UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 22, 2000

LICENSEE: Commonwealth Edison Company

FACILITIES: Byron Station, Units 1 and 2
Braidwood Station, Units 1 and 2

SUBJECT: SUMMARY OF NOVEMBER 21, 2000, MEETING WITH COMMONWEALTH EDISON COMPANY TO DISCUSS REQUEST FOR PLANT SPECIFIC USE OF BEST ESTIMATE LARGE BREAK LOSS OF COOLANT ACCIDENT (BELOCA) ANALYSIS FOR BYRON, UNITS 1 AND 2, AND BRAIDWOOD, UNITS 1 AND 2 (TAC NOS. MB0412, MB0413, MB0410, AND MB0411)

On November 21, 2000, the U. S. Nuclear Regulatory Commission (NRC) staff met with members of the Commonwealth Edison Company (ComEd) and Westinghouse staffs' to discuss ComEd's request for plant specific use of BELOCA for Byron Station, Units 1 and 2 (Byron), and Braidwood Station, Units 1 and 2 (Braidwood). A list of those attending the meeting is provided as Enclosure 1. Enclosure 2 is a copy of the handout used during the meeting.

On October 24, 2000, ComEd submitted its request for plant specific use of a BELOCA analysis. The analysis which is under review, was performed specifically to support the licensee's power uprate request of July 5, 2000. The NRC staff requested the meeting to better understand how the BELOCA methodology was applied to Byron and Braidwood. Although the staff's generic SER approving the BELOCA analysis presented in Westinghouse report WCAP-12945 only considered analyses done specifically for each unit, ComEd proposed to use two licensing basis analyses, with two of the units referencing each analysis.

The licensee presented a discussion of its approach to the development of the BELOCA analyses. For the input parameters used in the BELOCA methodology, each unit was reviewed to determine the extent of the similarities and differences. The conclusions were that the vessel and loop designs were virtually identical. The only major difference between the units is in the steam generators. Byron, Unit 1 and Braidwood, Unit 1, have Babcock and Wilcox "U" tube steam generators. One analysis was done for those two units. A second analysis was done for Byron, Unit 2 and Braidwood, Unit 2, which have Westinghouse D-5 steam generators. Minor differences between the two sites were bounded in the analyses. For tracking purposes as required by 10 CFR 50.46, each of the two models as well as each unit will be tracked separately. Therefore, changes in fuel peak clad temperature for each unit will be evaluated in accordance with the criteria in 10 CFR 50.46 as well as for significant variation (greater than 50°F) from the respective model.

Following the discussion, the NRC staff indicated that the approach used by the licensee for the BELOCA modeling at Byron and Braidwood appeared reasonable. The reporting of model and physical plant changes (per 10 CFR 50.46) proposed by the licensee will assure that potential problems will be identified.

/RA/

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Docket Nos. STN 50-454, STN 50-455,
STN 50-456, and STN 50-457

Enclosures: 1. Meeting Attendees
2. Handout

cc w/encls: See next page

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NRC-001

Following the discussion, the NRC staff indicated that the approach used by the licensee for the BELOCA modeling at Byron and Braidwood appeared reasonable. The reporting of model and physical plant changes (per 10 CFR 50.46) proposed by the licensee will assure that potential problems will be identified.

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STN 50-456, and STN 50-457

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BYRON AND BRAIDWOOD BELOCA MEETING

NOVEMBER 21, 2000

MEETING ATTENDEES

NRC

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M. Chawla
G. Dick
R. Landry (1)
A. Mendiola
F. Orr
J. Staudenmeier (1)

ComEd

J. Bauer
H. Kim
R. Richards

Westinghouse

S. Dederer
J. Petzold

Notes

(1) Part time attendee

ENCLOSURE 1

BEST ESTIMATE LARGE BREAK LOSS OF COOLANT ACCIDENT ANALYSIS PROGRAM FOR

BYRON STATION UNITS 1&2 AND BRAIDWOOD STATION UNITS 1&2

NRC
COMMONWEALTH EDISON
WESTINGHOUSE
MEETING

ROCKVILLE, MD.
NOVEMBER 21, 2000

ENCLOSURE 2

ANALYSIS METHODOLOGY

BACKGROUND

WESTINGHOUSE BEST ESTIMATE LBLOCA METHODOLOGY APPLIED TO SUPPORT A 5% UPRATE IN POWER FOR

BYRON UNITS 1&2 AND BRAIDWOOD UNITS 1&2

PLANT DESIGNS WERE REVIEWED TO DETERMINE EXTENT OF SIMILARITIES/DIFFERENCES

ONLY MAJOR DIFFERENCE FOUND WAS THE STEAM GENERATOR

THIS DIFFERENCE WAS EXPLICITLY MODELED

BYRON STATION UNITS 1&2
AND
BRAIDWOOD STATION UNITS 1&2

SIMILARITIES

VESSEL DESIGNS VERY SIMILAR – SEE FIGURE 3.2-1

17x17 FUEL LATTICE

TOP HAT UPPER SUPPORT PLATE

TCOLD UPPER HEAD

17x17 GUIDE TUBE DESIGN

FLAT LOWER SUPPORT PLATE

NO DIFFUSER PLATE

NEUTRON PADS

UPFLOW BARREL/BAFFLE DESIGN

UPPER AND LOWER TIE PLATES

LOOP DESIGNS SIMILAR

4 LOOPS PLANTS WITH SAME OVERALL LOOP LAYOUT

SAME ACCUMULATORS

SAME REACTOR COOLANT PUMPS

SAME PRESSURIZER

SAME SAFETY INJECTION PERFORMANCE

SAME CONTAINMENT DATA

SAME OPERATING PLANT CONDITIONS
(TAVG, TDF, ECCS CONDITIONS)

BYRON STATION UNITS 1&2
AND
BRAIDWOOD STATION UNITS 1&2

DIFFERENCES

VESSEL

MINOR DIFFERENCES IN VOLUME/METAL MASS

LOWER PLENUM < 1% DIFFERENT IN VOLUME
< 2% DIFFERENT IN METAL MASS

MODELED MAXIMUM WATER VOLUME AND MAXIMUM METAL MASS

CONSERVATIVELY DELAYS LP REFILL
MAXIMIZES LP REFLOOD PERIOD BOILING

VESSEL WALL ABOVE LOOP – 11 INCHES VS. 9.5 INCHES
MODELED THICKER VESSEL WALL IN ANALYSIS

UPPER PLENUM < 0.5% DIFFERENT IN VOLUME
< 1% DIFFERENT IN METAL MASS

MODELED MINIMUM VOLUME AND MAXIMUM METAL MASS

UPPER HEAD < 0.5% DIFFERENT IN VOLUME

MODELED MINIMUM VOLUME

CONSERVATIVELY MINIMIZES UP/UH VOLUME FOR BLOWDOWN COOLING

THESE DIFFERENCES ARE CONSIDERED MINOR

SAME VESSEL MODEL WAS USED FOR BOTH ANALYSES

BYRON STATION UNITS 1&2
AND
BRAIDWOOD STATION UNITS 1&2

DIFFERENCES

LOOPS

AVERAGE PRESSURIZER SURGE LINE VOLUME WAS USED
DIFFERENCE IS ± 4%

AVERAGE PRESSURIZER SURGE LINE RESISTANCE WAS USED
DIFFERENCE IS ± 3%

AVERAGE ACCUMULATOR LINE VOLUME WAS USED
DIFFERENCE IS ± 2%

AVERAGE ACCUMULATOR LINE RESISTANCE WAS USED
DIFFERENCE IS ± 1%

STEAM GENERATORS

UNIT 1 PLANTS HAVE BWI SG WITH 5% MAX SGTP
UNIT 2 PLANTS HAVE WESTINGHOUSE D-5 SG WITH 10% MAXIMUM STEAM GENERATOR TUBE PLUGGING

ALL MINOR DIFFERENCES WERE BOUNDED

STEAM GENERATOR DIFFERENCES WERE EXPLICITY MODELED

BEST ESTIMATE (BE) ANALYSIS METHOD
AND
SUMMARY OF RESULTS

TWO COMPLETE BE ANALYSES WERE PERFORMED FOR THE FOUR UNITS

SEPARATE ANALYSIS FOR UNIT 1 PLANTS WITH BWI SG

SEPARATE ANALYSIS FOR UNIT 2 PLANTS WITH D-5 SG

SUMMARY OF RESULTS:

	UNIT 1	UNIT 2
CALCULATED 50TH PERCENTILE PCT (°F)	1676	1756
CALCULATED 95TH PERCENTILE PCT (°F)	2044	2088

CONCLUSIONS

VESSEL DESIGNS ARE VIRTUALLY IDENTICAL

- DIFFERENCES WERE MODELED CONSERVATIVELY WHERE APPROPRIATE

LOOP DESIGNS ARE VIRTUALLY IDENTICAL

- MAJOR DIFFERENCE IN STEAM GENERATORS WAS EXPLICITLY MODELED

FOR 10 CFR50.46 TRACKING PURPOSES:

- ALL UNITS ARE TRACKED SEPARATELY
- FUTURE CHANGES TO INDIVIDUAL UNITS WILL BE TRACKED SEPARATELY

MAJOR PLANT PARAMETER ASSUMPTIONS FOR BELOCA

THE ANALYSIS INPUT VALUES FOR ALL MAJOR PLANT OPERATING PARAMETERS CONSERVATIVELY BOUND THEIR AS-OPERATED PLANT VALUES.

THE FOUR BYRON AND BRAIDWOOD UNITS HAVE THE SAME RANGE OF MAJOR PLANT OPERATING PARAMETERS AS SPECIFIED IN THE TECHNICAL SPECIFICATION.

COMMONWEALTH EDISON COMPANY
CONFIGURATION CONTROL PROCEDURE CC-AA-102
"DESIGN IMPACT SCREENING"

SCREENING FOR POSSIBLE NUCLEAR FUEL, CORE COMPONENT, OR TRANSIENT OR ACCIDENT ANALYSIS INTERACTION

FUEL HANDLING AND STORAGE CONSIDERATIONS
REACTOR REACTIVITY CONTROL CONSIDERATIONS
NSSS GEOMETRY
OPERATING CONDITIONS
INSTRUMENTATION
CONTROL SYSTEMS
SETPOINTS
SYSTEM PERFORMANCE