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*Set up a file on
decontamination*

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

June 18, 1979

MEMORANDUM FOR: Darrell G. Eisenhut, Acting Director, Division of
Operating Reactors, NRR

THRU: *AB* Dennis L. Ziemann, Chief, Operating Reactors
Branch #2, DOR

FROM: Paul W. O'Connor, Task Manager, Task Action Plan A-15

SUBJECT: TRANSLATION OF GERMAN REPORT

I have received a technical report from NIS, NUKLEAR INGENIEUR SERVICE which identifies decontamination and transportation considerations associated with a hypothetical 10% fuel failure in a 1300 MW PWR.

I have informed Mr. Vollmer of the contents of this report and he requested a translation. Please sign the attached NRC Form 430.

Paul W. O'Connor

Paul W. O'Connor, Task Manager
Task Action Plan A-15

Attachment:
1. Abstract
2. Title Page

REQUEST FOR TRANSLATION OF FOREIGN DOCUMENT

1. LANGUAGE OF FOREIGN DOCUMENT

German

TO:
DIVISION OF DOCUMENT CONTROL

(Forward the original of this form together with
the document to be translated.)

2. FROM: DIVISION, BRANCH, SECTION OR UNIT
DOR, ORB#2

a. REQUESTER'S NAME
Paul W. O'Connor

b. TELEPHONE NUMBER 27215
c. MAIL STOP 314

3. TYPE OF DOCUMENT

- a. REPORT
- b. BOOK
- c. JOURNAL ARTICLE
- d. THESIS
- e. LEGAL DOCUMENT
- f. CORRESPONDENCE

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8. NUMBER OF WORDS (CHARACTERS) IN FOREIGN DOCUMENT (See reverse for instructions)

9. FOREIGN REPORT NUMBER(S)
RS300

10. ORIGINAL PUBLICATION DATE
August 1978

11. REPORT TITLE

a. FOREIGN (Leave blank if other than Roman alphabet)

b. ENGLISH (If available)

Specification of Conditions of a Nuclear Power Plant with a PWR following a LOCA for Purposes of Studying the Ensuing Decontamination and Transport Problems.

12. AUTHOR(S) (If more than three, name first author followed by "and others")

D. Eder and others

13. NAME AND ADDRESS OF FOREIGN ORGANIZATION RESPONSIBLE FOR PUBLISHING DOCUMENT

NIS, NUKLEAR - INGENIEUR - SERVICE GMBH
Frankfurt/Main

14. NAME OF PERIODICAL

a. VOLUME	b. NUMBER	c. DATE	d. PAGES ON WHICH ARTICLE APPEARS

15. ADDITIONAL INFORMATION

Provide one (1) copy to R. Vollmer (MS - 542) and one (1) copy to P. W. O'Connor (MS - 314).

16. TITLE OF APPROVING OFFICIAL (Office or Div. Dir.)

Acting Director/DOR

17. SIGNATURE

Darrell G. Eisenhut

18. DATE

Specification of Conditions of a Nuclear Power Plant
with a PWR Following a LOCA for Purposes of Studying
the Ensuing Decontamination and Transport Problems

Abstract

In order to specify the condition of a nuclear power plant with a PWR following a loss-of-coolant accident for purposes of studying the ensuing decontamination and transportation problems, assumptions are made which provide a conservative picture of the reference plant studied (PWR, 1300 MW) with respect to the course of the accident and the resulting damage as well as the distribution of radioactivity in the plant.

Assuming a double-ended rupture of the hot line in the piping chamber and a fuel assembly cladding tube damage of 10% corresponding to the licensing guidelines currently valid for the release of iodine, the nuclide-specific distribution of the radioactivity in reference chambers in the containment is determined with the "CORRAL" computer program. The dose rates resulting from the nuclide-specific distribution of the radioactivity are calculated for 1 a, 10 a, and 30 a after the accident. The dominant radionuclides here are Cs 137/Ba 137 m and Cs 134.

In all, about $7 \cdot 10^8$ Ci of fission and corrosion products are released into the containment during the accident.

As a result of the radioactivity released, a maximum dose rate of about 3 150 rem/h must be expected in the chamber where the rupture occurred one year after the accident. After 30 years, the maximum dose rate is still 350 rem/h. In the chambers located farther from the chamber where the rupture occurred, dose rates in the order of magnitude of 25 rem/h are expected 1 a after the accident. A possible reduction in the radiation as a result of decontamination measures was not considered here.

In addition, the corrosion of the fuel assemblies still located in the reactor pressure vessel, of building structures, and on the surface of system components was studied, and the possible penetration of radioactivity into damaged concrete surfaces was determined.

The adhesion of the radionuclides to the contaminated surfaces due to their element-specific behavior is also shown here so that suitable decontamination processes and materials can be developed and applied.

Frankfurt/Main, August 1978

Spezifizierung des Anlagenzustandes
eines DWR nach einem Kühlmittel-
verluststörfall für die
Untersuchung der daraus folgenden
Dekontaminations und Transport-
probleme

im Auftrag des Bundesministers für
Forschung und Technologie

Förderungskennzeichen RS 300

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freigegeben

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