



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

April 7, 1994

Docket No. 52-002

APPLICANT: ABB-Combustion Engineering, Inc. (ABB-CE)
PROJECT: ABB-CE System 80+
SUBJECT: PUBLIC MEETING OF MARCH 21, 1994, REGARDING THE VERIFICATION OF DESIGN CALCULATIONS FOR THE ABB-CE SYSTEM 80+ STANDARD PLANT DESIGN

On March 21, 1994, a public meeting was held at the U.S. Nuclear Regulatory Commission (NRC) headquarters offices in Rockville, Maryland, between representatives of ABB-CE and the NRC. Enclosure 1 provides a list of attendees.

The purpose of the meeting was to discuss the status of the independent design verification of safety analysis calculations to support CESSAR-DC. ABB-CE stated that the bases for their proposed independent review starts with the complete independent review of those non-repetitive, limiting safety analyses that set the design hardware parameters for the engineered safety features. In addition, ABB-CE will independently review all base decks for Chapters 6 and 15 design bases events. Enclosure 2 is the hand-out material presented by ABB-CE at the meeting.

The following commitments were made at the meeting:

- (1) The staff will issue a meeting summary that will include an assessment of ABB-CE's proposed scope of analyses of limiting Chapters 6 and 15 events for which ABB-CE intends to perform independent verification.
- (2) ABB-CE will evaluate if Chapters 5 and 19 analyses will need independent verification. They will respond by Friday, March 25, 1994.
- (3) ABB-CE and the staff will discuss whether the non-limiting events need independent verification and if this is a deviation from NQA-1.
- (4) ABB-CE will document in CESSAR-DC the scope of quality assurance (QA) work performed on non-DBA analyses (e.g., second person/supervisory review).
- (5) ABB-CE will send a letter to the NRC upon completion of the independent verification activities identifying any significant findings. ABB-CE stated it is their intent to have the independent verification completed before the final version of the final safety evaluation report is issued.

Subsequent to the meeting, several conference calls between the NRC staff and ABB-CE were held to clarify ABB-CE's independent review plan. The staff agrees that the independent review should cover all the non-repetitive

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April 7, 1994

design-bases analyses presented in CESSAR-DC Chapters 6 and 15. The staff also agrees that, in addition, the independent review should cover all non-repetitive safety analyses that set safety-related design hardware limits (including software such as setpoints) outside of Chapters 6 and 15. The staff anticipates that further discussions will be necessary to clarify the independent review process.

(Original signed by)

Stewart L. Magruder, Project Manager
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Associate Directorate for Advanced Reactors
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Enclosures:
As stated

cc w/enclosures:
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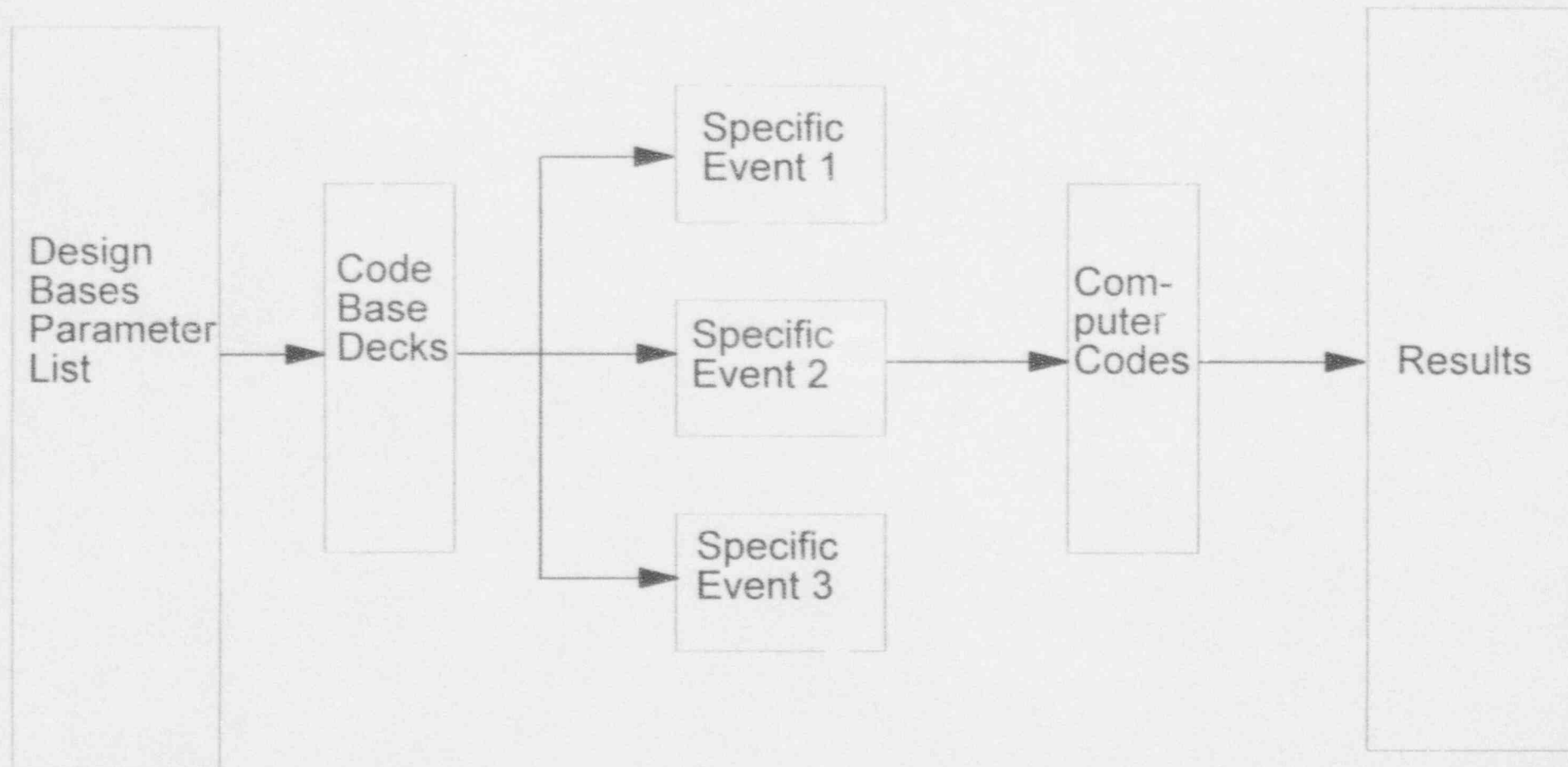
ABB-CE SYSTEM 80+
DESIGN VERIFICATION MEETING ATTENDEES
March 21, 1993

<u>Name</u>	<u>Organization</u>
M. Franovich	NRC
R. Borchardt	NRC
C. Carpenter	NRC
S. Sun	NRC
T. Rudek	ABB-CE
F. Carpentino	ABB-CE
J. Longo	ABB-CE
C. Brinkman	ABB-CE
R. McIntyre	NRC
R. Gramm	NRC
F. Allenspach	NRC
P. Lang	DOE

Enclosure 1

STATUS OF SAFETY ANALYSIS CALCULATIONS
TO SUPPORT CESSAR-DC

Analysis Process



QA STATUS

CESSAR-DC ... CHAPTERS 6 & 15

- o ALL COMPUTER CODES ARE VERIFIED AND PREVIOUSLY APPROVED BY NRC.
- o ALL COMPUTER BASEDECKS ARE BEING INDEPENDENTLY REVIEWED.
- o LIMITING EVENTS ARE BEING INDEPENDENTLY REVIEWED:

<u>#FSAR</u>	-	<u>LIMITING EVENT</u>
6.2	-	MSLB CONTAINMENT P/T
6.3	-	LB LOCA ECCS PERFORMANCE
15.1	-	MAIN STEAMLINER BREAK EXCESS LOAD
15.2	-	FEEDWATER LINE BREAK LOSS OF CONDENSER VACUUM
15.3	-	LOCKED ROTOR
15.4	-	CEA EJECTION
15.6	-	SGTR W/LOOP & STUCK ADV

- o NON-LIMITING EVENTS ARE VERIFIED BY COMPARISON WITH SYSTEM 80/PALO VERDE TO ASSURE RESULTS FOLLOW EXPECTATIONS.

CESSAR-DC ... SAFETY ANALYSIS
DESIGN BASIS ANALYSIS: CODES

O CONTAINMENT P/T (6.2)

CEFLASH-4A
FLOOD-MOD2
SGN III
CONTRANS

O LOCA

CEFLASH-4A
COMPERC-II
STRIKIN-II
PARCH
HCROSS
FATES-3
COMZIRC

CEFLASH-4AS
CELDA
NATFLOW

C NON-LOCA (15.X)

CESEC=III
CETOP=D
TORC
HERMITE
COAST
STRIKIN-II
FATES-3

CHAPTER 6 (6.2)

CESSAR SECTION	DOCUMENT NUMBER	DESCRIPTION	LIMITING Y OR N
6.2	00000-FS-C-037 Rev.00	LOCA BLOWDOWN M/E CALC AND CEFLASH-4A BASEDECK	N
6.2	00000-FS-C-038 Rev.00	LOCA POST BLOWDOWN M/E CALC AND FLOOD BASEDECK	N
6.2	00000-FS-C-039 Rev.00	LOCA CONTAINMENT P/T CALC AND CONTRANS BASEDECK	N
6.2	00000-FS-C-040 Rev.00	MSLB M/E AND CONTAINMENT P/T CALC AND SGN III BASEDECK	Y
6.2	00000-FS-C-060 Rev.00	LOCA CONTAINMENT P/T ANALYSIS	N
6.2	00000-FS-C-061 Rev.00	MSLB CONTAINMENT P/T ANALYSIS (3800 MWT)	Y
6.2	00000-FS-C-062 Rev.00	LONG TERM LOCA CONTAINMENT P/T ANALYSIS	N
6.2	00000-FS-C-063 Rev.00	ENERGY BALANCE CALC	N
6.2	00000-FS-C-069 Rev.00	CONTAINMENT ANNULUS P/T ANALYSIS (3800 MWT)	N
6.2	00000-FS-C-114 Rev.00	MSLB CONTAINMENT P/T ANALYSIS (3914 MWT)	Y
6.2	00000-FS-C-130 Rev.00	CONTAINMENT ANNULUS P/T ANALYSIS (3914 MWT)	N
TOTAL 6.2			3 YES 8 NO

CHAPTER 6 (6.3)

CESSAR SECTION	DOCUMENT NUMBER	DESCRIPTION	LIMITING Y OR N
6.3	00000-FS-C-008 Rev.00	EVAL OF IMPACT OF TUBE PLUGGING ON LG BREAK LOCA ANAL	N
6.3	00000-FS-C-016 Rev.00	ALWR LARGE BREAK ANALYSIS	N
6.3	00000-FS-C-129 Rev.00	CONTAINMENT ANAL TO SUPPORT SCS OPERABILITY	N
6.3	A-S80+-FE-0006 Rev.00	LBLOCA ECCS PERF ANAL BLOWDOWN HYDRAUL (3992 MWT)	Y
6.3	A-S80+-FE-0007 Rev.00	LBLOCA ECCS PERF ANAL REFLOOD HYDFAUL & CORE-WIDE OXIDATION (3992 MWT)	Y
6.3	A-S80+-FE-0008 Rev.00	LBLOCA ECCS PERF ANAL HOT ROD TEMP CALC (3992 MWT)	Y
6.3	A-S80+-FE-0009 Rev.00	SBLOCA ECS PERF ANAL BLOWDOWN & REFILL CALC (3992 MWT)	N
6.3	A-S80+-FE-0010 Rev.00	SBLOCA ECCS PERF ANAL HOT ROD TEMP CALC (3992 MWT)	N
6.3	A-S80+-FE-0011 Rev.00	POST-LOCA LONG TERM COOLING ANALYSIS (3992 MWT)	N
6.3	A-S80+-FE-0012 Rev.00	FATES/FUEL PERFORMANCE ANALYSIS (3992 MWT)	Y
6.3	A-S80+-FE-0013 Rev.00	ANAL OF BORON DILUTION DURING SMALL BREAK LOCA	N
6.3	SS-TML-049 Rev.00	BEST-ESTIMATE SMALL BREAK LOCA BASEDECK FOR CE ALWR	N
6.3	SS-TML-045 Rev.00	ALWR LARGE BREAK SCOPING ANALYSIS	N
6.3	SS-TML-059 Rev.00	CEFLASH-4A BASEDECK FOR LBLOCA (3914 MWT)	Y
6.3	SS-TML-060 Rev.00	COMPERC-II BASE DECK FOR LARGE BREAK LOCA REFILL/REFLOOD	Y
6.3	SS-TML-061 Rev.00	STRIKIN-II BASE DECK FOR LARGE BREAK LOCA HOT ROD HEATUP	Y

CHAPTER 6 (6.3)

CESSAR SECTION	DOCUMENT NUMBER	DESCRIPTION	LIMITING Y OR N
6.3	SS-TML-063 Rev.00	SYS80+ LARGE BREAK LOCA SIT STUDY	N
6.3	SS-TML-064 Rev.00	PARCH & HCROSS BASE DECKS FOR LARGE BREAK STEAM COOLING	Y
6.3	SS-TML-065 Rev.00	CEFLASH-4A ANAL: LBLOCA ECCS PERFORMANCE ANAL 4/90 AMEND G	Y
6.3	SS-TML-066 Rev.00	COMPERC II & REFLOOD HTC ANAL: LBLOCA ECCS PERF ANAL 4/90	Y
6.3	SS-TML-067 Rev.00	STRIKIN-II ANAL FOR LBLOCA ECCS PERF ANAL 4/90 AMEND G	Y
6.3	SS-TML-068 Rev.00	CORE-WIDE CLADDING OXIDATION ANALYSIS FOR THE LBLOCA ECCS PERF. ANAL	N
6.3	SS-TML-069 Rev.00	CEFLASH 4AS BASEDECK FOR SBLOCA ECCS PERFORMANCE ANAL	N
6.3	SS-TML-070 Rev.00	COMPERC-II SMALL BREAK LOCA REFLOOD ANALYSIS	N
6.3	SS-TML-071 Rev.00	SYSTEM 80+ SMALL BREAK LOCA TEMPERATURE CALCULATION	N
6.3	SS-TML-072 Rev.00	POST-LOCA LONG TERM COOLING ANALYSIS	N
6.3	SS-TML-073 Rev.00	ANAL SUMMARY & REPORT PREP FOR LBLOCA ECCS PERF ANAL (3800 MWT)	N
6.3	SS-TML-074 Rev.00	ANAL SUMMARY & REPORT PREP FOR SBLOCA ECCS PERF ANAL (3800 MWT)	N
6.7	00000-FS-C-145 Rev.00	TLOFW ANALYSIS	N
TOTAL 6.3			11YES 18 NO

CHAPTER 15

CESSAR SECTION	DOCUMENT NUMBER	DESCRIPTION	LIMITING Y OR N
15.0	00000-FS-C-003 Rev 00	VERIFICATION OF CESEC MODELS FOR CODE CERTIFICATION	Y
15.0	00000-FS-C-003 Rev 01	VERIFICATION OF CESEC MODELS FOR LICENSING ANALYSIS	Y
15.0	00000-FS-C-018 Rev 00	JUSTIFICATION OF CODE TESTING USING AN UNCERTIFIED CESEC-III CODE	Y
15.0	00000-FS-C-019 Rev 00	CERTIFICATION OF CESEC-III CODE VERSION 88120 FOR LICENSING	Y
15.0	00000-FS-C-032 Rev 00	CESEC-III BASEDECK (3800 MWT)	Y
15.0	00000-FS-C-032 Rev 01	CESEC-III BASEDECK (3914 MWT)	Y
15.0	00000-FS-C-041 Rev 00	CERTIFICATION OF CESEC III FOR SAFETY RELATED DESIGN APPLICATIONS	Y
15.0	00000-FS-C-041 Rev 01	CERTIFICATION OF CESEC III FOR SAFETY RELATED DESIGN APPLICATIONS	Y
15.0	00000-FS-C-046 Rev 00	RCP COASTDOWN TRANSIENTS AND COAST BASEDECK (3800 MWT)	Y
15.0	00000-FS-C-046 Rev 01	RCP COASTDOWN TRANSIENTS AND COAST BASEDECK (3914 MWT)	Y
15.0	00000-FS-C-050 Rev 00	VERIFICATION OF IBM-PC VERSION OF COAST FOR DESIGN & SAFETY	Y
15.0	00000-FS-C-085 Rev 00	STRIKIN-II BASEDECK FOR NON-LOCA TRANSIENT ANAL (3800 MWT)	N
15.0	00000-FS-C-085 Rev 01	STRIKIN-II BASEDECK FOR NON-LOCA TRANSIENT ANAL (3914 MWT)	Y
15.0	18386-NRE-005 Rev 00	TORC AND CETOP MODELS (FOUR PUMP)	Y
15.0	18386-NRE-007 Rev 00	REACTOR CORE DESIGN DATA (HEP**ITE BASEDECK)	Y

CHAPTER 15

CESSAR SECTION	DOCUMENT NUMBER	DESCRIPTION	LIMITING Y OR N
15.1	00000-FS-C-119 Rev.00	STEAM LINE BREAK ANALYSIS (3914 MWT)	Y
15.1	00000-FS-C-120 Rev.00	INCREASED HEAT REMOVAL BY SECONDARY SIDE ANALYSIS (IOSGADV)	Y
15.2	00000-FS-C-067 Rev.00	FEEDWATER LINE BREAK EVENT (3800 MWT)	Y
15.2	00000-FS-C-067 Rev.01	FEEDWATER LINE BREAK (3914 MWT)	Y
15.2	00000-FS-C-067 Rev.02	FEEDWATER LINE BREAK (3914 MWT/REVISED)	Y
15.2	00000-FS-C-068 Rev.00	LOSS OF CONDENSER VACUUM (3800 MWT)	Y
15.2	00000-FS-C-115 Rev.00	LOSS OF CONDENSER VACUUM (3914 MWT)	Y
15.3	00000-FS-C-076 Rev.00	LOSS OF REACTOR COOLANT FLOW EVENT ANALYSIS (3800 MWT)	N
15.3	00000-FS-C-076 Rev.01	LOSS OF REACTOR COOLANT FLOW EVENT ANALYSIS (3914 MWT)	N
15.3	00000-FS-C-077 Rev.00	SYSTEM 80+ RCP LOCKED ROTOR/SHEARED SHAFT ANALYSIS (3800 MWT)	Y
15.3	00000-FS-C-077 Rev.01	SYSTEM 80+ RCP LOCKED ROTOR/SHEARED SHAFT ANALYSIS (3914 MWT)	Y
15.4	00000-FS-C-078 Rev.00	CEA WITHDRAWAL EVENT (3800 MWT)	N
15.4	00000-FS-C-078 Rev.01	CEA WITHDRAWAL EVENT (3914 MWT)	N
15.4	00000-FS-C-079 Rev.00	SINGLE CEA DROP EVENT (3800 MWT)	N
15.4	00000-FS-C-079 Rev.01	SINGLE CEA DROP EVENT (3914 MWT)	N
15.4	00000-FS-C-080 Rev.00	STARTUP OF AN INACTIVE RCP (3800 MWT)	N

CHAPTER 15

CESSAR SECTION	DOCUMENT NUMBER	DESCRIPTION	LIMITING Y OR N
15.4	00000-FS-C-081 Rev.00	BORON DILUTION EVENT (3800 MWT)	N
15.4	00000-FS-C-081 Rev.01	BORON DILUTION EVFNT (3914 MWT)	N
15.4	00000-FS-C-082 Rev.00	SYSTEM 80+ INADVERTENT LOADING OF A FUEL ASSEMBLY (3800 MWT)	N
15.4	00000-FS-C-083 Rev.00	CEA EJECTION ANALYSIS (3800 MWT)	Y
15.4	00000-FS-C-083 Rev.01	CEA EJECTION ANALYSIS (3914 MWT)	Y
15.5	00000-FS-C-065 Rev.00	PRESSURIZER LEVEL CONTROL SYSTEM MALFUNCTION (3800 MWT)	N
15.5	00000-FS-C-116 Rev.00	PRESSURIZER LEVEL CONTROL SYSTEM MALFUNCTION (3914 MWT)	N
15.6	00000-FS-C-053 Rev.00	SGTR WITHOUT LOOP (3800 MWT)	N
15.6	00000-FS-C-053 Rev.01	SGTR WITHOUT LOOP (3914 MWT)	N
15.6	00000-FS-C-054 Rev.00	SGTR WITH LOOP (3800 MWT)	N
15.6	00000-FS-C-054 Rev.01	SGTR WITH LOOP (3914 MWT)	N
15.6	00000-FS-C-055 Rev.00	SGTR WITH STUCK OPEN ADV AND LOOP (3800 MWT)	Y
15.6	00000-FS-C-055 Rev.01	SGTR WITH STUCK OPEN ADV AND LOOP (3914 MWT)	Y
15.6	00000-FS-C-066 Rev.00	VERIFICATION OF COOL FOR SGTR DESIGN AND SAFETY	Y
15.6	00000-FS-C-074 Rev.00	DOUBLE-ENDED BREAK OF A LETDOWN LINE OUTSIDE OF CONTAINMENT (3800 MWT)	N
15.6	00000-FS-C-074 Rev.01	DOUBLE-ENDED BREAK OF A LETDOWN LINE OUTSIDE OF CONTAINMENT (3914 MWT)	N

TOTAL CH. 15

28 YES 19 NO