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

June 5, 1979

MEMORANDUM FOR: Ronald M. Scroggins, Director
Administrative and Resource Control Staff
Office of Nuclear Regulatory Research

FROM: Peter E. McGrath, Acting Director
Probabilistic Analysis Staff
Office of Nuclear Regulatory Research

SUBJECT: REQUEST FOR INFORMATION FROM PRESIDENTIAL COMMISSION

Following is information you requested regarding assistance provided the Probabilistic Analysis Staff/RES by individuals/organizations outside NRC to assist in the TMI-2 emergency. These actions were initiated soon after the incident and were continued through April 1979.

1. Battelle Columbus (Dr. Richard Denning)

   a. Performed MARCH/CORRAL analysis of hypothetical meltdown scenarios for contingency planning to predict melt process timing and radionuclide releases for various assumptions.

   b. Pebble bed calculations for natural circulation through the damaged core in order to predict core thermal behavior when secondary side cooled down and pump tripped.

   c. Hydrogen explosion analysis--potential effect of hydrogen explosion in upper head. Included detonation limits, stress in vessel in event of an explosion, using HELP code.

   d. External cooling of lower head of the reactor vessel to determine whether and under what circumstances the vessel could be cooled in event of core melt.

   e. Advice and comment on proposed containment vents and filter systems.

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2. Sandia Laboratory (Mr. David McCloskey)

   a. Performed ORGEN calculations of core radioactive inventory specific to TMI-2.

   b. Evaluated vulnerability of components to radiation and submergence.

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c. Analyzed hydrogen burning/explosion potential, to include impulse requirements and structural consequences.

d. Performed studies on hydrogen solubility and water chemistry.

e. Performed analysis on coolability of damaged reactor core.

f. Developed conceptual design of a contingency filtered venting system for containment.

3. ORNL (Dr. Fred Mynatt)

a. On-site activities included radiation monitoring, chemical analysis of liquid/gaseous effluents, monitoring and clean-up of auxiliary building, and instrumentation and diagnostics.

b. Direct/dedicated efforts at the lab included:

1. Analysis of cooling of disrupted core,
2. Analysis of fuel and cladding effects,
3. Analysis of primary coolant water samples,
4. Radiation effects and core nuclear analysis,
5. Radiation shielding analysis,
6. Hydrogen chemistry, and
7. Support for instrumentation and diagnostics.

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Peter E. McGrath, Acting Director
Probabilistic Analysis Staff
Office of Nuclear Regulatory Research

cc: Lawrence Vandenberg, OMPA

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