

NSRP Panel Project: Development of Shipyard Environmental Metrics

SP-1 Environmental Panel Meeting
June 21, 2007 (Status Update)



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Project Scope

- **Review and evaluate the environmental impacts of production techniques and management systems used in ship production and repair facilities.**
- **Selection of those aspects that demonstrate the most useful environmental performance indicators.**
- **Selected aspects will be used to measure and report environmental performance and help identify future improvements**

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Project Status

- **NSRP Executive Control Board contracted project in January 2007.**
- **Project Award – NTE \$42,000 with \$12k Cost Share**
- **Project Duration – 8 months**
- **Project Team Members**
 - BAE Systems San Diego Ship Repair – San Diego (lead)
 - General Dynamics, NASSCO
 - General Dynamics, Bath Iron Works
 - Dana M. Austin Environmental Consulting, Inc. (Shipyard Environmental Consultant)
 - Hepinstall Consulting Group, Inc. (Industrial Engineering Consultant)

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Project Status

- **Workshop conducted during last NSRP SP-1 Meeting on February 15, 2007**
- **Phase I Report submitted April 30, 2007**
- **Phase II Report submitted May 25, 2007**
- **Project update June 21, 2007**
- **Phase III is currently underway**
- **Phase III Report due August 17, 2007**
- **Final Report due August 31, 2007**
- **Final Presentation to SP-1 Committee to be made at the Fall 2007 meeting.**

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Project Final Deliverables

- **Final Written Report and Oral Presentation**
 - Describing the identification, selection, and development of selected environmental metrics and their relationship to shipyard production process aspects.
 - The deliverable will include a menu of potentially applicable measurement techniques that shipyards can adopt as appropriate to their operations.

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Survey Results

Operations	Drivers		
	Compliance	Cost	Environmental Impact
Shipyard Process or Aspect			
Exterior Ship Painting	9.3	8.4	9.3
Dry Dock Painting	9.6	8.8	8.4
Hazardous Waste Disposal	8.4	8.4	8.5
Dry Dock Cleaning	8.3	7.6	8.0
Industrial Wastewater	8.3	8.0	7.3
Waste Management	7.6	7.6	6.9
Abrasive Blasting, Exterior Ships	8.0	6.0	7.2
Over water Transfers	7.6	5.9	7.6
Stormwater Management	7.9	6.7	6.7
Hydroblasting-UHPWJ	7.2	6.8	6.8
Interior Ship Painting	7.6	6.1	6.0
Ships Refueling	6.8	4.5	6.4
Paint Booth	6.8	5.5	5.5
Pressure Washing	6.0	4.9	6.1
Pier Repair/Maintenance	6.0	5.3	4.9
Bilge and Tank Cleaning	5.2	5.3	5.7
Small Parts Coating	7.6	3.8	4.3
Abrasive Blasting, Inside Ships	4.1	6.8	4.2
Ships Metal Abatement	5.5	4.8	4.4
Portable Compressors	5.6	3.8	4.6
ACM Abatement	4.0	5.6	3.4
Welding, Stations	3.8	4.1	4.5
Refrigeration Repair	4.8	3.1	3.3
Welding, On-Board Ship	3.7	3.3	4.1
Burning/Cutting	3.8	3.1	4.2
Scrap/Recyclables	4.2	4.3	2.0
Metal Grinding	3.4	3.1	4.1
Wood Working	4.1	3.3	3.0

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- **Survey results:**

- Ranking of production processes
- Identification of primary drivers for those processes
- Evaluation of common elements for processes and drivers

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Phase III

Environmental Drivers

Common Aspects

Process Metrics

Production Activity

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Next Steps

- **Identify the common elements of selected work processes**
- **Develop process metric templates for data input**
- **Develop Highest level metric that incorporates normalized common elements (Balanced Scorecard). Examples may included:**
 - Waste disposal
 - Air emissions
 - Water Quality
 - Compliance

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