

Kick-Off Meeting

Shipbuilding and Ship Repair Industry Initiative to Prepare for and Comply with the Residual Risk Ruling

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Team Leader

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Concurrent
Technologies
Corporation

Background

- U.S. Environmental Protection Agency (US EPA) is assessing risk to the public
- US EPA considering new risk-based standards known as Residual Risk Standards
- Anticipated notice of proposed rule-making
 - ANPRM – December 2006
 - Proposed Rule – June 2007
 - Final Rule – May 2008
- Goal is cost-effective compliance with Residual Risk Rule (RRR)



Objectives

- Ensure continued operations at shipyards pre/post RRR
- Determine current state of welding practices at shipyards
- Perform independent analysis of environmental risk model
- Identify and evaluate technologies/strategies to reduce welding emissions
- Determine economic impact of RRR on shipbuilding industry
- Support sustainable Technical Transition Plan



Project Team

- **Supporting Organizations**
 - National Shipbuilding Research Program (NSRP)
 - Advance Technology Institute (ATI)
 - Chief of Naval Operations (CNO), N45
 - Naval Sea Systems Command (NAVSEA)
 - Naval Surface Warfare Center Carderock Division (NSWCCD)
- **Navy Shipyards**
 - Norfolk Naval Shipyard (NNSY)
 - Puget Sound Naval Shipyard (PSNY)
- **Commercial Shipyards**
 - Atlantic Marine Alabama (AMA)
 - BAE Systems (San Diego and Norfolk Ship Repair)
 - Bath Iron Works (BIW)
 - General Dynamics (GD) National Steel and Shipbuilding Company (NASSCO)
 - Northrop Grumman Newport News (NGNN)
 - Northrop Grumman Ship Systems (NGSS) - PTR
- **Primary Contractor and Subcontractors/Consultants**
 - Concurrent Technology Corporation (*CTC*)
 - Applied Research Laboratory (ARL) - Penn State Univ.
 - Kelley Drye Collier Shannon, PLLC (KDCS)
 - Scientific Resources Associated (SRA)
 - SofTek Systems Inc. (SSI)
 - Emission Testing Consulting Firm (TBD)



Approach – Phase I

Proactively prepare for release of RRR

- Project Management
 - Prepare Project Management plan (PMP)
 - Produce Interim Report
 - Support Meetings
 - Kickoff --SP-1--etc.
- Complete Technology Transition Plan
- Determine fate and transport of welding emissions
- Conduct demonstrations/evaluations of possible emission control technologies
- Evaluate risks associated with alternative technology deployment and overall impact on emission reductions
- Determine economic impact of RRR to shipbuilding industry



Approach - Phase II and Final Report

Complying with the RRR

- Conduct alternative welding process demonstration
- Complete technology transition activities
- Identify innovative welding processes
- Produce Final Report



Phase I

Task 1 Technology Transition Plan

Goal – Detail implementation efforts required and to disseminate to shipbuilding industry

- Identify expected outcome of project
- Determine critical implementation requirements
- Develop milestone schedule
- Implement findings under this project



Phase I

Task 2 Fate and Transport of Emissions

Goal - Support preparation of any potential regulation negotiations

Baseline Data

- Define problem and any potential obstacles
 - Identify issues that could impact implementation of viable solutions
 - Assess information compiled for/by US EPA during previous efforts
 - Visit selected shipyards to gather current info (as needed)
 - Welding process types
 - Materials used (base & consumables)
 - Estimate/actual rates of emissions/particulates
 - Emissions, mists, or fume relevant rates and constituents
 - Determine whether additional analysis is needed
 - (i.e. air emissions sampling from scrubbers etc)

Teams visiting sites will be cognizant that site personnel have the best information available but limited time to spend answering questions.

Phase I

Task 2 Fate and Transport of Emissions

Baseline Data (cont.)

- Leverage previous efforts/studies
 - *Coordination of Shipbuilding and Repair Industry Response to US EPA RRR* (NSRP 0345, ongoing)
 - US EPA's 2003 Survey of emissions and control of toxic materials and HAPs from shipbuilding/ship repair industry
 - *Welding Fume Study Final Report* (NSRP 0525, 1999)
 - *Characterizing Shipyard Welding Emissions and Associated Control Options* (NSRP 0457, 1995)
 - *Draft Gap Analysis Report, Economic Impact Report, and Final Task Technical Report* (NDCEE Joint Services Initiative Project (N5, 2006)
 - *Compliance Development of Lightweight Fume Extraction Welding Guns* (NSRP SP-7 Final Report, 2001)
 - Sustainable Painting Operations for the Total Army (SPOTA) Program
 - Others (TBD)



Phase I

Task 2 Fate and Transport of Emissions

Emission Modeling and Calculation Procedures

- Gather/model representative emissions, pollutant release & dispersion data
- Compare data and model output generated by US EPA and/or the shipbuilding industry
 - Evaluate reasonableness of assessment conducted by the US EPA
- Collect info regarding techniques used to determine emissions data
- Develop set of common emission factors and calculation procedures to be used by all shipyards



Phase I

Task 3 Emission Control Technology Demonstration

Goal - Quantify the effectiveness of identified welding control technologies

- Gather/review previous studies and models
 - Edison Welding Institute (EWI)
 - University of New Orleans
 - Baseline information gathered under Task 2
- Determine cost, efficiency, workspace volume limitations, reliability, maintenance burden and impact on production for each identified technology
- Determine if additional laboratory testing and on-site demonstrations for welding emissions are needed
- Develop a sampling and analysis plan
- Conduct emission and open air testing at up to four sites
- Investigate and evaluate combinations of process and engineering controls to assess the potential emission reduction, cost and production process impact



Phase I

Task 4 – Risk of Implementation

Goal – Determine risk of implementation

- Calculate risk of technology implementation to include, but may not be limited to:
 - Output from toxicant and emissions dispersion modeling
 - Estimated cancer risks and noncarcinogenic health impacts
- Leverage *Monte Carlo* analysis software
 - Identify impact of uncertainty upon risk calculations
 - Assure full understanding of the resultant risk range is available for comparison to RRR



Phase I

Task 5 Cost Impact Analysis Support

Goal – Determine economic impact of RRR

- Utilize US EPA approved methodology (ECAMSM)
 - Capital
 - Operating Cost
 - Cost of non-compliance
 - Other



Decision Point

Go/No Go Decision Point

- Impact of RRR findings
- Threshold risk comparison (acceptable v. non-acceptable)



Phase II and Final Report

- Task 1 - Continue demonstrations and evaluations on welding emission control technologies
- Task 2 - Continue technology transition and implementation activities
- Task 3 - Conduct research to identify innovative alternative welding materials and processes
- Final Report



Phase I Schedule

ID	Task Name	Duration	Start	Finish	Half 1, 2007					Half 2, 2007					Hal				
					J	F	M	A	M	J	J	A	S	O		N	D	J	
1	Initiative to Prepare For and Comply With The RRR	609 days	Thu 1/18/07	Tue 5/19/09															
2	Contract Award	1 day	Thu 1/18/07	Thu 1/18/07															
3	Phase I	261 days	Thu 1/18/07	Thu 1/17/08															
4	Task 1 - Technology Transition Plan	261 days	Thu 1/18/07	Thu 1/17/08															
5	Final Technology Transition Plan	75 days	Fri 1/19/07	Thu 5/3/07															
6	Technology Transfer Activities	261 days	Thu 1/18/07	Thu 1/17/08															
7	Task 2 - Fate and Transport of Emissions	190 days	Thu 1/18/07	Wed 10/10/07															
8	Baseline Data	170 days	Thu 1/18/07	Wed 9/12/07															
9	Emissions Modeling	190 days	Thu 1/18/07	Wed 10/10/07															
12	Emission Factors and Calculation Procedures	60 days	Thu 3/1/07	Wed 5/23/07															
15	Task 3 - Emission Control Technology Demonstration	225 days	Thu 1/18/07	Wed 11/28/07															
16	Literature Review	60 days	Thu 1/18/07	Wed 4/11/07															
17	Decision on need for PM10 or Alt Welding Demo's	5 days	Thu 4/12/07	Wed 4/18/07															
18	PM10 Emission Demo	105 days	Thu 5/24/07	Wed 10/17/07															
28	Alt. Welding Demo	135 days	Thu 5/24/07	Wed 11/28/07															
39	Task 4 - Risk of Implementation	240 days	Thu 1/18/07	Wed 12/19/07															
40	Perform Risk Evaluation	180 days	Thu 1/18/07	Wed 9/26/07															
41	Risk of Implementation Report	60 days	Thu 9/27/07	Wed 12/19/07															
42	Task 5 - Cost Impact Analysis	120 days	Mon 7/2/07	Fri 12/14/07															
43	Perform Cost Impact Analysis	90 days	Mon 7/2/07	Fri 11/2/07															
44	Cost Impact Analysis Report	30 days	Mon 11/5/07	Fri 12/14/07															
45	Task 6 - Interim Final Report	65 days	Fri 10/19/07	Thu 1/17/08															
46	Go/No Go Decision to Proceed With Phase II	10 days	Fri 1/4/08	Thu 1/17/08															



Phase II & Final Report Schedule

ID	Task Name	Duration	Start	Finish	Half 1, 2008					Half 2, 2008					Half 1, 2009					
					J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A
47	Phase II	261 days	Fri 1/18/08	Fri 1/16/09	←															
48	Task 1 - Alternative Welding Process Demo	200 days	Fri 1/18/08	Thu 10/23/08	←															
49	Laboratory Testing	180 days	Fri 1/18/08	Thu 9/25/08	←															
53	On-Site Testing	200 days	Fri 1/18/08	Thu 10/23/08	←															
58	Task 2 - Technology Transfer Activities	255 days	Fri 1/18/08	Thu 1/8/09	←															
59	Task 3 - Innovative Welding Processes	251 days	Fri 2/1/08	Fri 1/16/09	←															
60	Identify Alternative Welding Processes	170 days	Fri 2/1/08	Thu 9/25/08	←															
61	Innovative Welding Processes Report	30 days	Mon 12/8/08	Fri 1/16/09	←															
62	Program Management (Phase I Task 6 & Phase II Task 4)	609 days	Thu 1/18/07	Tue 5/19/09	←															
63	Quarterly Technical Status Report	527 days	Thu 3/1/07	Fri 3/6/09																
73	Quarterly Business Status Report	527 days	Thu 3/1/07	Fri 3/6/09																
83	Project Management Plan	15 days	Thu 1/18/07	Wed 2/7/07																
84	Program Management Activities	609 days	Thu 1/18/07	Tue 5/19/09	←															
85	Phase III	74 days	Mon 1/19/09	Thu 4/30/09	←															
86	Final Project Report	74 days	Mon 1/19/09	Thu 4/30/09	←															



Path Forward

- Complete contract negotiations
- Finalize formalized team agreements
- Determine data disseminated and/or shared with US EPA to date related to modeling
- Determine reciprocal and/or shared knowledge regarding emissions modeling
- Identify team for sampling and analysis plan
- Next Meeting



Contact Information

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