POOR ORIGINAL

INTERIM REPORT

Accession No. _____
Contractor's Report No. _____

Contract Program or Project Title: Methods to Assess Impacts on Hudson River Striped Bass

Subject of this Document: Quarterly progress Report

Type of Document: Interim Contractor Progress Report (Technical)

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Date of Document: _____

Responsible NRC Individual and NRC Office or Division: Phillip R. Reed, Environmental Effects Branch, Division of Safeguards, Fuel Cycle and Environmental Res., Office of Nuclear Regulatory Research

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ORNL
Oak Ridge, Tennessee

Prepared for
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

NRC FIN No. B0165

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NRC Research and Technical Assistance Report

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INTERIM REPORT

QUARTERLY PROGRESS REPORT FOR PERIOD

April 1 through June 30, 1979

ENVIRONMENTAL SCIENCES DIVISION
OAK RIDGE NATIONAL LABORATORY

PROJECT (189 No.): B0165--Methods to Assess Impacts on Hudson River Striped Bass

PERSON IN CHARGE: Webster Van Winkle

PRINCIPAL SCIENTIST: Lawrence W. Barnthouse

TECHNICAL OBJECTIVES: To further develop and apply computer simulation models and other methods of quantitative analysis in assessing the effects of power plant entrainment and impingement on the striped bass population in the Hudson River.

STATUS OF SUBTASKS: Work on all subtasks is proceeding on schedule.

MAJOR ACCOMPLISHMENTS:

A. Young-of-the-Year Models

1. Empirical Entrainment Methodology

The Empirical Transport Model was used to assess the impact of entrainment on the Hudson River striped bass population. Results were incorporated in testimony filed with EPA, Region II on May 14, 1979.

2. Empirical Impingement Methodology

The Empirical Impingement Model was used to assess the impact of impingement on the Hudson River striped bass population. Results were incorporated in testimony filed with EPA, Region II on May 14, 1979.

B. Quantitative Methodologies for Estimating Probability of Entrainment Mortality

1. Analysis of EA Intake and Discharge Data

Estimates of f_C for striped bass ichthyoplankton entrained at Indian Point, Bowline, Lovett, Roseton and Danskammer were computed and incorporated in testimony field with EPA, Region II on May 14, 1979.

2. Indirect Entrainment Mortality

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An estimate of indirect entrainment mortality for entrainable striped bass ichthyoplankton was incorporated in testimony filed with EPA, Region II on May 14, 1979.

C. Stock-Recruitment Analysis

1. Stock-recruitment validation procedure

The stock-recruitment validation procedure was used to evaluate stock-recruitment models developed by Lawler, Matusky and Skelly Engineers for the Hudson River striped bass population. This evaluation was incorporated in testimony filed with EPA, Region II on May 14, 1979.

2. California Striped Bass Population

Completion of this subtask has been temporarily deferred.

D. Relative Contribution and Discriminant Analysis

Additional analyses are nearly completed and preparation of a manuscript is starting.

E. Local Distribution

Estimates of f_1 for striped bass ichthyoplankton entrained at Indian Point, Bowline, Lovett, Roseton and Danskammer were computed and incorporated in testimony filed with EPA, Region II on May 14, 1979.

PUBLICATIONS, PRESENTATIONS, AND MEETINGS:

None.

TESTIMONY (filed with EPA, Region II on May 14, 1979):

Barnthouse, L. W. An analysis of factors that influence impingement estimates at Hudson River power plants. 50 p.

Barnthouse, L. W., K. D. Kumar, and B. L. Kirk. W-factors for Hudson River ichthyoplankton entrained at Bowline, Lovett, Indian Point, Roseton, and Danskammer. 76 p.

Barnthouse, L. W., and W. Van Winkle. Impingement impact estimates for seven Hudson River fish species. 93 p.

Boreman, J., C. P. Goodyear, and S. W. Christensen. Mathematical methods used in estimating conditional entrainment mortality rates of six Hudson River fish populations. 25 p.

Christensen, S. W., C. P. Goodyear, and B. L. Kirk. An analysis of the validity of the utilities' stock-recruitment curve-fitting exercise. 320 p.

Van Winkle, W., and S. W. Christensen. Incorporation of sublethal effects and indirect mortality in modeling population-level impacts of power-plant entrainment. 5 p.

Vaughan, D. S. Entrainment mortality factors for Hudson River ichthyoplankton at Bowline Point, Lovett, Indian Point, Roseton, and Danskammer power plants. 125 p.

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