

INTERIM REPORT

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Project Title: Unified Transport for Power Plant Assessment (Radioisotopes)

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Responsible NRC Individual and NRC Office or Division: P. R. Reed, Division of
Safeguards, Fuel Cycle and Environmental Research

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OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37830
operated by
UNION CARBIDE CORPORATION
for the
DEPARTMENT OF ENERGY

**NRC Research and Technical
Assistance Report**

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OAK RIDGE NATIONAL LABORATORY MONTHLY REPORT TO
THE DIVISION OF SAFEGUARDS, FUEL CYCLE AND ENVIRONMENTAL RESEARCH

July 1979

A. Status of Project

The status of Period I reports is:

B. THERMAL

- 1.b. "ESTONE: A Computer Code for Simulating Fast-Transient, One-Dimensional Hydrodynamic, Thermal and Salinity Conditions in Controlled Rivers and Tidal Estuaries for the Assessment of the Impact of Multiple Power Plant Operations".

Ready for final document typing.

- 2.b. "TEMPER: A Computer Code for Simulating Fast-Transient, Two-Dimensional Temperature Distributions in Lakes, Estuaries and Coastal Regions for the Assessment of the Thermal Impact of Power Plant Operations".

Final draft completed.

3. "A Comprehensive Mathematical Modeling and Computer Simulation Study of the Hydrodynamic and Thermal Conditions in the Conowingo Pond Reservoir in the Vicinity of the Peach Bottom Atomic Power Station".

Rough draft has been completed.

D. CHEMICAL

1. "CHMKIN: A General-Usage Computer Code for Systematic Analysis of Non-equilibrium Chemical Kinetics in Aquatic Systems with Large Number of Chemical Species Undergoing Large Number of Moderately Fast Chemical Reactions".

Rough draft in preparation.

2. "A Preliminary Study of the Far-Field Nonequilibrium Chemical Kinetics of Chlorinated Estuarine Water with Moderate Salinity".

Ready for final document typing.

3. "CHMONE: A Computer Code for Simulating Fast-Transient, One-Dimensional Hydrodynamic, Thermal and Chemical Species Concentration Conditions in Controlled Rivers and Tidal Estuaries for the Assessment of the Chemical Impact of Chlorinated Discharge Water from Multiple Power Plant Operations".

Final draft has been completed.

**NRC Research and Technical
Assistance**

E. SEDIMENT

- 1.b. "SEDONE: A Computer Code for Simulating Fast-Transient, One-Dimensional Hydrodynamic Conditions and Three-Layer, Variable-Size Sediment Concentrations in Controlled Rivers and Tidal Estuaries".

Published February, 1979.

F. RADIOLOGICAL

- 1.b. "RADLAY: A Computer Code for Simulating Fast-Transient, One-Dimensional Hydrodynamic Conditions and Two-Layer Radionuclide Concentrations, Including Bed Deposition and Release Effects, in Controlled Rivers and Tidal Estuaries".

Rough draft has been completed.

- 2.b. "RADTWO: A Computer Code for Simulating Fast-Transient, Two-Dimensional Two-Layer Radionuclide Concentrations, Including Bottom Deposition and Release Effects, in Lakes, Estuaries and Coastal Regions Under Specified Natural and Plant-Induced Flow Conditions".

Rough draft in preparation.

B. Budget

<u>July 1979</u>	<u>FY1979</u>	<u>Cost Plan</u>
\$10,000	\$33,224	\$68,060

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