PLEASE KEEP THIS SHEET WITH THE ACTION PACKAGE

DSARE

DATE: 06/21/02

DSARE Action Number: 2002-28

RES Action Number: 2001388

GT/WITS:

SUBJECT: Access to International Standard Problem ISP44 KAEVER DATA

Requester: Eltawila

Action Requested: Prepare response. Inform Front Office on decision on whether or not proide requested information.

ASSIGNED TO: Rosenthal/Hogan

EXPECTED COMPLETION DATE: 07/17/02

EXTENDED COMPLETION DATE:

COMPLETION DATE:

DOCUMENTATION OF COMPLETION — ATTACH COPY OF E-MAIL, MEMO, ETC.

OR INDICATE BELOW HOW ACTION WAS COMPLETED:

RESEARCH ACTION ITEM

June 21, 2002 MAIL CONTROL FORM 8:33:55 AM

FROM: Gary Rochau
TO: Ashok Thadani

RES#: **2001388**
EDO#:
FOIA#:
WITS#:

DESCRIPTION: ACCESS TO INTERNATIONAL STANDARD PROBLEM ISP44 KAEVER DATA

SPECIAL INSTRUCTIONS: Prepare response. Inform Front Office on decision on whether or not to provide requested information.

DOCUMENT DATE: June 1, 2002
DUE TO RES: **July 17, 2002**

RECEIVED BY RES: June 20, 2002
DUE TO EDO:

ASSIGNED TO: **F. Eltawila, Dir, DSARE** FOR SIGNATURE OF: **F. Eltawila**

COPIES TO:
C. Ader

MILESTONES:	ORIGINAL DUE	CURRENT DUE	COMPLETED
To RES	07/17/2002		
Gary Rochau	07/19/2002		

printed by ATMS 2000, the RES action tracking system

ACTION

Routing to:

☐ _____ ☐ _____ Nesmith - Enter in ATMIS; send copy to responsible division.

☐ Flory - Forward to Nesmith

CONTROLLED CORRESPONDENCE
RES FRONT OFFICE REVIEW

ACTION: DSARE PREPARE RESPONSE
INFORM FRONT OFFICE ON DECISION ON WHETHER
OR NOT TO PROVIDE REQUESTED INFO
THX Joel

WITS/GREEN TICKET #: _____ **DUE DATE:** 7/19/02

ASSIGN TO: ☑ DSARE ☐ DRAA ☐ DET ☐ PMPDAS ☐ F.O.

CONCUR WITH: ☐ NRR ☐ NMSS ☐ OGC ☐ CFO ☐ CIO ☐ ____ ☐ ____

MEET EARLY TO RESOLVE ISSUES WITH CONCURRING OFFICES? ☐ YES ☐ NO

	To Be Reviewed by:	Signature Block:	To Be Signed by:
F. EZTAWICA ~~A. Thadani~~	☐	☑	☑
~~J. Strosnider~~	☐	☐	☐
~~M. Lee~~	☐	☐	☐

DATE DUE TO F.O.: _____

F.O. GUIDANCE: ☐ None. **Specify:** _____

Sandia National Laboratories
Operated for the U.S. Department of Energy by
Sandia Corporation

Gary E. Rochau, Manager
Modeling and Analysis, Department 6415

P.O. Box 5800
Albuquerque, NM 87185-0748
Phone: (505)845-7543
Fax: (505)844-2829
Internet: gerocha@sandia.gov

June 1, 2002

Dr. Ashok Thadani, Director
Office of Research, Mail Stop 10 F12
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Access to International Standard Problem ISP44 KAEVER data

Dear Dr. Thadani;

As part of our NRC work, we have begun investigating the reported discrepancies between the experimental measurements made during the ISP44 series of aerosol experiments and the MELCOR calculations performed by participants in these experiments. The discrepancies have remained a troubling open question. In an effort to resolve these issues, we have several questions on the data and the interpretation. Dr. Fred Gelbard of my staff has been looking into the issues and I have attached his questions to highlight the needed information. Because Sandia did not participate in the experiments, we do not have access to the data so that we can work on the discrepancies. According to Dr. Karsten Fischer (fischer@becker-technologies.com) the data for these tests are the property of the German Federal Ministry of Economy, and are not publicly available. However, he suggested that we could obtain the data if you make a formal request to Dr. Kollath, Research Management at GRS, Cologne. Therefore, we are asking if you would please request of Dr. Kollath to send us a complete set of reports and data for the ISP44 series of aerosol experiments and to provide us with a knowledgeable contact with whom we may discuss the experimental details. Dr. Kollath can be reached at Tel: 0221-2068-721, Fax: 0221-2068-629, E-Mail: kth@grs.de.

Please contact me or Dr. Fred Gelbard at fgelbar@sandia.gov (or at 505-844-5794) if you have any questions.

Sincerely,

Gary E. Rochau

Attachment: Data request from Dr. Fred Gelbard to resolve KAEVER/MELCOR issues.

Data Request for KAEVER ISP

Dr. Fred Gelbard, Sandia National Laboratories

I have obtained the compact disk that supplies the data collected for the aerosol and thermal hydraulics. However, I have not found the details of the experiments for tests K148, K188, K123, K186, and K187. May I obtain additional reports on the experiment? In particular, are the following available?

(1) Reports with the raw data obtained from the instruments. For example, the impactor data are given with the mean diameter and a geometric standard deviation. However, the impactor raw data should contain the mass measured on each stage over a specified time interval, with the particle size cutoffs for each stage. Are these data available? What chemical data analysis is available for each stage? Are the raw data also available for the photometers and filters?

(2) There is mention of electron micrographs that were taken of the aerosol. Are these available with details of where and when the samples were obtained?

(3) To my understanding, for aerosol injection consisting of more than one species, these species were each generated as separate aerosol particles. Is that correct? For example, in test K187 in which the dry aerosol particles consisted of Ag, CsOH, and CsI, there were separate aerosol generators for each species, even though there is only one mean diameter and standard deviation that is to be used for all the generators.

(4) In the report "Draft Specification of the International Standard Problem ISP No 44: KAEVER: Experiments on the Behavior of Core-melt Aerosols in a LWR Containment," by M. Firnhaber, K. Fischer, and B. Fritsche, January
2000, I have two questions.

- from page 10, is there more detail on how the relative humidity was determined from photometer measurements, and the associated data?
- from page 11, a mass balance was not obtained. May I have the actual masses measured in the crucibles, deposited in the injection lines and on surfaces? Also, was the mass balance error quantified?

(5) Regarding test K187, the only measured aerosol in the chamber data that I have seen are given below. Considering that the injection period was from 13:20 to 15:20 hours, and the test terminated at 19:00 hours, the data are very scant. I have not found data with the measured suspended aerosol concentration or species concentrations as a function of time. Such data do however seem to be available for the other tests, which is why I'm trying to obtain suspended concentration data for test K187.

Measured aerosol data for test K187.
time = 15:33 hours
Lognormal wet particle size distribution
volumetric median diameter = 1.58 micrometers
geometric standard deviation = 1.65
wet particle volume concentration = 8.2E-06 m^3/m^3

time = 15:19 hours
Lognormal dry particle size distribution

dry volumetric median diameter = 0.527 micrometers
dry number median particle diameter = 0.321 micrometers
geometric standard deviation = 1.4

time = 15:16 hours
Ag concentration in aerosol = 0.040 g/m^3
CsOH concentration in aerosol = 0.099 g/m^3
CsOH concentration in aerosol = 0.163 g/m^3
total (Ag+CsOH+CsI) dry particle concentration = 0.301 g/m^3