

DoD Executive Agent

Office of the Assistant
Secretary of the Army
(Installations and
Environment)



NDCEE

National Defense Center for
Environmental Excellence

Operated by:

 Concurrent Technologies Corporation

Transferring Technology Solutions -

Navy Compliance with National Emission Standards for Hazardous Air Pollutants (NESHAP) for Shipbuilding and Ship Repair

By

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Supporting Readiness, Sustainability, and Transformation



Overview

- Background
- Objectives
- Accomplishments and Results
- Report
- Project Stakeholders
- Contact Information



Background

- NESHAP for Shipbuilding and Ship Repair
 - Promulgated under section 112(d) of the Clean Air Act
 - Amended in 1990
- U.S. Environmental Protection Agency (EPA) is in the process of assessing the risk to the public
 - Conducted residual risk test in 2003
 - Developed a data-gathering and analysis plan
 - Obtaining more refined data
 - Processes
 - Emissions
 - Emission control equipment
 - Cost
 - Plans to develop a residual risk rule (unless deemed unnecessary)
 - Update from published data on April 24, 2006
 - Anticipated notice of proposed rule-making – July 2007 (was December 2006)
 - Final Action – December 2008 (was December 2007)
- Need to enable cost-effective compliance to the residual risk ruling



Objectives

- Coordinate communication between Navy and commercial shipyards on the status of and preparation for the residual risk ruling
- Identify and evaluate environmental control technologies to comply with the residual risk ruling
- Determine economic impact of residual risk ruling to the shipbuilding industry



Shielded Metal Arc Welding



Accomplishments and Results

- Coordinated communication between Navy and commercial shipyards on the status of the residual risk ruling and this project
 - October 25, 2005
 - March 3, 2006
 - June 16, 2006
- Obtained document on possible Welding Control Options submitted to the EPA by the Residual Risk Working Group under the parallel National Shipbuilding and Repair Program (NSRP) Environmental Panel (SP-1) project



Accomplishments and Results (cont'd)

- Identified over 20 potential shipyards for the collection of baseline data
- Compiled baseline data from seven (7) Navy and commercial shipyards
- Coordinated with the project team to identify and select the following locations for site visits:
 - Bath Iron Works, ME
 - Northrop Grumman Newport News Shipbuilding, VA
 - Norfolk Naval Shipyard, VA
 - BAE Systems – Norfolk Ship Repair, VA
 - Puget Sound Naval Shipyard, WA
 - Todd Pacific Shipyard, WA



Site Visit Results

- Bath Iron Works
 - December 19-20, 2005
 - POC
 - Vince Dickinson
 - Areas visited
 - A(ssembly)-Ways
 - Blast/Paint I
 - LLTF (includes Pier 4, Shipways 1-3 and Drydock)
 - POII
 - Assembly Bldg
 - Aluminum Building



Site Visit Results

- Bath Iron Works (cont'd)
 - Obtained copies of reports on worker exposure and welding emission release completed by the Edison Welding Institute for the NSRP
 - Obtained a copy of the EPA document entitled “Alternative Control Techniques Document – Industrial Cleaning Solvents” dated February 1994
 - Identified additional contacts to assist with down-selection of shipyards to be visited for completion of the cost impact analysis



Site Visit Results

- Northrop Grumman Newport News Shipbuilding (NGNNS)
 - April 10, 2006
 - POCs
 - Frank “Hogie” Thorne
 - Page Ayres
 - Tiffany Rensonet
 - Areas Visited
 - Welding Engineering Lab
 - Boiler Shop
 - Carrier Module Assembly Facility (CMAF)
 - Platen Area
 - Welding School
 - Steel Production Facility
 - Drydock



Site Visit Results (cont'd)

- Norfolk Naval Shipyard (NNSY)
 - April 12, 2006
 - POCs
 - Mike Host
 - Bill Bright
 - Jan Neilsen
 - Areas Visited
 - Welding School
 - Welding Engineering Facility
 - Pipe Shop
 - Structural Fabrication Building
 - Storage Equipment Facility



Site Visit Results (cont'd)

- BAE Systems Norfolk Ship Repair
 - April 13, 2006
 - POC
 - Michael Ewing
 - Areas Visited
 - Drydock Area
 - Blacksmith Shop
 - Metal Shop
 - Fabrication Shop
 - Machine Shop



Site Visit Results (cont'd)

- Puget Sound Naval Shipyard (PSNSY)
 - May 16, 2006
 - POC
 - Richard Stone
 - Areas Visited
 - Shopfitter and Welder Shops
 - Off-Hull Recycle Center
 - Sheetmetal Shop
 - Drydock



Site Visit Results (cont'd)

- Todd Pacific Shipyard
 - May 17, 2006
 - POC
 - Allen Rainsberger
 - Areas Visited
 - Sheet Metal Shop
 - Aluminum Shop
 - Welding Lab
 - Machine Shop
 - Steel Shop
 - Drydock



Site Visit Results (cont'd)

■ **Welding Technologies**

- Submerged Arc Welding (SAW)
- Gas Tungsten Arc Welding (GTAW)
- Gas Metal Arc Welding (GMAW)
- Shielded Metal Arc Welding (SMAW)
- Flux Core Arc Welding (FCAW)
- Stick Welding

■ **Control Technologies**

- Industrial Health
 - Local exhaust ventilation (LEV)
 - Blowers (portable and stationary)
 - Passive louvers above the floor
 - Fans with louvers near the roof
 - Natural (e.g., opened windows or doors)
- Environmental
 - Fume extraction system with HEPA filtration
 - Downdraft tables with filter/baghouse
 - Dust Collectors (cartridge type)
 - Water wash Roto-Clone



Accomplishments and Results (cont'd)

- Initiated telecons with Mohammed Serageldin, EPA:
 - Discussed
 - Objectives of this effort
 - Status of the residual risk ruling
 - Status of EPA's analysis: risk team is in process of conducting risk analysis (June 5, 2006)
 - Recommended that *CTC* provide proposed cost model to him to review prior to running the program to ensure consistent analysis of cost data by *CTC* and EPA



Final Report

- Describe broad range of welding operations in the shipbuilding industry
 - Small, medium, and large shipyards
 - New construction and repair shipyards
 - Shipboard operations
 - Fabrication building operations
- Include “Toolbox” of environmental control technologies
 - Currently used
 - leverage report on welding control technologies (NSRP Residual Risk Working Group)
 - Data obtained during task execution
 - Commercially available
 - Applications of each identified technology
 - Pros and cons of each technology



Final Report (cont'd)

- Economic impact analysis of residual risk ruling, as it applies to the shipbuilding industry
 - Proposed scenario
 - Option 1: shipboard welding applications
 - Option 2: welding applications in a fabrication building
 - Parameters: air flow and environmental controls (e.g., filtration)
 - Potential Output
 - Capital, maintenance, and training cost for each option under the proposed scenario
 - Cost per welder and/or pound of emission captured for each option under the proposed scenario



Project Stakeholders

- Supporting Organizations
 - Chief of Naval Operations (CNO), N45
 - Naval Sea Systems Command (NAVSEA)
 - Naval Surface Warfare Center Carderock Division (NSWCCD)
 - Shipbuilders Council of America
 - NSRP
- Navy Shipyards
 - Norfolk Naval Shipyard
 - Puget Sound Naval Shipyard



Project Stakeholders

- Commercial Shipyards
 - Atlantic Dry Dock Corporation
 - Alabama
 - Jacksonville
 - BAE Systems
 - Norfolk
 - San Diego
 - San Francisco
 - General Dynamics
 - National Steel and Shipbuilding Company (NASSCO)
 - Bath Iron Works (BIW)
 - Gunderson Inc.



Project Stakeholders

- Commercial Shipyards
 - Jeff Boat
 - Northrop Grumman
 - Avondale Ship Systems
 - Newport News Shipbuilding
 - Signal International, LLC.
 - Todd Shipyard



Contact Information

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