

SHIP PRODUCTION COMMITTEE
FACILITIES AND ENVIRONMENTAL EFFECTS
SURFACE PREPARATION AND COATINGS
DESIGN/PRODUCTION INTEGRATION
HUMAN RESOURCE INNOVATION
MARINE INDUSTRY STANDARDS
WELDING
INDUSTRIAL ENGINEERING
EDUCATION AND TRAINING

November 20, 2000
NSRP 0572
N1-97-1

THE NATIONAL SHIPBUILDING RESEARCH PROGRAM

Environmental Studies and Testing (Phase V)

U.S. DEPARTMENT OF THE NAVY
CARDEROCK DIVISION,
NAVAL SURFACE WARFARE CENTER

in cooperation with
National Steel and Shipbuilding Company
San Diego, California

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FINAL REPORT
on
ENVIRONMENTAL STUDIES AND TESTING (PHASE V)

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National Shipbuilding Research Program

Project N1-97-1

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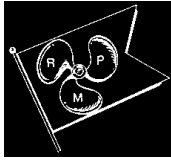
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20 November 2000

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Environmental Studies and Testing (Phase V)
Task No. N1-97-1

20 Nov 2000

Final Report

This Project was begun on 12 Jan 1998 and was completed on 20 Nov 2000 under NASSCO Purchase Order MU300062-D, Change Order 01, dated 11 Dec 1997. Administrative arrangements for prosecuting Subtasks under this Project were developed, based on the general requirements for performing projects under the NSRP. These arrangements were approved by the members of the SPC Panel SP-1 Ad Hoc Committee for Environmental Studies and Testing (ES&T), and by the NSRP Program Manager at NASSCO. A total of 34 Potential Tasks were considered by the Ad Hoc Committee, from which thirteen Subtasks were approved for performance, as follows:

Subtask #29 - Environmental Presentation for the NSRP Strategic Investment Planning Group.

This Subtask prepared a white paper on the issues and considerations associated with facilities and environmental matters that must be reflected in the development of the Strategic Investment Plan (SIP) being actively prosecuted by the NSRP. The presentation was delivered at a workshop of the SIP Planning Group in March 1998. The white paper also will be of continuing use to several shipyards as the basis for keeping senior management apprised of the vital need for environmental considerations in virtually all shipyard activities. The Subtask was performed by Jennifer L. Kraus, GECCo Associate, of the 3E Company, San Diego, CA. Work began on 18 Mar 1998 and was completed on 31 Mar 1998. The white paper was distributed by NASSCO to interested members of SPC Panel SP-1. Cost of the Subtask was \$6,780.

Subtask #30 - Development and Presentation of Pollution Prevention Workshops.

This Subtask developed and presented five one-day Pollution Prevention Workshops to audiences consisting of shipyard personnel from several regions of the United States, and State environmental agency personnel involved in regulating activities within the shipyards in those regions. Initially, six Workshops were planned as follows:

Portland, OR	Cascade General, host	8 Jun 1998
Groton, CT	EBCorp, host	16 Jun 1998
Norfolk, VA	NorShipCo, host	18 Jun 1998
San Diego, CA	NASSCO or SWM, host	14 Sep 1998
Jeffersonville, IN	Jeffboat, host	18 Sep 1998
Biloxi, MS	Consortium, host	21 Sep 1998

The Workshop in Groton, CT was abandoned due to difficulties in assembling a suitable audience. The five Workshops actually conducted were highly successful and well attended. The Subtask began on 27 Apr 1998 and was completed on 1 Nov 2000 following several unsuccessful attempts to arrange for a Workshop in Groton, CT. The Subtask was performed by Dana M. Austin of Austin Environmental, Inc., San Diego, CA. Cost of the Subtask was

\$33,980. The Gulf Coast Region Maritime Technology Center/Environmental Resources and Information Center at the University of New Orleans contributed \$15,000. to help fund these Workshops. Cost to the ES&T Project was \$18,980.

Subtask #31 - Development of a Network Version of Shipyard MACT Tracking Software

This Subtask developed a networked version of the original Neshap 3.0 Management and Tracking Software (which was developed under ES&T Subtask 28) for those Shipyard users who receive and issue coatings from multiple locations. The software operates in the Windows NT 4.0 environment. NESHAP (National Emission Standards for Hazardous Air Pollutants) standards are written in. The software will determine (based on the user data entered) whether the coatings and thinners being combined meet the regulations as currently presented. The Subtask was performed by Dale O'Bar of Classic Miniatures, Jacksonville, FL in association with Frank Thorn of Newport News Shipbuilding, Newport News, VA. Work began on 29 May 1998 and was completed on 1 November 1998. The software is available via Internet download as shareware from the Documentation Center of NSNet, identified as **NSRP 0554, November 1998, Network Version of Shipyard MACT Tracking Software**. Cost of the Subtask was \$24,630.

Subtask #32 - Workshop on Environmental Negotiations

This Subtask provided a one-day Workshop on environmental negotiation training and specific tips on how to negotiate environmental disputes, along with a discussion of several important issues related to agencies, penalties, and enforcement actions. The Workshop was conducted on 19 Jan 1999 in San Diego, CA, immediately preceding a regular meeting of SPC Panel SP-1. The Workshop was well attended and highly successful, with each attendee receiving an unusually comprehensive handout of materials relating to the topics discussed. The Subtask was performed by John L. Wittenborn of Collier, Shannon, Rill & Scott, PLLC, of Washington, DC, who personally conducted the Workshop. Work began on 20 Jul 1998 and was completed on 19 Jan 1999. Cost of the Subtask was \$20,000.

Subtask #33 - Turnaround Analytical Method for TBT

This Subtask performed a preliminary investigation leading to the development of an analytical procedure for toxic organic compounds, including TBT (tributyltin), whose turnaround time would be in the order of minutes or hours (rather than two or more days due to the complicated and labor-intensive analysis methods previously employed). The Subtask produced a "Quick TBT Analytical Method" that will yield reliable results in 15 minutes, a veritable breakthrough in sampling technology. The Subtask was managed by The Center for Advanced Ship Repair and Maintenance (CASRM), Norfolk, VA, Dr. Thomas J. Fox, Executive Director. This Center is a non-profit corporation established as a partnership between the ship repair industry and Old Dominion University. The Subtask was directed by Dr. Alan Messing, Director of the Applied Marine Research Laboratory affiliated with Old Dominion University in Norfolk. Also contributing to the prosecution of this Subtask was Thomas L. Beacham, NorShipCo/Lyons Shipyard, Norfolk, VA. Work began on 7 Aug 1998 and was completed on 20 Jun 2000.

Results were published as **NSRP Report 0561, August 2000, *Development of a Quick TBT Analytical Method***. Cost of the Subtask was \$21,500.

Subtask #34 - Interpretation of the Hazardous Chemical Exemption for Solids under EPCRA 311(e)(2).

This Subtask analyzed an interpretation being considered by the EPA relative to an exemption for "solids" under the definition of a "hazardous chemical" so that only the amount of "fume or dust" from a modified metal would count towards a facility's threshold calculations. This would be in lieu of the current practice of including all the listed metals in the entire "processed" metal plates. The analysis concluded that: (1) the proposed interpretation expanding the scope of the "solids exclusion" should be supported; and (2) this interpretation should also apply when calculating activity level thresholds under Section 313 of EPCRA (Emergency Planning and Community Right to Know Act) which governs the annual reporting of chemical "releases" on Form R or alternative Form A. Comments to this effect were prepared and submitted on behalf of the shipbuilding and ship repair industry. The Subtask was performed by John L. Wittenborn of Collier, Shannon, Rill & Scott, PLLC, Washington, DC. Work began on 3 Sep 1998 and was completed on 8 Sep 1998. Cost of the Subtask was \$3,000.

Subtask #35 - Shipbreaking: Environmental and Health and Safety Regulatory Overview.

This Subtask was to provide the following: (1) a description of U. S. policy on shipbreaking, and how that policy would be impacted by upcoming legislation; (2) detailed information on the Navy's new domestic shipbreaking pilot project, and how shipyards can get involved; and (3) an overview evaluation and description of U. S. environmental and OSHA laws and regulations applicable to shipbreaking activities. Because ships often contain a variety of hazardous substances (PCBs, contaminated oils, lead paint, asbestos, etc.), ship scrapping can - if done improperly - pose dangers to human health and the environment. This Subtask provides an overview of federal ship breaking policies as well as laws and regulations that are likely to be triggered during ship breaking activities. The Subtask was performed by John L. Wittenborn of Collier, Shannon, Rill & Scott, PLLC, Washington, DC. Work began on 5 Oct 1998 and was completed on 1 Sep 1999. Findings were published as **NSRP Report 0555, October 1999, *Ship Breaking: Environmental and Health and Safety Regulatory Overview***. Cost of the Subtask was \$27,500.

Subtask #36 - Shipyard TRI Training and Workshops

This Subtask prepared and delivered four 8-hour Workshops on Superfund Amendments and Reauthorization Act (SARA) Toxic Release Inventory (TRI) Reporting. Workshops were conducted as follows:

Northwest	Todd Shipyard, Seattle, WA	9 Apr 1999
Gulf Coast	University of New Orleans	16 Apr 1999
Northeast	General Dynamics, Groton, CT	23 Apr 1999
Southern California	Southwest Marine, San Diego, CA	1 Jun 1999

All Workshops were well attended, and the instructional information was well received. The techniques and calculations conveyed should help the shipyards to prepare more accurate and

appropriate TRI reports, increase shipyard efficiency, and inspire the documentation necessary to maintain compliance with EPCRA TRI. A student manual, in both hardcopy and on computer disk, was provided to each attendee. The Subtask was performed by Zachary F. Jacobs of Jacobs Consulting, San Diego, CA, who personally conducted the Workshops. The Subtask began on 14 Dec 1998 and was completed on 8 Nov 1999. Cost of the Subtask was \$25,700.

Subtask #37 - Endocrine Disrupter Chemicals Screening Program.

This Subtask prepared and submitted comments on behalf of the shipyard industry on the Endocrine Disrupter Chemicals Screening Program being pursued by the EPA. This program includes the procedures EPA intends to use to determine which chemicals may disrupt the endocrine (hormone) system of humans or wildlife. Comments on three legal issues, three technical issues, and two policy issues were offered. The Subtask was performed by John L. Wittenborn of Collier, Shannon, Rill & Scott, PLLC, Washington, DC. Work began on 6 Jan 1999 and was completed on 26 Feb 1999. Cost of the Subtask was \$6,000.

Subtask #38 - Development of Augmented Agenda for Shipyard-EPA Forum.

This Subtask was to prepare and hold an informational Forum or symposium to exchange views on selected environmental and regulatory issues of current impact and interest to both the EPA and the shipyard community. The Forum was held on 25-26 Mar 1999 in Washington, DC, and was highly successful. Participants included senior representatives from the U. S. Maritime Administration, the Environmental Protection Agency, and the Shipbuilding and Ship Repair Sector. This was the first in what would develop into additional exchanges of information among these principals, which later would include regional regulators. This positive approach to matters of mutual concern established a most favorable atmosphere that has continued to the present, and bodes well for the future. The Subtask was performed by Dana M. Austin of Austin Environmental, Inc., Jacksonville, FL. Work began on 4 Feb 1999 and was completed on 26 Mar 1999. Cost of the Subtask was \$37,074. The Gulf Coast Region Maritime Technology Center/Environmental Resources and Information Center at the University of New Orleans contributed \$3,500. to help fund this Forum. Cost to the ES&T Project was \$33,574.

Subtask #39 - Comments on EPA's Erroneous Application of Persistent, Bioaccumulative, and Toxic Criteria to Metals.

This Subtask prepared and submitted comments to the EPA on behalf of the NSRP relative to the inapplicability of the PBT (Persistent, Bioaccumulative, and Toxic) criteria to metals. The comments discuss this concern in detail, urging that the EPA Office of Solid Waste remove copper, chromium, zinc, and other metals from its list of RCRA (Resource Conservation and Recovery Act) PBT substances. The Subtask was performed by John L. Wittenborn of Collier, Shannon, Rill & Scott, PLLC, Washington, DC. Work began on 8 Feb 1999 and was completed on 16 Feb 1999. Cost of the Subtask was \$6,000.

Subtask #50 - Prepare and Submit Comments on Proposed TMDL Guidelines.

This Subtask prepared and filed comments on the EPA proposed water quality effluent limitation guidelines for Total Maximum Daily Loads (TMDL). A majority of the members of

the ES&T Ad Hoc Committee were present at a MarAd/EPA/Shipyard Stormwater Forum held on 11 Jan 1999, at which these guidelines were considered. During their discussions following the Forum, these members determined that this Subtask should be performed. In view of the extremely short timeframe involved, the contractor was authorized to proceed immediately. Comments were prepared and submitted before the EPA deadline. The Subtask was performed by John L. Wittenborn of Collier, Shannon, Rill & Scott, PLLC, Washington, DC. Cost of the Subtask was \$2,000.

Subtask #51 - MP&M Effluent Limitation Guidelines, Phase 1-1/2: Attempt to Reshape the upcoming MP&M Proposal.

This Subtask enabled an attempt to negotiate the terms of the pending Metal Products and Machinery (MP&M) proposal on Effluent Limitation Guidelines (ELG's), and also deal with the Office of Management and Budget (OMB) and the Small Business Administration (SBA) to help shape the proposal prior to its publication in October 2000. The Subtask is closely associated with three Subtasks currently being prosecuted under ES&T Phase VI relative to MP&M ELG's:

Subtask #47 - Phase 1: Analysis of Current Data;

Subtask #48 - Phase 2: Detailed Analysis of Proposed Regulation;

Subtask #49 - Phase 3: Prepare Comments on the Proposal for the Rulemaking Docket.

This Subtask seized upon an opportunity growing from the favorable relationship nurtured by several Shipyard/EPA/MarAd activities over the past several months (including Subtask #38 discussed above, and on-going Phase VI Subtask #44 - Shipyard/EPA/MarAd Project Facilitation and Coordination). Appropriate issues, particularly including shipyard dry dock operations, were addressed to senior representatives of EPA, OMB, and SBA for their consideration in determining regulation of the dry dock sector. The Subtask began on 10 Jul 2000 and was completed on 25 October 2000. Work was performed by John L. Wittenborn of Collier Shannon Scott, PLLC, Washington, DC. Cost of the Subtask was \$12,800.

SPC Panel SP-1 AD HOC COMMITTEE for Environmental Studies and Testing

Members of the SPC Panel SP-1 Ad Hoc Committee for Environmental Studies and Testing during most of this time period were:

Steven Lacoste, Chairman	Avondale Industries, Inc.
Thomas L. Beacham	Lyons Shipyard, Inc.
Julian M. Bingham	Atlantic Marine, Inc. - Mobile
T. Michael Chee	NASSCO
Fran Cohen	U. S. Coast Guard Yard
Donna L. Elks	Electric Boat Corp.
Wayne S. Holt	Atlantic Marine, Inc. - Jacksonville
Pat Killeen	Halter Marine Group
Frank H. Thorn	Newport News Shipbuilding
Rodney A. Robinson	R-P-M (Project Manager)

OVERALL SUMMARY OF ENVIRONMENTAL STUDIES AND TESTING TO DATE

Project **N1-89-2** for **Phase I** of Environmental Studies and Testing accomplished **4** Subtasks. Project **N1-90-5** for **Phase II** of Environmental Studies and Testing fell below the funding cutoff and was not performed. Project **N1-92-2** for **Phase III** of Environmental Studies and Testing accomplished **8** Subtasks. Project **N1-96-4** for **Phase IV** of Environmental Studies and Testing accomplished **18** Subtasks. This Project **N1-97-1** for **Phase V** of Environmental Studies and Testing accomplished **13** Subtasks. Project **N1-98-1** covering **Phase VI** of Environmental Studies and Testing, and involving **9** Subtasks, is currently underway with completion mandated for December 2000.

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