DISCHARGE TO THE SUPPRESSION POOL.
   AUGUST 19, 1982

3. PROVIDE DATA ON DISCHARGE SUBMERGENCE VERSUS CONDENSATION EFFECTIVENESS.
   OCTOBER 1, 1982

4. PERFORM FAILURE MODES EFFECTS ANALYSES ON RHR SYSTEM PRESSURE CONTROLLER.
   AUGUST 19, 1982

5. CALCULATE FIRST AND SECOND POP ACTUATION LOADS FOR THE RHR HEAT EXCHANGER RELIEF VALVE.
   OCTOBER 1, 1982

6. EVALUATE THERMAL DISCHARGE PLUME INTO THE SUPPRESSION POOL.
   OCTOBER 1, 1982

IV. SUPPRESSION POOL TEMPERATURE STRATIFICATION

1. SUBMIT ANALYSIS DEMONSTRATING A SUPPRESSION POOL MAXIMUM INCREASE OF 6°F IF THE DRYWELL POOL IS FORMED.

   AUGUST 19, 1982

2. PREPARE A STUDY DOCUMENTING MAJOR CONSERVATISMS IN THE SUPPRESSION POOL TEMPERATURE ANALYSIS.

   - QUANTIFY INDIVIDUAL CONSERVATISMS
   - SHOW OVERALL CONSERVATISM IS LARGE

   OCTOBER 1, 1982

3. CALCULATE EFFECTS OF FAILURE TO RECOVER THE DRYWELL AIRMASS.

   OCTOBER 1, 1982

4. COMPLETE ANALYSIS TO QUANTIFY THE EFFECT ON CONTAINMENT RESPONSE OF HIGHER SUPPRESSION POOL SURFACE TEMPERATURE.

   OCTOBER 1, 1982

5. PREDICT THE MAXIMUM DIFFERENCE BETWEEN THE SUPPRESSION POOL BULK TEMPERATURE AND THE RHR HEAT EXCHANGER INLET TEMPERATURE.

   OCTOBER 1, 1982

6. COMPLETE ANALYSES OR PROPOSE A TEST PLAN TO EVALUATE SUPPRESSION POOL TEMPERATURE STRATIFICATION PRODUCED BY SWITCHING TO CONTAINMENT SPRAY; AND UPPER POOL DUMP. TESTS WOULD ALSO COVER INTERACTION OF RHR SUCTION AND DISCHARGE.

   AUGUST 19, 1982

7. DEVELOP CRITERIA FOR SWITCHING CONTAINMENT SPRAY TO SUPPRESSION POOL COOLING MODE AND VICE VERSA.

   OCTOBER 1, 1982

8. DOCUMENT THAT CONTAINMENT SPRAY CAN WITHSTAND CYCLIC OPERATION.

   NOVEMBER 1, 1982

V. DRYWELL TO CONTAINMENT BYPASS LEAKAGE EFFECTS

1. COMPLETE A SPECTRUM OF BYPASS LEAKAGE ANALYSES TO CONFIRM ADEQUACY OF GGNS REPORTED CAPABILITY.

   NOVEMBER 1, 1982

2. ASSESS THE POTENTIAL FOR POCKETING OF HYDROGEN WHICH LEAKS THROUGH THE DRYWELL.

   AUGUST 19, 1982

3. EVALUATE THE NEED FOR REDUCING ALLOWABLE LEAKAGE BASED UPON A PRESSURE OF 6 PSIG IN THE DRYWELL.

   NOVEMBER 1, 1982

4. ESTABLISH THAT DRYWELL TEMPERATURE RESPONSE WILL NOT EXCEED 330°F WHEN DRYWELL PRESSURE IS LESS THAN 2 PSIG.

   NOVEMBER 1, 1982

VI. RHR PERMISSIVE ON CONTAINMENT SPRAY

1. SUBMIT DRAWINGS SHOWING EQUIPMENT LOCATED NEAR RECOMBINERS.
   AUGUST 19, 1982

2. SUBMIT DRAWINGS SHOWING AREA ARRANGEMENT ABOVE THE RECOMBINERS.
   AUGUST 19, 1982

3. SUMMARIZE CRITERIA USED FOR ACTUATING THE CONTAINMENT SPRAYS.
   AUGUST 19, 1982

VII. CONTAINMENT PRESSURE RESPONSES

1. COMPLETE ANALYSIS TO QUANTIFY THE EFFECT ON CONTAINMENT RESPONSE OF HIGHER SUPPRESSION POOL SURFACE TEMPERATURE.

   OCTOBER 1, 1982

2. QUANTIFY THE CONSERVATISM INHERENT IN ASSUMING THERMAL EQUILIBRIUM BETWEEN THE SUPPRESSION POOL AND THE CONTAINMENT ATMOSPHERE.

   OCTOBER 1, 1982

3. PROVIDE A LIST OF ASSUMPTIONS USED TO CALCULATE THE ENVIRONMENTAL PARAMETERS.

   OCTOBER 1, 1982

VIII. CONTAINMENT AIRMASS EFFECTS

1. QUANTIFY CONSERVATISMS IN EXISTING CONTAINMENT PRESSURE AND TEMPERATURE RESPONSE ANALYSES.

   NOVEMBER 1, 1982

2. COMPLETE REALISTIC ANALYSES TO DEMONSTRATE THAT EVEN WITH ALL PARAMETERS AT WORST CREDIBLE VALUES, THE EXISTING CONTAINMENT DESIGN PRESSURE IS ACCEPTABLE.

   - CREDIT FOR HEAT SINKS
   - AIR SPACE-TO-SUPPRESSION POOL TEMPERATURE DIFFERENCES

   NOVEMBER 1, 1982

3. ALTER THE GGNS TECHNICAL SPECIFICATION LIMITING CONDITIONS FOR CONTAINMENT TO AUXILIARY BUILDING DIFFERENTIAL PRESSURE.

   COMPLETED

4. CALCULATE MINIMUM AIR MASS WHICH CAN EXIST INSIDE CONTAINMENT AND EVALUATE THE WORST CASE NEGATIVE PRESSURE TRANSIENT WHICH COULD RESULT FROM THIS LOW AIR MASS.

   OCTOBER 1, 1982

IX. FINAL DRYWELL AIRMASS EFFECTS

1. COMPLETE A REALISTIC ANALYSIS TO EVALUATE MAXIMUM PRESSURE INCREASE ATTRIBUTABLE TO THE DRYWELL AIR REMAINING IN THE CONTAINMENT.
   - CONTAINMENT HEAT SINKS
   - CONTAINMENT SPRAYS

   OCTOBER 1, 1982

2. EVALUATE EFFECTS OF MAXIMUM LEAKAGE ON CONTAINMENT RESPONSE.

   OCTOBER 30, 1982

3. CONFIRM THAT SBA AND SORV ANALYSES ARE TREATED AS DESIGN BASIS ACCIDENTS.

   AUGUST 19, 1982

X. WEIRWALL OVERFLOW

1. PERFORM REVISED ANALYSIS TO ASSESS POTENTIAL FOR WEIRWALL OVERFLOW. THE NEW ANALYSIS WILL CONSIDER SIGNIFICANT FACTORS WHICH AGGRAVATE OVERFLOW.

   AUGUST 19, 1982

2. PROVIDE DETAILS OF INTERFACE DOCUMENT WHICH CONTROLS DESIGN OF THE WEIR WALL.

   AUGUST 19, 1982

XI. OPERATIONAL CONTROL OF DRYWELL TO CONTAINMENT DIFFERENTIAL PRESSURE.

1. DEFINE MAXIMUM POSSIBLE DIFFERENCES BETWEEN THE WEIR ANNULUS AND SUPPRESSION POOL LEVELS.

   AUGUST 19, 1982

2. EVALUATE CHANGES IN THE HYDRODYNAMIC LOADS WHICH MAY RESULT FROM MAXIMUM POSSIBLE DIFFERENCES.

   AUGUST 19, 1982

XIV. CONTAINMENT SPRAY BACKFLOW

1. QUANTIFY THE MAXIMUM BACKFLOW WHICH CAN OCCUR AND ASSESS ASSOCIATED EFFECTS ON CONTAINMENT RESPONSE.

   OCTOBER 1, 1982

2. EVALUATE POSSIBILITY OF ADDING INTERLOCKS TO PREVENT SIMULTANEOUS ACTUATION OF THESE VALUES.

   AUGUST 19, 1982

XVI. EFFECT OF SUPPRESSION POOL LEVEL ON TEMPERATURE MEASUREMENT

1. REVISE EMERGENCY PROCEDURES TO REQUIRE OPERATOR TO CHECK POOL LEVEL PRIOR TO READING BULK POOL TEMPERATURE.

   AUGUST 19, 1982

XIX. EFFECTS OF CHUGGING FROM LOCAL ENCROACHMENTS AND ADDITIONAL SUBMERGENCE

1. SUBMIT INFORMATION SHOWING THAT CHUGGING IS MORE DEPENDENT ON MASS FLUX.

   OCTOBER 1, 1982

2. QUANTIFY TO THE MAXIMUM EXTENT POSSIBLE INERTIAL IMPEDANCE EFFECTS ON CHUGGING LOADS.

   OCTOBER 1, 1982

3. EVALUATE ADEQUACY OF AVAILABLE MODELS FOR PREDICTING IMPACT OF LONGER ACOUSTIC PATHS ON LOAD DEFINITION.

   OCTOBER 1, 1982

GGNS GE/BECHTEL INTERFACE

I. GE

A. GE Containment Design Responsibilities

B. General Design and Interface Documents

1. Specifications

A) A62 - Requirements
B) A42 - Recommendations
C) A22 - Information

2. Design Drawings and Other Software

C. Design Interface Process

1. Design Freeze

2. Controlled Communication Process

3. Changes to Design Requirements
ECA, ECN, FDI, FDDR, AID, SIL

D. Special Interface Programs

E. BOP Interface Review

1. Audit Basis 1 or 2/year

2. Random selection of specification compliance

F. Installation and Preop. Testing

G. Operational Readiness Review

II. BECHTEL

A. BECHTEL CONTAINMENT DESIGN RESPONSIBILITIES

B. DEMONSTRATION OF GOOD INTERFACE

1. REVIEW FOR ADEQUACY OF DESIGN CONTROL/QA PROGRAM
   - AECM 82/119, MARCH 26, 1982

2. INDEPENDENT DESIGN REVIEW - CYGNA

3. NRC STRUCTURAL AUDIT

C. INTERFACE CONTROL

1. INTERFACE DOCUMENTED AND APPROVED BY MP&L IN PROJECT PROCEDURES MANUAL

2. DESIGN CRITERIA

   - INCORPORATES NSSS INTERFACE
   - REVIEWED AND APPROVED BY CHIEF ENGINEER
   - MP&L APPROVES

3. IMPLEMENTING PROCEDURES

   A. PROJECT ENGINEERING PROCEDURES MANUAL

   B. AUTOMATIC DOCUMENT CONTROL REGISTER

      - CODE 1; REVIEWED, NO COMMENTS
      - CODE 2; COMMENTS FOR GE INFORMATION
      - CODE 3; COMMENTS REQUIRING RESPONSE

   C. GE COMPUTERIZED LOG FOR TRACKING CORRESPONDENCE

   D. CRITICAL OPEN ITEMS SUBJECT OF MP&L CORRESPONDENCE/MONTHLY MEETINGS

4. Over 113 Design Review Meetings with Senior B/GE/MP&L personnel. All recorded in meeting minutes.
   - Includes special task force on conceptional design

5. Monthly Review Meeting During Critical Period

6. Off Project Reviews

   A. Chief Engineer's Staff

      - Initial Design
      - Changes in Design
      - Audits (2 per year)

   B. Bechtel Power Audit (Similar to GE Interface Review)

7. Mechanical Group Review

   - Review all GE Specifications to verify implementation/compliance
   - Problem Areas Resolved/some modifications made

III. MP&L

A. Continuous involvement and approval of Interface Document (PPM)

B. Monthly meetings to insure proper interface

C. Mark III Owners Group

1. History

2. Purpose

3. Participants

4. Issues Discussed

5. Excellent Interface Forum

Attachment 3

ACRS FLUID DYNAMICS SUBCOMMITTEE MEETING
SAN JOSE, CALIFORNIA
JULY 29-30, 1982

Revised 7/19/82

- Tentative Schedule of Presentations -

July 29, 1982

I.	Subcommittee Introduction - M. Plesset, Chairman	8:30 am
II.	Comments by J. Humphrey	8:45 am
III.	NRC Presentations	9:30 am
	A. Introduction	
	1. Background 2. Problem Definition	
	**** Break ****	10:15 am
	B. Decription and Resolution Approach	10:30 am
	1. Application to Containment Type (Mark I-III) 2. Approach for Resolution 3. Schedule	
	**** Lunch ****	11:30 - 12:30 pm
	C. NRC Overview of Specific Concerns	12:30 am
	**** Break ****	2:30 pm
IV.	Mississippi Power and Light Presentation	2:45 pm
	A. Introduction B. Detailed Action Plan	
	**** Recess ****	5:00 pm

July 30, 1982

V.	Reconvene	8:30 am
VI.	General Electric Presentation	8:35 am
	° GESSAR II/STRIDE Containment Design	
	**** Break ****	10:30 am
VII.	NSSS/AE Interaface	10:45 am
	A. Grand Gulf Plant - MP&L/Bechtel/GE B. STRIDE - GE	
VIII.	J. Humphrey Remarks	11:45 am
IX.	Lunch	12:45 - 1:45 pm

X.	Illinois Power Presentation ° Schedule and Approach for Resolving Humphrey Concerns on Clinton Plant	1:45 - 2:15 pm
XI.	Cleveland Electric Illuminating ° Schedule Approach for Resolving Humphrey Concerns on Perry Plant	2:15 - 2:45 pm
XII.	Discussion and Adjourn	2:45 pm