

May 23, 1997

MEMORANDUM TO: John A. Grobe, Acting Director  
 Division of Reactor Safety - RIII

FROM: John N. Hannon, Director Original signed by Kevin Connaughton for  
 Project Directorate III-1  
 Division of Reactor Projects - III/IV

SUBJECT: RESPONSE TO THE TASK INTERFACE AGREEMENT (TIA) REGARDING USE  
 OF GOTHIC COMPUTER CODE FOR DETERMINING ENVIRONMENTAL PROFILES  
 OUTSIDE OF CONTAINMENT (AIT 97-005)

By memorandum dated February 14, 1997, Region III requested review by the Office of Nuclear Reactor Regulation (NRR) of the acceptability of using the GOTHIC computer code to calculate outside containment high energy line break/environmental qualification temperature and pressure profiles. The Containment Systems and Severe Accident Branch has reviewed this issue and our evaluation is attached. We find the use of a computer code not approved by the NRC to be acceptable as long as a conservative benchmarking exists in order to establish a link between the unapproved computer code and the one that was used as the basis for the staff's acceptance of the original analyses as documented in the staff's safety evaluation report.

If you have any questions regarding this issue, please contact T. Kim of my staff at (301) 415-1392.

Docket No. 50-263

Attachment: As stated

cc w/att: J. T. Wiggins, RI  
 J. P. Jaudon, RII  
 A. T. Howell, RIV

DISTRIBUTION:

Docket File	PD3-1 R/F	SBloom (SDB1)	SVarga
EAdensam (EGA1)	MRing, RIII	JRoe	MBoyle (MLB4)
JJacobson, RIII	AChaffee	GHouseman, RIII	RCaruso
AStone, RIII	CBerlinger	MSnodderly	JKudrick
MOprendeck			

DOCUMENT NAME: G:\WPDOCS\MONTICEL/MON98033.TIA

To receive a copy of this document, indicate in the box C=Copy w/o attachment/enclosure E=Copy with attachment/enclosure N = No copy

OFFICE	PM:PD31	E	LA:PD31	E	D:PD31
NAME	TJKim:db	JK	CJamerson	CJ	JHannon
DATE	05/2/97		05/6/97		05/23/97

OFFICIAL RECORD COPY

LL9705300225

JUN 08 1997

## RESPONSE TO REGION III AITS 97-005

Region III Action Item Tracking System (AITS) 97-005, dated February 14, 1997, requested that the Office of Nuclear Reactor Regulation (NRR) evaluate the acceptability of using the GOTHIC computer code to calculate outside containment high energy line break (HELB)/environmental qualification (EQ) temperature and pressure profiles. This issue was raised during a system operational performance inspection at Monticello.

The inspectors determined that Monticello used the GOTHIC computer program to reanalyze the licensee's outside containment HELB/EQ temperature and pressure profiles. Monticello's current licensing basis HELB/EQ analyses were performed using a modified version of RELAP4/MOD5 named "EDSFLOW." In its June 1981 EQ SER [safety evaluation report] of Monticello the staff stated, "The licensee has provided the temperature, pressure, humidity and applicable environment associated with an HELB outside containment. The following areas outside containment have been addressed: [list of areas]. The staff has verified that the parameters identified by the licensee for the MSLB [main steam-line break] are acceptable." The inspectors could not determine whether the NRR staff specifically reviewed and accepted the computer code used for the outside containment environmental profiles.

Generic Letter (GL) 83-11, "Licensee Qualification For Performing Safety Analyses in Support of Licensing Actions," discusses the need for licensees who intend to use a safety analysis computer code to support licensing actions to demonstrate their proficiency in using the code by submitting code verifications performed by them, not others. The GL requested that licensees factor this need into future licensing submittal plans, in order to eliminate problems on future licensing submittals. When the inspectors discussed the GL with the licensee, the licensee stated that it had applied the GL only to thermal-hydraulic analyses, such as core reloads. The inspectors could not determine if the licensee was required to have the GOTHIC code reviewed and accepted by the NRC prior to using it for the outside containment HELB revisions. As a result of this issue, the region asked for the following questions to be answered:

- 1) *Is there a specific requirement, relevant to Monticello HELB or EQ analyses outside containment, for the licensee to use an NRC approved computer code for these analyses?*

There is no specific requirement, relevant to Monticello HELB or EQ analyses outside containment, for the licensee to use an NRC approved computer code for these analyses. It is SCSB's belief that the June 1981 EQ SER did not approve the EDSFLOW code for HELB/EQ licensing basis analyses. The SER did find the output of the code acceptable for establishing the temperature, pressure, humidity and applicable environment associated with an HELB outside the Monticello containment. The licensee could use another computer program or analytical methodology to establish the HELB environment outside containment provided that a satisfactory benchmarking to the approved output exists.

The licensee could then perform an evaluation, in accordance with 10 CFR 50.59, to determine if the new computer program or analytical methodology is acceptable to calculate the approved output without prior NRC approval. This benchmarking would then be available for inspection by NRC personnel. The inspectors established through discussions with licensee personnel that a contractor had completed a benchline/comparison code verification summary for the RELAP4/MOD5 and GOTHIC Version 4.0 computer programs.

A satisfactory benchmarking for the Monticello HELB/EQ analyses would compare the output from GOTHIC to the approved EDSFLOW output using the same input assumptions that were used to generate the approved output. Because the input deck used in the EDSFLOW analyses will not work in GOTHIC, a certain degree of engineering judgement will have to be applied. If, as a result of this comparison, the licensee determined that the GOTHIC results were not bounded by the EDSFLOW output (e.g., lower temperatures and pressures) than the use of the GOTHIC results could result in an unreviewed safety question. If the licensee still wanted to use the less conservative GOTHIC output or use GOTHIC in support of a licensing action then the licensee should submit the code verification and the new output for staff review and approval.

The need for such a benchmarking can be shown by a hypothetical example. Let's say the approved EDSFLOW output did not take credit for condensation on reactor building heat structures. GOTHIC models condensation on heat structures and this model had to be turned off in order for the GOTHIC output to be bounded by the EDSFLOW output. The condensation model would have to remain off in order to use GOTHIC to reanalyze the HELB environment outside containment. In order for the licensee to take credit for the condensation model prior NRC approval would be required.

- 2) *Is there a clear requirement, in any document, that informs the licensee of what types of analyses require use of an NRC approved computer code?*

Other than 10 CFR 50.46 and its associated Appendix K, "ECCS [emergency core cooling system] Evaluation Models," the staff is unaware of any requirement that informs the licensee of what types of analyses require use of an NRC approved computer code.

- 3) *Given the responses to the above questions, is it acceptable for the licensee to use the GOTHIC computer code for outside containment HELB analyses?*

It is acceptable for the licensee to use the GOTHIC computer code for outside containment HELB analyses as long as a benchmarking to the previously approved outputs exists and an evaluation, in accordance with 10 CFR 50.59, determined that prior NRC approval was not required.