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NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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MEMORANDUM FOR: Jay B. Durst, Assistant Director
Safeguards & Systems Performance
Research Branch
Division of Safeguards, Fuel Cycle
and Environmental Research

FROM: Donald E. Solberg, Chief
Systems Performance Research Branch
Division of Safeguards, Fuel Cycle
and Environmental Research

SUBJECT: SUMMARY OF FUEL CYCLE FACILITY ACCIDENTS RESEARCH
REVIEW GROUP MEETING

On November 28-29, 1979, a meeting of the Fuel Cycle Facility Accidents Research Review Group was held in Silver Spring offices of NRC. Meeting attendees are presented in Enclosure 1. The principal purpose of the meeting was to review accident compilations by PNL and ORNL so that the RRG could select a generic set of accidents for further investigation. The results presented by PNL and ORNL were only minimally useful in giving guidance in accident selection. Nevertheless, accidents for future evaluation were selected as shown in item 2 below. Further, since selection of parameters and defining values for these parameters for each of these accidents is the next phase for both ORNL and PNL, steps were taken to provide early availability and review of candidate parameters (items 4 and 5 below). Principal results of the meeting are:

1. The review of available data from the NRC-SD sponsored project at ANL to computerize results from all nuclear incidence reports (I. Muraka/C. Luner, project managers) revealed that fires and explosions are the most probable accidents and are approximately equally likely to occur. The ANL data set lacks some of the detailed information required by our study and is incomplete in terms of the compilation of reported accidents. It was agreed that when the remainder of these data become available, some additional effort will be spent in evaluating it, principally for the purpose of determining if the above conclusion on fires and explosions is altered.

2. The accidents which are to be considered and for which parameters are to be developed are fires, explosions, equipment failure, criticality, dynamic and static spills and tornados. Examples of equipment failure are failure of HEPA filters and fan failure.

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3. The basis for conducting this research was reiterated at the meeting, i.e., to develop generically applicable data and analysis methods capable of evaluating airborne concentrations of radionuclides and their transport to the facility boundary.

4. J. Mishima will prepare and transmit a list of the most significant parameters for describing fires, explosions and criticality which can be used to bracket the entire significant range of accident scenarios.

5. H. Godbee will prepare and transmit a list of the most significant parameters for describing liquid aerosols resulting from accidents in waste solidification plants. The purpose is to determine problems associated with analysis of entrained liquids which had not previously been considered in the LASL analysis development plan.

6. The review group agreed that advanced reprocessing schemes should be reviewed to assure that the list of accident types and parameters covered by this research will include those needed to analyze accidents in the advanced reprocessing approaches. Specifically, ORNL was directed to make this determination for the Hot Experimental Facility (HEF).

7. PNL and ORNL will develop sets of parameters (as required in item 3 and further developed in item 4 and 5) for all accidents identified in item 2.

8. LASL will proceed with the analytical and experimental plan. A draft copy of this plan dated November 28, 1979 was supplied to review group members at this meeting.

Donald E. Solberg, Chief
Systems Performance Research Branch
Division of Safeguards, Fuel Cycle
and Environmental Research

Enclosure: LASL presentation material

cc: Attendees
[redacted]

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Enclosure 1

LIST OF ATTENDEES

Bill Immerman	NRC/RES
A. T. Clark	NRC/NMSS/FCAF
R. A. Martin	LASL
W. S. Gregory	LASL
D. E. Solberg	NRC/RES
P. Owzarski	PNL
J. Mishima	PNL
R. W. Andrae	LASL
J. W. Bolstad	LASL
P. K. Tang	LASL
J. E. Ayer	NRC/NMSS/FCAF
H. Godbee	ORNL
E. Frederick	ORNL
E. Compere	ORNL
P. Loysen	NRC/NMSS/FCAF

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