

March 11, 1998

FOR: The Commissioners

FROM: L. Joseph Callan /s/
Executive Director for Operations

SUBJECT: REQUEST FOR LIMITED EXEMPTION TO THE COMMISSION'S POLICY TO ALLOW COMMERCIAL USE OF AN NRC-SUPPORTED CODE

PURPOSE:

To inform the Commission of the staff's intent to grant a limited waiver on the commercial use of the NRC severe accident containment analysis code (GASFLOW) to Germany.

BACKGROUND:

In SECY-94-158, "Policy on Release of Thermal Hydraulic Codes Developed under NRC Sponsorship," the staff recommended a continuation of its policy to restrict the commercial use of the thermal-hydraulic codes obtained under the Code Applications and Maintenance Program (CAMP) agreements. In an SRM dated

June 30, 1994, the Commission approved the staff recommendation to continue the restrictions on commercial use of NRC codes obtained under the CAMP agreement. The staff, in SECY-94-158, also indicated its intention to apply this policy to other NRC-developed codes, such as the severe accident codes. Accordingly, the staff has been applying the commercial-use restriction to the suite of severe accident codes, including the GASFLOW code, that are provided to foreign organizations.

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415-6499

The GASFLOW code is a multi-dimensional (3-D) finite volume field code, with the capability to characterize local post-accident conditions inside containment, such as: flow circulation patterns; gas stratification; and hydrogen distribution and combustion. (In comparison, lumped parameter codes, such as CONTAIN and MELCOR, are not capable of providing fine-grid resolution that may be useful in some types of containment analyses.) The GASFLOW code (and its predecessor, the HMS code) has been supported by the NRC and DOE over the past 15 years. Since 1993, Forschungszentrum Karlsruhe (FzK), a German government laboratory, has actively participated in the development and assessment of the GASFLOW code (through an agreement with the Los Alamos National Laboratory (LANL)). Recognizing the activities by DOE and FzK (particularly the apparent long-term commitment by FzK) and the fact that the HMS code (GASFLOW's predecessor code) was still being supported at a low level by the NRC, the staff chose to focus its development efforts for a multi-dimensional containment code on GASFLOW. During the past two years the staff actively coordinated the NRC, LANL, and FzK efforts in order to achieve a viable and realistic code development program. This decision was reached because of the need to leverage resources in order to continue to support the development of a multi-dimensional containment code. As a result of this effort, the development of a new version of GASFLOW (Version 2.1) is nearing completion and the version is almost ready for release.

Although FzK receives research and development funds from the German government, it also receives some funding from German utilities and a German firm, Siemens AG. Recently, FzK has requested a waiver from the NRC policy restricting commercial use of NRC-developed codes to allow Siemens AG to use the GASFLOW code to perform safety studies for nuclear power plants that are designed by Siemens AG or that are based on the European Pressurized Reactor (EPR). Because FzK's access to the GASFLOW code is currently governed by the July 1993 agreement between FzK and LANL, LANL has requested NRC concurrence to modify their agreement with FzK to allow limited commercial use of the GASFLOW code (see the attached letter (Attachment 1) from G. Niederauer to A. Notafrancesco, dated July 16, 1997).

DISCUSSION:

The staff has in the past granted limited waivers to the commercial use restrictions for NRC-developed codes. (See SECY-95-014, "Release of NRC Thermal-Hydraulic (T/H) Computer Codes to the Russian Research Center, Kurchatov Institute (RRC-KI)," dated January 24, 1995.) More recently, in SECY-97-134, "Commercial Use of NRC-Developed Thermal-Hydraulic Codes by Non-U.S. Organizations," the staff recommended, and the Commission approved, that international users of the thermal-hydraulic codes be allowed to perform safety analyses with the subject codes in the non-U.S. market, but not to use them to compete in the U.S. or to develop a new reactor design. The staff recognizes that LANL's request to grant FzK a limited waiver would allow GASFLOW to be used to develop a new reactor design. However, as discussed below, the staff believes concurring with LANL's request to grant FzK a limited waiver regarding the GASFLOW code is in the best interest of the NRC.

Over the past several years, FzK has provided a level of support for the development and assessment of the GASFLOW code comparable to that of DOE and NRC. Moreover, FzK plans to continue its active role in this effort for the foreseeable future. Furthermore, anticipating that advancements in computer software and hardware and the acquisition of suitable experimental data will continue, this long-term support is needed to achieve a practical and reliable 3-D field code. Although as a result of recent budget reductions, the NRC is no longer directly supporting the development of the GASFLOW code, the staff is exploring the possibility of maintaining a limited involvement in the GASFLOW developmental efforts through performance of in-house assessments of the code. The continued development, assessment, and application of GASFLOW by both FzK and Siemens AG will contribute to the overall development and assessment of this code. The staff believes that this work can have a long-term benefit to the NRC by extending the assessment base and increasing user experience. Further, in concurring with the LANL request to grant FzK a limited waiver, the staff will ensure that

any improved code version developed through this joint code development effort would also be made available to the NRC. The staff also believes that a favorable response to FzK's request for limited commercialization would strengthen the NRC's long-term relationship with FzK, ensuring a more viable and successful program.

Recently, in response to SECY-97-134, the Commission directed the staff to take a broader look at clarifying commercial applications of NRC-developed codes beyond that recommended in SECY-97-134. Further lifting the restrictions on the GASFLOW code will be considered for this longer-term action. However, because of the extent to which FzK is contributing to the development of the GASFLOW code, the staff believes that it is in the best interest of the NRC to concur in LANL's request to grant a limited waiver at this time, including allowing GASFLOW to be used in developing a new reactor design.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of International Programs and the Chief Information Officer have no objection to this paper. Also, the Office of the Chief Financial Officer has reviewed this Commission paper for resource implications and has no objections. In addition, as discussed in the attached letter from LANL, DOE has no objection to granting Siemens AG a limited waiver (through the LANL/FzK agreement) to the restriction on commercial use of the GASFLOW code.

RECOMMENDATION:

Unless otherwise directed within 10 days following the date of this paper, the staff will send LANL the attached letter (Attachment 2) concurring with its request to grant a limited waiver on the restriction of the use of the GASFLOW code for commercial purposes to Siemens AG. This waiver would only apply to the performance of safety studies for nuclear power plants that are designed by Siemens or that are based on the European Pressurized Reactor.

L. Joseph Callan
Executive Director for Operations

Attachments:

1. Letter from LANL dated July 16, 1997 
2. Proposed letter from W. Hodges to G. Niederauer

ATTACHMENT 2

D R A F T

Dr. George Niederauer
TSA-8, MS K575
Los Alamos National Laboratory
P. O. Box 1663
Los Alamos, NM 87545

SUBJECT: NRC CONCURRENCE TO PROPOSED MODIFIED LANL/FZK AGREEMENT ON GASFLOW

Dear Dr. Niederauer:

In response to your letter dated July 16, 1997, the NRC concurs with your proposed modification to the LANL/FzK agreement on the GASFLOW code. The key provision would allow Siemens AG limited commercial use of GASFLOW, i.e., to perform safety studies for nuclear power plants that are designed by Siemens or that are based on the European Pressurized Reactor (EPR).

Our concurrence is predicated on the condition that any improved version developed by Siemens AG and FzK would also be made available to the NRC.

Sincerely,
M. Wayne Hodges, Director
Division of Systems Technology
Office of Nuclear Regulatory Research