# Benefit Analysis of SPC Panel SP-3 Projects& Evaluation of SPC Panel SP-3 Management and Administration

U.S. DEPARTMENT OF THE NAVY
DAVID TAYLOR RESEARCH CENTER

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

# Report Documentation Page

*Form Approved*
*OMB No. 0704-0188*



| 1. REPORT DATE | 2. REPORT TYPE | 3. DATES COVERED |
|---|---|---|
| **SEP 1993** | **N/A** | **-** |

| 4. TITLE AND SUBTITLE | 5a. CONTRACT NUMBER |
|---|---|
| **Benefit Analysis of SPC Panel SP-3 Projects & Evaluation of SPC Panel SP-3 Management and Administration** | 5b. GRANT NUMBER |
| | 5c. PROGRAM ELEMENT NUMBER |
| 6. AUTHOR(S) | 5d. PROJECT NUMBER |
| | 5e. TASK NUMBER |
| | 5f. WORK UNIT NUMBER |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Naval Surface Warfare Center CD Code 2230-Design Integration Tools Bldg 192, Room 128 9500 MacArthur Blvd, Bethesda, MD 20817-5000** | 8. PERFORMING ORGANIZATION REPORT NUMBER |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) | 10. SPONSOR/MONITOR'S ACRONYM(S) |
| | 11. SPONSOR/MONITOR'S REPORT NUMBER(S) |

12. DISTRIBUTION/AVAILABILITY STATEMENT
**Approved for public release, distribution unlimited**

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

| 16. SECURITY CLASSIFICATION OF: | | | 17. LIMITATION OF ABSTRACT | 18. NUMBER OF PAGES | 19a. NAME OF RESPONSIBLE PERSON |
|---|---|---|---|---|---|
| a. REPORT | b. ABSTRACT | c. THIS PAGE | | | |
| **unclassified** | **unclassified** | **unclassified** | **SAR** | **55** | |

## DISCLAIMER

These reports were prepared as an account of government-sponsored work. Neither the United States, nor the United States Navy, nor any person acting on behalf of the United States Navy (A) makes any warranty or representation, expressed or implied, with respect to the accuracy, completeness or usefulness of the information contained in this report/manual, or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately owned rights; or (B) assumes any liabilities with respect to the use of or for damages resulting from the use of any information, apparatus, method, or process disclosed in the report. As used in the above, “Persons acting on behalf of the United States Navy” includes any employee, contractor, or subcontractor to the contractor of the United States Navy to the extent that such employe, contractor, or subcontractor to the contractor prepares, handles, or distributes, or provides access to any information pursuant to his employment or contract or subcontract to the contractor with the United State Navy. ANY POSSIBLE IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR PURPOSE ARE SPECIFICALLY DISCLAIMED.

# THE NSRP NEEDS YOUR EVALUATION OF THIS REPORT:

## PLEASE RETURN A RESPONSE CARD AFTER READING REPORT

### NSRP READER RESPONSE CARD

**We would appreciate your comments on this report. Please take a few minutes to complete and return this postage-paid card. Thank you.**

**Name** _____

**Organization** _____

**Phone** _____

•*Overall Quality of Report*

❑ Excellent ❑ Good ❑ Fair ❑ Poor

•*Usefulness to You/Ylour Organization*

*O* **Very Useful** **O Moderately Useful** ❑ N/A

•*Did/Will your organization implement the results of this project? O Yes O No*

**If not, why?** _____

•*How Did You Receive Report?*

❑ **Mailed directly to you**
**O Referred to you by someone else**

•*Did/Will You Pass Report On To Someone Else?*

*D Yes O No*

• *In Your Opinion,1s Anything Missing That Would Make This Report Better?*

*O* **Yes** _____

_____

•*General Comments*

_____

_____

**NSRP 0391**


### NSRP READER RESPONSE CARD

**We** would appreciate **your comments on this report. Please take a few minutes to complete and return this postage-paid card. Thank you.**

**Name** _____

**Organization** _____

**Phone** _____

•*Overall Quality of Report*

❑ Excellent ❑ Good ❑ Fair ❑ Poor

•*Usefulness to You/Your Organization*

*D* **Very Useful** ❑ Moderately Useful ❑ N/A

•*DidWill your organization implement the results of this project? o Yes D No*

**If not, why?** _____

•*How Did You Receive Report?*

❑ Mailed directly to you
**O Referred to you by someone else**

•*Did/Will You Pass Report On To Someone Else?*

❑ *Yes El No*

*" In Your Opinion, Is Anything Missing That Would Make This Report Better?*

❑ Yes _____

_____

•*General Comments*

_____

_____

**NSRP 0391**

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST CLASS MAIL PERMIT NO. 2635 SAN DIEGO CA

POSTAGE WILL BE PAID BY ADDRESSEE

NASSCO/NSRP PROGRAM MANAGER

ATTN: Lyn Haumschilt M.S. 04A
National Steel and Shipbuilding Co.
P.O. Box 85278
San Diego, CA 92186-5278

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST CLASS MAIL PERMIT NO. 2635 SAN DIEGO CA

POSTAGE WILL BE PAID BY ADDRESSEE

NASSCO/NSRP PROGRAM MANAGER

ATTN: Lyn Haumschilt M.S. 04A
National Steel and Shipbuilding Co.
P.O. Box 85278
San Diego, CA 92186-5278

# FINAL REPORT

✠ ✠ ✠

# BENEFIT ANALYSIS OF SPC PANEL SP-3 PROJECTS

**and**

## EVALUATION OF SPC PANEL SP-3 MANAGEMENT AND ADMINISTRATION

✠ ✠ ✠ ✠ ✠

Prepared by
Robinson-Page-McDonough and Associates, Inc.
Post Office Box 9
Greenland, New Hampshire 03840
(603) 436-7762

For
NATIONAL STEEL AND SHIPBUILDING COMPANY
Harbor Drive and 28th Street
Post Office Box 85278
San Diego, California 92186-5278

In Behalf Of
SNAME SPC PANEL SP-3

SURFACE PREPARATION AND COATINGS

Under the
NATIONAL SHIPBUILDING RESEARCH PROGRAM

✠ ✠ ✠ ✠ ✠

September 1993

Task N8-90-11

# PREFACE

The National Shipbuilding Research Program has been sponsored during the past 20 years by the Maritime Administration, United States Department of Transportation, and by the United States Navy toward improving productivity in shipbuilding. The Program is operated through several Panels of the SNAME Ship Production Committee. During 1988 a survey was conducted in behalf of SPC Panel SP-3 on Surface Preparation and Coatings to determine(1) the benefit value that had accrued from the research projects sponsored by that Panel during the previous 15 years, and (2) how the management and administration of the Panel itself- meetings, discussions, activities - was seen by the using community. The report of this survey (NSRP 0303, July 1989) was well received. It was therefore decided to conduct a similar survey for each of the other active SPC Panels, and to update the survey of Panel SP-3.

The SP-3 update is reported herein. The purpose of this survey was (1) to investigate the benefits that may have resulted from SP-3 projects carried out in the 4 years since the previous survey in this area, and (2) to evaluate how the direction of Panel SP-3 itself has been viewed by the using community since the last survey.

The Task was conducted by Rodney A. Robinson, Vice President of Robinson-Page-McDonough and Associates, Inc. Personal interviews were conducted with several representative members of the shipyard Surface Preparation and Coatings community to gain the necessary tiormation. Conclusions and recommendations based on analysis of the findings are included in the report. The work, under NASSCO Purchase Order No. MUl711 17-D, began in October 1991 and was completed in September 1993.

# EXECUTIVE **SUMMARY**

This Task has investigated the benefits derived from the projects sponsored during the past 4 years by SNAME Ship Production Committee Panel SP-3 on Surface Preparation and Coatings under the National Shipbuilding Research Program. This Task is an update to an earlier survey (1989) covering the previous 15 years. It has found that those projects offering timely information and assistance to the shipyard community in the surface preparation and coatings areas have yielded the most vaiue. It has also found that the projects performed since the last survey generally have yielded more benefit value to the shipyard community than the earlier projects, an indication that during the past few years the Panel has become better aligned with shipyard needs .

This Task has also assessed the opinion of the shipyard using community on the administration and management of Panel SP-3 itself. It has found that the practices currently in effect have been well received, and should be continued with only minor improvements. In regard to NSRP matters in general, however, the survey has revealed major concern about the length and uncertainty of the project finding cycle. It also points out difficulties in achieving and maintaining an awareness of NSRP matters throughout the shipyard community, and with the timely distribution to Panel participants of information on NSRP projects and activities. These concerns should be examined and treated promptly, as the future success of the NSRP may well depend on it.

The portion of the NSRP within which Panel SP-3 is active takes on additional significance as efforts are directed toward preparing our shipyard community for entry into the international commercial market. Environmental and hazardous material issues associated with surface preparation and coatings activities are of major concern, and may determine whether our shipyard industry will survive or fail. The “playing field” of environmental regulations and requirements is definitely <u>not</u> a level one where foreign shipyard practices are concerned. It is therefore necessary that U. S. shipyards become so proficient in these matters that the associated costs do not price us out of the competition. Panel SP-3 has recognized this situation, and actively meets in conjunction with SPC Panel SP-I on Facilities and Environmental Effects to address items of mutual concern. We are fortunate that Panel SP-3 is well established, broadly based, enthusiastic, and intellectually disposed to face the issues in this important area.

# TABLE OF CONTENTS


| | PAGE |
|---|---|
| BACKGROUND | 1 |
| BENEFIT ANALYSIS OF PROJECTS SPONSORED BY SPC PANEL SP-3 | 2 |
| Detailed Discussion of Individual Projects | 3 |
| MANAGEMENT **OF SPC** PANEL SP-3 ACTIVITIES | 19 |
| Meeting Attendee Matrix | 20 |
| Panel Meetings and Administration | 24 |
| - On Improving Meetings | 24 |
| - On Gaining More Assistance from the NSRP | 26 |
| - On Potential Projects for Panel SP-3 | 27 |
| - On Message for Panel SP-3 | 28 |
| Project Reports and NSRP Inforrnation | 29 |
| - On Improving NSRP Communications | 29 |
| CONCLUSIONS FROM THE FINDINGS | 31 |
| RECOMMENDATIONS FROM THE CONCLUSIONS | 33 |
| APPENDICES | |
| Appendix A - Project Benefit Analysis Worksheet, SPC Panel SP-3 | |
| Appendix B - SPC Panel Meeting Management and Administration Questionnaire/Worksheet | |
| Appendix C - SPC Panel SP-3 Projects Listing based on Benefits Evaluation | |

# FINAL REPORT

## BENEFIT ANALYSIS OF SPC PANEL SP-3 PROJECTS

**and**

## EVALUATION OF SPC PANEL SP-3 MANAGEMENT AND ADDMINISTRATION

## BACKGROUND

### General Discussion

This project was a direct follow-onto a similar project conducted in 1989 in behalf of SPC Panel SP-3 to (1) explore the benefits that may have resulted from the projects sponsored by that Panel during the previous 15 years, and (2) to evaluate how the management of Panel SP-3 itself was seen by the using community. The report on that project (NSRP 0303, July 1989) was well received, prompting the development of this current project, which consists of the same kind of analyses for all other SPC Panels, as well as an update on the projects of Panel SP-3 since the original report. The report presented herein covers the update on the projects of Panel SP-3 on Surface Preparation and Coatings since the previous survey, and offers some current comments on the administration of Panel activities.

This Project was designed: (1) to investigate the benefits that may have resulted from SPC Panel SP-3 Surface Preparation and Coatings projects carried out during the 4 years of Panel operations since the previous survey in this area; and (2) to evaluate how the management of Panel SP-3 itself has been viewed by the using community since the previous sumey. The aim was to focus on what type of project has been most helpful in the past, and may therefore be presumed to yield the most benefits in the future, and also to explore how the activities associated with Panel SP-3 might be improved.

This Project would consist of interviews with members of the Surface Preparation and Coatings community to gain information on these matters The interviews would be on-site and face-to-face, to yield the most meaningful results. Analysis of findings would be published for principal consumption by SP-3 Panel Members toward their action on panel operations and projects in the future.

### Overview

Information on both aspects of this effort was gained through personal and anonymous interviews with 26 members of the Surface Preparation and Coatings community from 12 different shipyard locations. Those interviewed included 24 shipyard people, and 2 paint supplier representatives. 23 specific and detailed responses to the project questionnaire were gathered, and have been used to formulate the detailed sections of this report. The period of interviews extended from December 1992 through June 1993.

Several questions were designed to explore both aspects of this survey. The worksheets for gathering information on the benefits of individual projects are contained in Appendix A. The worksheets associated with Panel SP-3 direction are contained in Appendix B.

A detailed discussion of the findings is presented below. Those associated with the benefit analysis of panel projects begin on this page. Those associated with panel management begin on page 19. Conclusions reached from the findings are on pages 31 and 32. The recommendations drawn from these conclusions are on page 33.

## BENEFIT ANALYSIS OF PROJECTS SPONSORED BY SPC PANEL SP-3

### General Discussion

This section contains information on all of the SP-3 projects investigated, including a description of each project, the pertinent information surrounding that project, and an analysis of the benefit value gained from that project to date. The NSRP Number is that assigned to each report in the NSRP Bibliography of Publications 1973-1992, published (now annually) by the University of Michigan for the National Shipbuilding Research Program. The projects investigated are those listed in this specific publication (1973-1992) that were added since 1989 when the previous survey was done. The analysis portion has been drawn from the comments offered by those interviewed, and is intended to provide a general indication of how the project has been received by the shipyard industry. It also indirectly provides the feelings of those interviewed on whether that particular type of effort should be sponsored by SP-3 in the future, since those projects with the higher benefit value might better receive the more favorable consideration. Appendix A was the worksheet used during the interviews.

The display below is intended to provide a rapid visual idea of the relative benefit value that has been gained from the SP-3 sponsored projects that were investigated. While these ratings are surely subjective, they represent the general opinions of those interviewed, which constitute a good cross-section of the shipyard industry in the Surface Preparation and Coatings area. As such, these opinions reflect the overall industry attitude surrounding these projects, which should be of interest to SP-3 panel members during consideration of what projects to sponsor in the future. The number of *'s against each project report indicates the amount of benefit gained from it to date. The more *'s, the larger the benefit value gained.

| Report No. | Benefit Value |
|---|---|
| NSRP 0270 | * * * * |
| NSRP 0275 | * * * * * * |
| NSRP 0280 | * * * * |
| NSRP 0288 | * * * * * |
| NSRP 0294 | * * |
| NSR.P 0295 | * * * * * * * |
| NSRP 0302 | * * * * * * |
| NSRP 0303 | Not Rated |
| NSRP 0306 | * * |
| NSRP 0307 | * * * * * * * * * |

| Report No. | Benefit Value |
|---|---|
| NSRP 0308 | Not Rated |
| NSRP 0309 | * * * * * * * |
| NSRP0311 | * * * * |
| NSRP 0312 | * * * * * * * * * |
| NSRP0313 | * * * * * * |
| NSRP0316 | * * * * * * * |
| NSRP 0329 | * * * * * |
| NSRP 0332 | * * * * * * * * * |
| NSRP 0341 | * * * * * * * |

**Detailed Discussion of Individual Projects**

Each of the individual projects investigated are discussed below in the chronological order in which they were carried out. Included is: NSRP Number; Benefit Value Rating (*'s); *TITLE, AUTHOR; DATE,* COST(where available); *ABSTRACT;* and *BENEFIT ANV4LYS1S.*

NOTE : Appendix C is an abbreviated listing of these same projects (NSRP Number; *TITLE, AUTHOR; DATE, CON)* arranged according to the benefit value (number of *'s) assigned to each project, highest to lowest. Appendix C is included as an aid to understanding which types of projects were found to be of most (and least) interest and value to the using community, based on user comments received during this suwey.

NSRP 0270 * * *

*TITLE:* Adoption of Japanese Prefabrication Priming Procedure to U.S. Shipbuilding Meethology.

*A AUTHOR:* KTA-TATOR, Inc. for Avondale Shipyards.

*DA7E:* August 1987 COST: $178,000.

*ABSTRACT: The* U.S. and Japanese Maritime shipbuilding coating practices currently involve the application of a reconstruction primer to blast cleaned steel prior to fabrication. After fabrication, the Japanese incorporate this primer into the protective coating system after minimal cleaning. In contrast, the U.S. removes this primer by blast cleaning. followed by the application of a new inorganic zinc primer and the remainder of the coating system. The result is an escalation in the U.S. costs of coating application as compared with the Japanese methodology. If the Japanese approach provides adequate performance, a significant cost savings would result. This report describes the results of a laboratory study to investigate and compare the performance of selected Marine coatings applied according to the Japanese and U.S. methodologies. (68 p.) (Project identified as 3-79- 1.)

*BENEFIT ANALYSIS:* LOW VALUE. 52% of those interviewed had no knowledge of this report and no interest in the material. 30% had read the material, but intended no application of it. As one person put it, “you cannot correlate the Japanese way with U. S. requirements. They are commercial shipbuilding, and we are Government ships and requirements. We are required to remove the preconstruction primer, even though there is no failure analysis to justify doing so. The Japanese coating systems are not as sophisticated as ours. So we have ‘apples and oranges’, and you cannot make a valid comparison”. One instance of use as reference material was cited, and one shipyard indicated some application of this approach.

NSRP 0275 * * * * * *

*TITLE:* Work Planning for Shipyard Surface Preparation and Coating (SP and C) - A Training Manual.

*AUTHOR:* DDL OMNI Engineering Ltd.

*DATE:* January 1987 CosT: $75,000.

*ABSTRACT: This* report is the result of an industry survey and two workshops pertaining to work planning of surface preparation and coating activities within a shipyard environment. The purpose of the manual is to improve work planning by providing training material directed primarily at those personnel involved in the near-term planning. scheduling, and directing of 5P and Coperations. It provides: (1) the means to use the material for instructional purposes. and (2) work planning factors that will be of value to other levels of work planners within a shipyard. (498 p.) (Project identified as 3-81-1.)

*BENEFIT ANALYSIS:* MIXED VALUE. 43% of those interviewed had no knowledge of this report and no interest in the material. 22% were familiar with the report, but intended no application of it. Three shipyard people said that the related workshop was beneficial, and cited use of the material. The report, according to one interviewee, "is cumbersome to evaluate and utilize". One paint supplier said that the tapes and information were still being used in his sales efforts. Some of this material has been incorporated into SSPC (Steel Structures Painting Council) information.

NSRP 0280 * * * *

TITLE: Cathodic Protection/Partial Coatings versus Complete Coating in Ballast Tanks - Five Year Report.

*AU7HOR:* Associated Coating Consultants for National Steel and Shipbuilding Company

*DATE:* November 1987 COST: (Not available)

*ABSTRACT:* Ship ballast tanks are one of the most costy items of new ship construction. In addition, ballast tanks are one of the most severe corrosion areas during ship operations. This report is the result of a research and development project to investigate alternate, cost-effective corrosion control solutions. Four approaches were originall y selected for mock-up ballast testing and 20-year life cycle cost analysis. A new coating was added after five years. The initial report published in 1982 and the project update report published in 1985 demonstrated that of the systems evaluated, the inorganic zinc preconstruction primer with zinc anode cathodic protection was the best performer, least expensive initially and least expensive over the 20 year economic life of the ship. This five year update concurs. (26 p.) (Project identified as 3-SP-4.)

*BENEFIT ANALYSIS:* MIXED VALUE. 39% of those interviewed had no knowledge of this report and no interest in the material. Another 39% were familiar with the report, but intended no application of the material. Although it was called a good reference by 4 people, it relates to commercial shipbuilding and “undoubtedly will be reconsidered for international commercial market activities”. One person said that the report “was not effective in supporting this direction”. Another commented that “new double hull construction is impacted by it”. Although it appears that not much shipyard implementation has occurred to date. this material could become quite important to engineering and coatings specialists in the near future.

NSRP 0288 * * * * *

*TITLE:* Marine Coatings Performance - Ten Year Report.

*AU7HOR:* Associated Coating Consultants for National Steel and Shipbuilding Company.

*DATE:* JULY 1988 COST: (Not available)

ABSTRACT: The objective of this project was to continue a series of exterior test performance studies which began in 1978 and 1980 as portions of other projects. The program has continued for over ten years and is now beginning to provide meaningful test results. For the first time, shipyards have access to field test data systematically developed from exposure specimens where the application was controlled and the characteristics of the applied film were carefully defined and documented. Failure assessments were made at planned intervals utilizing standard evaluation techniques. The marine exposure selected, while not as harsh as that experienced by ships at sea, possesses sufficiently similar exposure elements to provide significant data to evaluate and compare various generic coating systems utilized for these applications. Even though the state of the art has progressed since the program was initiated. many of the projects tested are still available as originally formulated or have been reformulated to improve service life. Shipyards now have data which can be used to predict the performance of marine coatings in service. (40 p.)

*BENEFIT ANALYSIS:* MIXED VALUE. Although 48% of those interviewed had no knowledge of this report and no interest in the material, the rest considered this report as good reference material. No instances of shipyard application were cited, but one person said that he had used this information with his customers to instill confidence. Several comments were offered, suggesting that the whole program was good, and that it yielded good information on the breakdown of coatings and the reasons why failure occurs. However. the report itself "lacks definitive information", and it is "tough to get information out of it".

NSRP 0294 * *

*TITLE:* Automated Painting of Small Parts.

*AU7HOR:* National Steel and Shipbuilding Company.

*DATE:* August 1989 COST: (Not available)

*ABSTRACT:* Shipyard painting is most often viewed as pure ship construction operations, where the painting of the hull, deck, superstructure, and cargo spaces make up the total effort and cost. This view may be justified when analyzing various trade production costs as parts of the total ship cost. However, parts preparation and painting costs are significant when looked at in summary as a new construction or repair contract sub-cost item. (46 p.) (_Project identified as 3-84-4.)

*BENEFIT ANALYSIS:* LOW VALUE. None of those interviewed cited use of this material, or need for this type of consideration. 43% were familiar with this report. but the general tone of their comments was that the findings were “not aligned with their needs”. One person said “shipbuilding is not like building lawnmowers - handles today, and bodies tomorrow. Shipbuilding is not like that. We have all sorts of shapes and sizes all the time”. He found no need for automated painting in his shipyard.

NSRP 0295 * * * * * * *

TITLE: Development of Standard Procedures for Shipboard Paint Inspection.

*A UTHOR:* Thomas Radakovich.

*DATE:* September 1988 COST: (Not available)

*ABS7RACT: The use* of protective coatings is a common method of corrosion control in the marine industry. To ensure that these coatings remain intact and effective, they must be inspected periodically so that damaged areas are discovered and repaired. Currently there are no widely accepted standard methods for shipboard inspection of anti-corrosive coating systems. The Navy, the Maritime Administration. and the shipbuilding industry cosponsored a program directed at standardizing the methods used for shipboard inspection of coating systems and for reporting inspection data. The output of this program was the development of four inspection standards for different ship areas. These four standards have been adopted by the American Society for Testing and Materials (ASTM) as ASTM standards. This report discusses the development of' these inspection standards. (146 p.)

*BENEFIT ANALYSIS:* HIGH VALUE. Four ASTM standards resulted from this project. Another ASTM standard was a spin-off for the nuclear electric power industry. This material has been used in one shipyard to "develop dedicated inspection formats and criteria", and has been used recently to inspect ship tanks at a shipyard other than the building yard where repair work was underway. Although one shipyard representative said that "we did not care for this one". it appears that the project was valuable to the industry, and may soon have increased usage in commercial work. 52% of those interviewed had no knowledge of this report and no interest in the material, which reflects the major impact of Navy work on the shipyard community.

NSRP 0302 * * * * * *

TITLE: The Economics of Shipyard Painting Phase II, Bid Stage Estimating.

*AUTHOR:* National Steel and Shipbuilding Company.

DATE: December 1988 COST: $80,000.

*ABSTRACT: This* document is the result of Phase II of a three phase project and presents a generic bid estimating program which calculates bids for painting work in shipyards. The program also maintains historical data for past contract comparisons. This follows work performed in Phase I that identified the actual tasks and costs associated with paint department work. (83 p.) (Project identified as 3-85-3.)

*BENEFIT ANALYSIS:* MIXED VALUE. 52% of those interviewed had no knowledge of this report and no interest in the material. 30% were familiar with the report but intended no application of it. Those remaining, however, had praise for the report and cited extensive application of it. One person said "this is an excellent report, and is right on target. It might not be completely applicable to us, but it has spawned major efforts at our shipyard". other shipyard representatives said that they might have used this material, but that their existing systems were adequately treating this area. Also, the applicability of this technique to repair work was not clear to one shipyard representative.

*NSRP 0303* (Not Rated)

TITLE: Benefit Analysis of SPC Panel SP-3 Projects and Evacuation of SPC Panel SP-3 Management and Administration.

*AUTHOR:* National Steel and Shipbuilding Company.

*DATE:* July 1989 COST: (Not available)

ABSTRACT: This is a survey and analysis of the benefits that has accrued from the projects sponsored by SP-3 since 1974, and how the management and 'administration of SP-3 is seen by the using community. The purpose of this survey was to determine the types of SP-3 projects that have been most beneficial, to determine the types of SP-3 projects that are most likely to be beneficial in the future, and to determine how the direction of SP-3 might be improved. (71 p.).

*BENEFIT ANALYSIS:* (NOT RATED). This project was designed more for the benefit of Panel SP-3 members than for the shipyard community per se. As such it has not been rated relative to the direct shipyard benefits gained from it. One shipyard representative cited use of this report to prompt requests for some of the research material discussed in it. Another said that it "did focus attention on SP-3 activities". Since a similar survey has been ordered for the other SPC Panels, it appears that this report did serve the purpose for which it was intended.

NSRP 0306 **

*TITLE:* Corrosion Protection by Calcite-Type Coatings.

*AU7HOR:* National Steel and Shipbuilding Company.

DATE: October 1989 *COST:* $70,000.

*ABSTRACT: This* document presents the results of a study of the feasibility of applying calcite-type coatings to segregated seawater ballast tanks. The purpose of studying these types of coatings is to substantially reduce corrosion in segregated seawater tanks. (39 p.) (Project identified as 3-85-1.)

*BENEFIT ANALYSIS:* LOW VALUE. 65% of those interviewed had no knowledge of this report and no interest in the material. 30% were familiar with the report but intended no application of the findings. Several comments were offered, such as: "interesting reference material": "good research project. but it did not materialize"; "not high on this one": "calcite coating is not a good idea"; even if all reasons for using it were good. it would be an enormous task to get the Navy OK": "the international commercial market will inspire use of this material, even if it is a negative result". Overall it appears that this research may turn out to be valuable as how not to proceed.

NSRP 0307 * * * * * * * *

*TITLE:* Abrasive Contaminants and Their Effect on Coating Performance.

*AUTHOR:* National Steel and Shipbuilding Company.

DATE: January 1990 *COST:* $20,000.

*ABSTRACT: This* study characterizes eight commerciall y available abrasive products for the water lechate conductivity, chloride and sulfate content and their effect on rust-back and coating performance in ambient and pressurized deionized water immersion. Four copper slag product were examined petrographically to identify the minerals in the slag particles and to determine if free copper was present. Scanning Electron Microscopy Energy Dispersive X-Ray Fluorescence (EDXRF) analysis was used to identify slag constituents. (30 P.) (Project identified as 3-84-6.)

*BENEFIT ANALYSIS:* HIGH VALUE. 65% of those interviewed were familiar with this report, although 26% intended no application of the material. The rest cited considerable usage of the findings. One person said that he had used the material to see what quality level should be taken, and that it had provided good insight into the effects of contaminates on the surface, and therefore on coating system performance. Another person said that “this opened our eyes, and is good information that influences future decisions”. A third person said that the material “is useful on tank blasting failures, cleaning, and avoiding problems that have occurred in the past”. A paint supplier said that this research has “established lists in SSPC AB-1 Class media specifications”, and that the “entire paint industry benefits from this information”. There were no contrary comments on this report.

NSRP 0308 (Not Rated)

TITLE: Evaluation of Smoke Extraction Systems vs. Ventilation in Shipbuilding and Repair.

*A U7HOR:* National Steel and Shipbuilding Company.

*DA7E:* January 1990 COST: (Not available)

*ABSTRACT:* This reports' evaluations found that the costs associated with the currently applied methods of ventilation are documenting systems with at best 30-40 percent of "true-source" ventilation or extraction of welding fumes. Thus, the direction of the conclusions and recommendations are structured to the truer overall objective which is to have an increased level of source ventilation or extraction, including improved methods for both. as well as to depict areas for reducing costs for any level or type of service. (108 p.) (Project identified as 1-85-3.)

*BENEFIT ANALYSES:* NOT RATED. This report appears in the NSRP Bibliography of Publications 1973-1992 under the section assigned to SPC Panel SP-3. and therefore was included in the survey of Panel SP-3 people. However. this project actually was done under sponsorship of Panel SP-1. Since most of the SP-3 people interviewed during this survey did not receive a copy of this report. a rating of its benefits has not been attempted.

NSRP 0309 * * * * * * *

*TITLE::* **Impact of V.O.C. Regulation on Shipbuilding and Ship Repair.**

*AU7HOR:* National Steel and Shipbuilding Company.

*DATE:* January 1990 *COST: $19.545.*

*ABS7RACT:* This study investigated the impact of two new volatile organic compound (VOC) regulations on the U.S. Shipbuilding industry. These new regulations, the first aimed specifically y at the protective coating of ships and other marine structures., have potentially widespread effects on many facets of the industry including raw material suppliers and coatings manufacturers as well as end users. (167 p.) (Project identified as 3-84-5.)

*BENEFIT ANALYSIS:* **HIGH VALUE. This** report provided "a snapshot in time" of the effect of these regulations on the shipyard industry. Although it "came out later than really needed", it is generally recognized as a good report which is "used by the entire coating industry". One person commented that the report was too general, and another said that he was "disappointed - it should have been a lot more". However, 25% of those interviewed had either applied the material in their shipyards, or were planning to do so. They considered the information to be valuable, with one person citing its use to supplement his presentations to senior management.

**NSRP 0311** *** * * ***

*TITLE:* Performance Testing of Marine Coatings: New Test and Evaluation Procedures.

*AU7HOR:* National Steel and Shipbuilding Company.

DATE: June 1990 *COST: $79,500.*

*ABSTRACT:* Since there are environmental and health restrictions on conventional marine coatings, there is an urgent need for reliable short-term procedures to evaluate performance and durability of coatings for ship tank exteriors and other exposed surfaces in marine environments. Currently used methods are considered inadequate. Long-term immersion or outdoor tests, though generally reliable, are much too time-consuming for today's regulatory timetable. Commonly used accelerated test methods produce results in a short time frame (1-4 months) but have been shown to give poor reproducibility and poor prediction of long-term service performance. (86 p.) (Project identified as 3-83-3.)

*BENEFIT ANALYSIS:* MIXED VALUE. This research was found beneficial to those shipyards and activities that carry out performance testing. This explains why 61% of those interviewed had no knowledge of this report and no interest in the material. 17% were familiar with the report but intended no application of the findings. Another 17% were looking at the material now. Only one shipyard representative indicated application of the findings during in-house performance testing.

**NSRP 0312** *** * * * * * * ***

*TITLE:* **Evaluation of New Surface Preparation and Coating Repair Techniques** in Ballast Tanks.

AUTHOR: National Steel and Shipbuilding Company.

DATE: July 1990 *COST: $40,000.*

ABS7RACT: Ship ballast tanks present special problems as concerns corrosion control. In addition. ballast tanks are one of the most costly areas in which to apply coatings in both new ship construction and ship maintenance. Being subjected to intermittent wet and dry cycles of aerated sea water places extreme demands on corrosion control methods. Harsh service environments are coupled with necessarily complex tank geometries, especially in Navy combatants with difficult accessibility. The SP-3 Panel of SNAME recognized these problems and formulated a series of research and development projects to investigate alternate. cost effective corrosion control solutions. (35 p.) (Project identified as 3-82-3.)

*BENEFIT ANALALYSIS:* **HIGH VALUE.** This report has been well received, even though there were no cited instances of application among those interviewed. Shipyards doing Navy work would need a requirements change in order to utilize the findings. One person said that "ballast tanks see an aggressive environment". He has used this research material as a benchmark for other areas of the ship. He has used this material with his customers in support of decision making, and in-house for setting quality levels. Another person said that ship owners need to read this material, which will be important in the commercial market. One question being asked already by the shipping companies is "can we <u>really</u> provide protection for ballast tanks as it impacts double hull construction?". Although 43% of those interviewed were not familiar with this report and had no interest in the material. and 22% were familiar with the report but intended no application of the findings, it appears that this research was quite appropriate and will continue to be valuable as commercial shipbuilding becomes the rule instead of the exception.

NSRP 0313 * * * * * *

*TITLE:* The Cost Effectiveness of Flame Sprayed Coatings for Shipboard Corrosion Control.

*AUTHOR:* National Steel and Shipbuilding Company.

DATE: July 1990 COST: $72,500.

*ABSTRACT:* Corrosion control takes up about 30 percent of the cost of maintaining ships. The maritime industry must respond by utilizing the most effective and economical methods of corrosion control available. Wire sprayed aluminum (WSA) has proven to be an effective corrosion control method for many shipboard applications. Data provided which will assist ship owners in comparing the cost of WSA coatings with selected representative paint systems regarding application, repair, and life cycle costs. This report also describes methods used to repair WSA and compare the life cycle cost of these coatings to conventional paint coating systems. This report also helps the user determine ship areas best suited for WSA. (161 p.) (Project identified as 3-84-3.)

*BENEFIT ANALYSIS:* **MIXED VALUE.** Only 17% of those interviewed were not familiar with this report and had no interest in the material, the lowest of any report surveyed. 35% were familiar with the report but intended no application of the findings, although 30% indicated some shipyard application. The remaining 18% were looking at the material now. This report was described by one person as "a handy reference for those doing wire-sprayed aluminum". Another said that he had made a reduced-size booklet for all of his people. Another person said that his shipyard was "high on wire-sprayed aluminum", but that this report did not cover the cost of the process as the title suggests. Another person said that the report was "very informative" even though his shipyard did only flame-sprayed aluminum. Two comments suggested that the Navy was becoming more interested in this process. Only two contrary comments were offered, one that the report was "news while it **was** news", and the other that this process "is a dying animal".

**NSRP 0316** * * * * * * *

TITLE: The Economics of Shipyard Painting, Phase III

*AUTHOR:* Gary Higgins and Steven Garlick.

DATE: October 1990 COST: (Not available)

*ABSTRACT: The* purpose of this study was to develop a system for a paint department that could provide shop supervision with timely information concerning cost performance. Phase 111 shows that a labor system can be used to identify cost variances at an early stage to avoid cost overruns. Three areas were investigated in Phase III; lost time, abnormal conditions, and hotwork identification. **(51** p.)

*BENEFIT ANALYSIS:* HIGH **VALUE. 52%** of those interviewed were not familiar with this report and had no interest in the material. 22% had read the report but intended no application of the findings. One shipyard representative said, however. that the report was excellent, and could support shop floor control efforts. Another person said that he was "not high on any of the three Phases of this report". but he admitted that "Navy requirements include a lot of this stuff". Another said that he "did not like Phase II, but this Phase III looks interesting".

NSRP 0329 * * * * *

**TITLE: The Effect of Substrate Contaminants on the Life** of **Epoxy Coatings Submerged in Sea Water**

*AUTHOR:* Dr. Gerald Carl Soltz.

*DATE:* June 1991 COST: (Not available)

*ABSTRACT:* The purpose of this project was to study the effects that contaminants, commonl y occurring in the marine environment, have on epoxy coating systems. Three standard ballast tank coatings plus a clear epoxy coating were tested. Three chemicals and various size blasting grit particles were used as contaminants. Sea salt and sodium chloride were found to be much more detrimental to epoxy coatings, than was ferrous sulfate or the grit particles. (160 p.)

*BENEFIT ANALYSIS:* **MIXED VALUE. 43%** of those interviewed were not familiar with this report and had no interest in the material. 30% had read the report, but intended no application of the findings. 18% were reading it now. Only two instances of application were cited, and those were as reference material. This research is more aligned with testing programs for coatings, rather than with direct application in shipyards. As such it may play an important role in coating formulation activities, especially as commercial shipwork becomes more prevalent.

NSRP 0332 * * * * * * * *

*TITLE:* **Evaluation of New Surface Preparation and Coating Repair Techniques in Ballast Tanks Interim Report (Three Year Results).**

*AU7H0R:* Associated Coating Consultants Inc.

*DATE:* May 1991 COST: (Not available)

*ABSTRACT:* This report details the interim results of a research and development program to investigate alternate cost effect ive corrosion control solutions. The report also includes the performance results of new approaches to surface preparation and coating repair techniques for preservation of in-service ships' ballast tanks using VOC compliant coatings after three years of testing (23 p.)

*BENEFIT ANALYSIS:* **HIGH VALUE. This** report is closely related to NSRP 0312 above. 22% of those interviewed gave this report high marks as reference material. One said, however, that the ship owners would have to support these ideas before they could be used. As entry into the international commercial market is pursued. it appears that research of this type may become quite valuable to the shipyard industry as a part of the on-going efforts to develop VOC-compliant coatings.

**NSRP 0341 * * * * * * ***

**TITLE:: Procedure Handbook for Shipboard Thermal Sprayed Coating Applications.**

*AUTHOR:* Roger Snyder, Larry Shul and Les Hansen.

*DATE:* March 1992 COST: (Not available)

*ABSTRACT:* This handbook is intended to guide a shipyard that is preparing to establish a first time thermal spray program that is in accordance with current U. S. Navy requirements. The second is to assist shipyards that are currently involved in an active thermal spray program by providing information and data that can be used to analyze and reassess their current methods, thus leading to potential improvements or cost savings. (191 P.)

*BENEFIT ANALYSIS:* **HIGH VALUE. This** handbook was developed as an assist to recognizing the issues in thermal spray applications. It would simplify the process issues for the benefit of the using community, and serve as a training aid. Those involved in thermal spray applications found this report to be valuable, and gave it high marks as reference material. Statistically, however, 39% of those interviewed had no knowledge of this report and no interest in the material. 30% were familiar with the report but intended no application of the findings. It appears that this material may be of use to only a narrow segment of the shipyard industry, but within that area it is well received and quite beneficial.

## MANAGEMENT OF SPC PANEL SP-3 ACTIVITIES

### General Discussion

This section describes the opinions of those interviewed relative to the administration of SPC Panel SP-3 meetings, including such things as the use of pre-planned agenda, the actual format for a meeting, who should attend, how often a meeting should be held and under what circumstances (e.g., during the same time frame as the meeting of another SPC Panel, or an NSRP Symposium), what matters should/should not be discussed, how meeting minutes should be handled, and similar considerations that bear on the mechanics of the panel meeting itself. It also describes the thoughts of those interviewed on how the NSRP can be of more assistance to them, what projects should be prosecuted, and in general what message they would like to have transmitted back to Panel SP-3.

The discussions that produced these opinions were open and serious, with each person interviewed appearing anxious to offer a position on the matter at hand. The persons interviewed constitute the core of Panel SP-3 as it is known today, and so their feelings are surely important to the future well-being of the Panel and its activities.

On the following four pages is a matrix showing SPC Panel SP-3 Meeting Attendees for the 10 most recent meetings. This matrix reveals which shipyards and other activities have been supporting SP-3 by having a representative in attendance at these meetings. The date and location of each meeting is indicated, along with the company affiliation of those in attendance. Note that 40% of these companies have had a representative at three at more of these meetings. Note also that 119 companies are listed, the largest listing of all SPC Panels.

| Attendee Affiliation / Date - Location | Jan '90 - San Diego, CA | Oct ' 90 - Groton, CT | Feb ' 91 - New Orleans, LA | Jun '91 - Sturgeon Bay, WI | Nov '91 - Long Beach, CA | Jan ' 92 - San Diego, CA | May '92 - Pascagoula, MS | Oct ' 92 - Cocoa Beach, FL | Feb ' 93 - Tampa, FL | May ' 93 - Virginia Beach, VA |
|---|---|---|---|---|---|---|---|---|---|---|
| A K Services | | | | | | | | | X | |
| AACCO | | X | | X | | | | | | |
| Advanced SystemsTechnology | | | | | | X | | | | |
| Alpheus Technologies | X | | | | | | | | | |
| AMCLEAN | | | | | | | | | | X |
| Amega Engineering, Inc. | X | | | | X | X | | | X | |
| Ameron Marine Coatings | | | | | X | X | X | X | X | X |
| Archer-Blackstone Corp. | | | | | X | | | | | |
| ASTI | | | | | | | | | | X |
| Atlantic Coast Equipment | | | | | | | | | | X |
| Atlantic Drydock | | | | | X | | X | X | X | |
| Atlantic Marine, Inc. | | | | | | | X | X | X | X |
| Avondale Industries, Inc. | | | X | | | X | X | X | X | X |
| Bainbridge/Aquabatten, Inc. | | | | | | | | X | | |
| Barton Mines | | X | | | X | | | | X | X |
| Bath Iron Works | | X | X | X | X | X | X | X | X | X |
| Bechtel Corp. | X | X | X | X | | X | X | X | X | |
| Berger Assoc., Inc. | | | | | X | | | | | |
| Bethlehem Steel Corp. - Sabine | | | | | | | | X | X | X |
| Bethlehem Steel Corp. - Sp Point | | | | | X | X | X | X | | X |
| Blast Star Co. | | | | | X | | | | | |
| Blasters, Inc. | | | | | | | | X | X | |
| BMS and Associates | X | X | X | X | X | X | X | | X | |
| Bruce Payne & Assoc., Inc. | | | | | X | X | | | | |
| Charleston NSY | | | | | X | X | X | | X | X |
| Chesapeake Specialty Products | X | | | | X | | X | X | X | X |
| Colorado School of Mines | | | | | | | | | X | |
| Continental Maritime | | | | X | | | | | | |
| Davis Boatworks | | | | | | | | | | X |
| Devoe Coatings Co. | X | X | | X | X | X | X | X | X | X |
| Dow Chemical | | | | X | | | | | | |
| Dow Corning Corp. | | | | | | | | X | | X |
| DTRC (NSWC - Annapolis) | | | X | | X | X | | X | X | |
| DTRC (NSWC - Carderock) | X | X | X | X | X | X | X | | X | X |
| DTRC (NSWC - NavSea ManTech) | | | | X | | | X | X | | |

Minutes of May '90 meeting at Jacksonville, FL do not include a listing of attendees.

**Meeting Attendees**
**SPC Panel SP-3**
**Surface Preparation and Coatings**

| Attendee Affiliation / Date - Location | Jan '90 - San Diego, CA | Oct ' 90 - Groton, CT | Feb ' 91 - New Orleans, LA | Jun '91 - Sturgeon Bay, WI | Nov '91 - Long Beach, CA | Jan ' 92 - San Diego, CA | May '92 - Pascagoula, MS | Oct ' 92 - Cocoa Beach, FL | Feb ' 93 - Tampa, FL | May ' 93 - Virginia Beach, VA |
|---|---|---|---|---|---|---|---|---|---|---|
| Dunn-Edwards | X | | | | | | | | | |
| Eckhart Engineering | | | | X | | | | | | |
| Emerald Creek Garnet | | | | | | | | | X | |
| Enviro-Tech Marketing | | | | | | | | X | | |
| Ervin Industries, Inc. | | | | | X | | | | X | X |
| F. J. Lynch Co. | | | | | | | | | X | |
| FHWA | | | | | X | | | | | |
| Florida Inst. of Technology | | | | | | | | X | | |
| FMC Corp. Tech Center | | | | | | | X | | | |
| GCS Corrosion | X | | X | | | | | | | |
| GD/EB Div. | X | X | | | | X | X | X | | X |
| Graco, Inc. | | | X | | X | X | X | X | X | X |
| Hempel Coatings, USA | | | | | X | | | | | |
| Hemple Marine | X | | | | | | | | | |
| Hoffman Blast Room Equip, Inc. | | | | | | | | | | X |
| Ingalls Shipbuilding Division | X | | X | X | X | X | X | | X | X |
| Ingersoll-Rand Co. | | | | | | X | | | X | X |
| Inorganic Coatings | X | X | X | | X | X | | | X | X |
| Insight Industries, Inc. | | X | | X | X | X | X | X | X | |
| International Paint | | | X | X | X | | X | X | X | X |
| International/Courtaulds | | | | | X | | | | | |
| Jet Edge | | | | | X | X | | X | | |
| JJG Associates | | | | X | | | | | | |
| Jotun Valspar Marine Coatings | | | | | | | | X | | X |
| L. L. Bean | | | | | X | | | | | |
| Leggett Tech Service | | | | | | | | X | | |
| Lehigh University | | | | | X | | | | | |
| Long Beach NSY | | | | | X | X | X | X | | |
| Managing Change, Inc. | | | X | | | | | | | |
| Mare Island NSY | | | | | | X | X | X | X | X |
| Maritime Administration, U. S. DoT | X | | | X | | X | | | | |
| Maritime Outfitters | | | | | | X | | | | |
| Metco/Perkin - Elmer | | | | X | | | | | | |
| MMM Company | | | X | | | | | | | |
| NASSCO | X | X | X | X | X | X | X | X | X | X |

Minutes of May '90 meeting at Jacksonville, FL do not include a listing of attendees.

**Meeting Attendees**
**SPC Panel SP-3**
**Surface Preparation and Coatings**

| Attendee Affiliation / Date - Location | Jan '90 - San Diego, CA | Oct ' 90 - Groton, CT | Feb ' 91 - New Orleans, LA | Jun '91 - Sturgeon Bay, WI | Nov '91 - Long Beach, CA | Jan ' 92 - San Diego, CA | May '92 - Pascagoula, MS | Oct ' 92 - Cocoa Beach, FL | Feb ' 93 - Tampa, FL | May ' 93 - Virginia Beach, VA |
|---|---|---|---|---|---|---|---|---|---|---|
| National Institute of Stds & Tech | | | | | X | | | | X | |
| NavSea | X | X | X | X | X | X | X | X | X | X |
| NDC Environmental Excellence | | | | | | | | | X | |
| Newport News Shipbuilding | | X | | | X | | | | X | X |
| Norfolk NSY | X | X | | X | X | X | X | | X | X |
| North Florida Shipyards | | | | | | | X | | X | X |
| NSRF Yokosuka Sa | | | | | | | | | X | |
| Ocean City Research Corporation | X | X | X | | X | | X | | | |
| Penn State - ARL | | | | | | | | | X | X |
| Peterson Builders, Inc. | X | X | X | X | X | X | X | X | X | X |
| Philadelphia NSY | | | | | X | | | | X | |
| Port of Portland, OR | | | | | | | | | | X |
| Portsmouth NSY | X | X | | X | | X | | | | X |
| Pratt & Whitney - Waterjet Sys | | | | | | | | | X | |
| Pro-Line Paint Co. | X | | X | X | X | X | | | | |
| Protective Coating Technology, Inc. | | | | | X | | | | | |
| Puget Sound NSY | X | X | | | X | | | | | |
| R-P-M and Associates, Inc. | | | | X | | X | X | | X | |
| Rayco Services, Inc. | | | | | | X | X | X | | X |
| Reed Minerals | X | X | | X | X | | | X | X | X |
| RT&E | | | | | | | X | | | |
| S. G. Pinney & Associates, Inc. | | | | | | | | | X | |
| Sandroid System, Inc. | | | | | | | | | X | |
| Shipbuilders Council of America | | | | | | X | X | | | |
| Sigma Coatings | | | | | | | | | | X |
| Smith Eastern Corp. | X | | X | | | X | X | | | X |
| Southwest Marine, Inc. | X | X | | | X | X | | | | |
| Steel Structures Painting Council | | X | X | X | X | X | X | X | X | X |
| SupShip San Diego | X | | | | | | | | | |
| Tampa Shipyards | | | | | | | X | | | |
| Tech. Services Associates | | | | | | | | | X | |
| The Morie Co. | | | | | | | | | | X |
| The Movie, Inc. | | | | | | | | | | X |
| Thiokol Corp. | | | | | | | | X | | |
| Trelawny Pneumatic Tools | | | X | X | X | | | | | |

Minutes of May '90 meeting at Jacksonville, FL do not include a listing of attendees.

**Meeting Attendees**
**SPC Panel SP-3**
**Surface Preparation and Coatings**

| Date - Location | Jan '90 - San Diego, CA | Oct ' 90 - Groton, CT | Feb ' 91 - New Orleans, LA | Jun '91 - Sturgeon Bay, WI | Nov '91 - Long Beach, CA | Jan ' 92 - San Diego, CA | May '92 - Pascagoula, MS | Oct ' 92 - Cocoa Beach, FL | Feb ' 93 - Tampa, FL | May ' 93 - Virginia Beach, VA |
|---|---|---|---|---|---|---|---|---|---|---|
| Trinity Marine Group | | | | | | | | | X | |
| TSA | | | | | | | | | | X |
| U. S. C. G. Ketchikan, AK | | | | | | | | | | X |
| UHP Projects | | | | | | | | | | X |
| Unique Systems | | | | | | | | | | X |
| United Technologies | X | | X | X | X | X | | | | |
| Unitor Ships Service, Inc. | | | | | X | | | | | |
| USBI | | | | | | | | X | | |
| Valspar Corp. | X | X | | | X | X | X | | | |
| VECOM USA, Inc. | | | | | | | | X | | |
| Watchdog, Inc. | | | | | | | | | X | X |
| Wilkins Enterprise, Inc. | | X | X | | | | | | | |
| Wm. O'Sullivan & Associates | X | | | | X | X | | | | |
| WOMA Corp. | | | | | | | | | | X |

Minutes of May '90 meeting at Jacksonville, FL do not include a listing of attendees.

**Meeting Attendees**
**SPC Panel SP-3**
**Surface Preparation and Coatings**

**Detailed Discussion of Findings**

The responses are summarized under the headings of each question, following the order and language of the worksheet, Appendix B, that was used during the interviews.

## PANEL MEETINGS AND ADMINISTRATION

How **often do you attend?**

*1/2* of those interviewed attend all meetings on a regular basis. The rest, with one exception, attend one meeting per year. The exception was a person who had never attended a meeting, and did not expect to do so.

**Do/should others in your Company attend?**

Six interviewees said that one or more additional person should attend along with them. The rest answered the question in the negative or offered no response at all, indicating that their solo attendance should be continued.

**Are the meetings of value to you?**

All responses to this question were favorable, with networking cited as the principal benefit.

**How can the meetings be improved?** In particular,

**Increase/decrease number of meeting days?**

Most felt that the present meeting arrangement of 2 to 2-1/2 days should be continued. 1 interviewee would drop 1/2 day, while 2 other interviewees would add 1 to 1-1/2 days, one other interview would like a full day with SPC Panel SP-1.

**Continue/change meeting format?**

While *70%* said that no changes were needed, there were three specific comments on this matter, as follows:

1. Abstract administration dominates the meetings, and needs to be controlled more effectively.
2. Vendor involvement has been a problem on occasion, and needs to be kept in check so that the shipyard representatives will drive the meeting.
3. Information exchanges during the breaks are quite valuable, and so more opportunities for this type of discussion should be arranged.

**Continue/change content of meeting?**

Responses to this question indicated satisfaction with the present meeting content.

**Broaden/restrict who should attend?**

Most of those interviewed found the attendee mix to be satisfactory, although three people offered comments, as follows:

1. Two wanted more shipyards to be represented.
2. One wanted more hands-on people in attendance.

**What should be added to the agenda?**

One person indicated that the agendas should be issued sooner. In addition, four specific suggestions for agenda additions were made in response to this question, as follows:

1. More on problem solving.
2. More introduction of real data.
3. More involvement by senior shipyard people.
4. Introduce a structured input from the shipyards on their current problems, describing the processes they currently use, and why. This will enable organized sharing of experiences and methods.

**What should be dropped from the agenda?**

All responses indicated that nothing should be dropped from the agendas.

**Should meetings be held in conjunction with other organizations?**

All responses to this question were in the affirmative, with most people favoring joint meetings with SPC Panel SP-1.

**Are meeting minutes ofvalue to you?**

The feeling expressed by those interviewed was unanimously positive, with several comments praising the style, features, and quality of the minutes as administered by Jim Rogness, the former NSRP Program Manager for SPC Panels SP-3 and SP-7.

**How can the NSRP be of more assistance to your company?**

This question prompted a series of comments which reflect some serious difficulties with the NSRP in general. These comments also illustrate serious and deep concerns on the part of those interviewed for the future of the NSRP and the shipyard industry. These comments are summarized below, as nearly verbatim as possible:

- We need more projects "geared to mechanics on the deck plates where it happens".

- Shorten the time frame from abstract to final report. We can help this situation by adding interim reporting arrangements that are disciplined and effective. Then at least we will get some useful information even though the RN report is not yet available.

- Make the presence of the NSRP more visible throughout the shipyard community.

- Provide more mini-symposium activities, such as at Virginia Beach recently, where vendors and equipment suppliers can show new technology and ideas.

- More Naval Shipyard participation is needed, as more contractors are doing Navy work.

- We need more information on the other SPC Panels to learn what they are doing, so we can invite joint participation.

- We must avoid cliques and closed-shop meetings. The NSRP is for everybody.

- We need NavSea to stress participation in the NSRP at the highest levels of NavSea, including Codes 07, 05, and 00. The push for participation needs to come from NavSea.

- Minimize the loss of momentum from the meeting to the application of ideas. Follow-up should be quick and effective. We must not "lose the wind in our sails".

- Speed up the project finding process. Otherwise people will get disgusted and leave.

- We should combine forces strongly with OSHA and assist them in their thinking. They are not the experts. The shipyards are the experts. We need to work with OSHA to overcome the hazards unique to the shipyard industry. There is no other group to do this for OSHA. We should actively solicit participation of the NSRP to help OSHA get the proper act together.

- Stimulate ship owner and operator representation. We now have the owners on the military side, but not on the commercial side.

- We need better distribution of information inside our shipyards, and also to ship owners and operators.

• We need continuity of project finding. The down time between fundings is a drag on those who want to bid on and perform projects. People will lose interest unless we fix this situation.

**What Projects would you like to see carried out?**

Several specific responses to this question were offered, as follows:

● Some critical VOC projects should be done now, and should receive the attention that they deserve.

• We need projects to get senior management attitudes compatible with the needs of the industry to enter, and become effective in, the international commercial market. We need to have senior management willing to accept the changes that are needed for the conversion.

● Some projects do not show an immediate and direct benefit to shipyards. We need basic research, but we also need some potential advantages to the shipyards. This is why we are here.

• Lead paint handling and removal is a problem area. What forms should we use? What are the OSHA considerations? What are the production problems? What environmental issues are involved? What management problems are included? We need answers to all of these things.

**Do you have on-going NSRP Projects?**

The responses to this question were all negative, except for one person who said that his shipyard was currently working on several projects.

**What problem areas would you like to see investigated?**

This question was quite similar to the earlier one that asked "What Projects would you like to see carried out?", but prompted a few rather different responses, as follows:

● The regulation on confined space enter (1910.146) needs attention, as it is an abomination. It seems to have been put together by non-technical people.

• How to paint and run diesel engines in the same compartment at the same time. We need to show OSHA and the EPA that this is within the rules, rather than a variance.

• Action by the suppliers to get rid of heavy metals, glycol, etc. so that we do not encounter them.

• We need to find out what the foreign shipyards are doing. This information must be determined so that we can learn from it.

**What message would you like transmitted to this Panel?**

This question was added to the list so that the people being interviewed could have a direct voice back to the Panel, anonymously, on any point that they might wish to raise. Some comments were favorable, and some not so favorable. There were not many comments offered, but collectively they cover quite a spectrum of concern. Responses were as follows:

- We need to improve the project reporting format and discipline. This will improve what Panel members take home with them on a timely basis. Then maybe management will be more likely to support the attendance of people - since they will be bringing back good stuff.

- Make our (NSRP) presence more known to the shipyard community.

- On-going project activities are nor crisp and definite. We are always putting off the details.

- Consider the idea of a project advisory group to keep matters on track.

- What is "left" of the shipyard industry will be killed off by OSHA in their efforts to accomplish their objectives. The industry <u>can</u> be compatible with safety and protect the environment This area is not getting the necessary attention. In the environmental field we do not have the necessary expertise to support the interests of the shipyards. We just "roll over".

- Beware of "clique-supported" projects.

- Concentrate on real live shipyard problems today.

- We need more technical hands-on demonstrations, and shorter reports when there is not much to say. We need to cut through the chaff and get on with it. We need more practical applications of better products, procedures, and practices.

- Technology is not going to get us there. We have technology, and can solve problems when we are faced with them.

## PROJECT REPORTS AND NSRP INFORMATION

Do **you receive adequate information on NSRP Project Reports?**

**80%** of those responding answered "Yes", and only 3 people answered **"No".**

Do **you get the "Yellow Book" NSRP Bibliography of Publications?**

Here, again, 80% of those responding answered "Yes", and 3 people answered "No".

**Have you ever ordered a Report from the NSRP Library?**

**3** people answered this question in the affirmative. No comments suggested a problem with the procedure for obtaining project reports and training materials from the NSRP Library.

**Is the NSRP Newsletter of value to you?**

60% of those responding answered this question in the negative. 40% answered in the affirmative. Several people saw the Newsletter only when it was routed to them by someone else. and asked to have their names added to the mailing list for the Newsletter. This is a favorable indication that they feel the Newsletter has the potential of being useful to them.

**How can NSRP information be communicated more effectively?**

Since it was apparent at the beginning of this Project that communications were a major weakness of the NSRP, this question was added to explore with those interviewed how improvements might be made. Responses to this question were as follows:

- We need information in a more timely manner, even if we must sacrifice quality to get it.
- Put the NSRP Bibliography of Publications and all reports on CD ROM. Update annually. Make available at nearly no cost.
- Ask the Panels to update their mailing lists.
- Have people who know about the NSRP tell their own shipyard people about it. This should be on-going by all of those who are already involved. Send the Newsletter to ship owners and ship operators.
- Put articles in trade magazines on what the NSRP does, and include an overview of features.
- Maybe we need to educate the stockholders of the "Big 6" shipyards to get their CEOS more in line with the needs of the shipyard industry. A "did you know" letter to them might do it.

- Involve higher-level people in NSRP activities, and communications will take care of themselves.

- Write to the CEOS and the executives and tell them what is happening of benefit to them. Tell them who they should have involved. Commitment at the top is essential. Then the top says "you go", rather than having the bottom say "please may I?".

**Would you prefer to have a single point of contact within your company for information on meetings, availability of NSRP reports on projects, and other NSRP matters?**

This question was included on the list to suggest the idea of a single point of contact to those who have not as yet tried it. It would also provide some feedback from those who have attempted this idea in their shipyard. All of the responses to this question were in the affirmative.

**What person in your company would best serve as this point of contact?**

This follow-up question prompted the feeling by most of those interviewed that this person should be the NSRP representative from that shipyard, such as the Program Manager, Panel Chairperson, or regular Panel attendee. Two comments suggested that the shipyard Librarian would be the best choice for assignment to this task.

## CONCLUSIONS FROM THE FINDINGS

Analysis of the responses offered by those interviewed suggests the following conclusions on matters of interest to SPC Panel SP-3.

### Those Associated with the Benefits derived from Project Reports

1. The projects yielding the most benefit value were those addressing surface preparation and coatings problems of current concern to the shipyard community.

2. Also considered highly beneficial were those projects investigating the management and administration of surface preparation and coatings processes in shipyards, along with those concerned with thermal sprayed coatings.

**3.** Several projects designed to gain reference information were also considered to be of value to the industry.

### Those Associated with the Suitability of Panel Meeting Administration

**4.** The present administration of Panel Meetings is quite satisfactory

**5.** Several specific points are pertinent:

A. Meetings of 2 to 2-1/2 day's duration, three times per year, at varying locations, are favored.

B. The present meeting format and content have been satisfactory and should be continued. However, there might be a need for:

- Better administration of abstracts.
- Limiting vendor involvement in meeting deliberations.
- Adding a full day of discussions jointly with Panel SP- 1.
- Increasing the number of breaks and social periods to maximize opportunities for networking.

C. The present mix of attendees is satisfactory.

D. Meeting agenda might be improved by providing for:

- More on problem solving.
- More introduction of real data.
- More involvement by senior shipyard people.
- Introducing a structured input from the shipyards on current problems.

E. A meeting in conjunction with another SPC Panel could be beneficial, especially with Pane! SP- 1.

F. Meeting minutes in a bound format have been well received, and should be continued.

**Those associated with the Administration of Project Reports and Information**

**6.** Project reports have been available to the shipyard people on the primary mailing list, but improvement is needed within the shipyards in making this information available to others.

*7.* The NSRP Bibliography of Publications has been available to those who need it.

**8.** The procedure for obtaining project reports and training materials from the NSRP Library has been working satisfactorily.

**9.** Distribution of the NSRP Newsletter is too narrow and restricted.

10. A single point of contact within a shipyard for obtaining information on NSRP matters would be helpful.

**Those associated with NSRP matters in general**

11. The finding cycle for projects has been too long and uncertain.

12. More publicity about the NSRP is needed throughout the shipyard community.

**13.** Mailing lists are out of date and do not include the proper people.

14. Information available from NSRP projects and activities should be provided in a more timely reamer.

15. **In summary,** SPC Panel SP-3 is large, active, well supported, and has been effective in providing meaningful contributions to the National Shipbuilding Research Program in behalf of the shipyard community in general, and the Surface Preparation and Coatings areas in particular.

## RECOMMENDATIONS FROM THE CONCLUSIONS

The following recommendations have been drawn from the conclusions.

**Those Associated with Panel Projects**

1. Timely projects offering advantages to the shipyard community in the surface preparation and coatings areas should receive prime attention.

**Those Associated with Panel Meeting Administration**

2. The present practices for Panel meetings should be continued, with only minor adjustments (see pages 31 and 32 under Conclusions for a discussion of several pertinent points).

**Those Associated with the Administration of Project Reports and Information**

*3*, The distribution of project reports within the shipyard of the principal recipients of this material should be improved.

4, Extension of the NSRP Newsletter to a broader distribution should be supported.

**5,** The idea of establishing of a single point of contact within each shipyard for NSRP information should be developed and implemented.

**Those Associated with NSRP Matters in General**

**6.** The NSRP should be thoroughly publicized throughout the shipyard community.

7. Steps to shorten and stabilize the funding cycle for projects should be supported.

8. Mailing lists should be updated and examined to ensure that the appropriate people in each shipyard and activity are included.

# APPENDIX A

## Project Benefit Analysis Worksheet

## SPC Panel SP-3

## SP-3 PROJECTS LISTING
(since 1989 survey)

| NSRP | KEY | REMARKS |
|---|---|---|
| **0270** Adaptation of Japanese Prefabrication Priming Procedure to U.S. Shipbuilding Methodology 1987 | | |
| **0275** Work Planning for Shipyard Surface Preparation and Coating (SP&C) - A Training Manual Jan 1987 | | |
| **0280** Cathodic Protection/Partial Coatings versus Complete Coating in Ballast Tanks - Five Year Report 1987 | | |
| **0288** Marine Coatings Performance - Ten Year Report 1988 | | |
| **0294** Automated Painting of Small Parts 1989 | | |
| **0295 Development** of Standard Procedures for Shipboard Paint Inspection 1988 | | |
| **0302 The Economics** of Shipyard Painting Phase II, Bid Stage Estimating 1988 | | |

| NSRP | | KEY | REMARKS |
|---|---|---|---|
| *0303* | Benefit Analysis of SPC Panel SP-3 Projects and Evaluation of SPC Panel SP-3 Management and Administration Jul 1989 | | |
| *0306* | Corrosion Protection by Calcite-Type Coatings Ott 1989 | | |
| *0307* | Abrasive Contaminants and their Effect on Coating Performance Jan 1990 | | |
| *0308* | Evaluation of Smoke Extraction Systems vs. Ventilation in Shipbuilding and Repair Jan 1990 | | |
| *0309* | Impact of V.O.C. Regulation on Shipbuilding and Ship Repair Jan 1990 | | |
| **0311** | Performance Testing of Marine Coatings: New Test and Evaluation Procedures Jun 1990 | | |

| NSRP | KEY | REMARKS |
|---|---|---|
| 0312 Evaluation of New Surface Preparation and Coating Repair Techniques in Ballast Tanks Jul 1990 | | |
| 0313 The Cost Effectiveness of Flame Sprayed Coatings for Shipboard Corrosion Control Jul 1990 | | |
| 0316 The Economics of Shipyard Painting - Phase III Ott 1990 | | |
| 0329 The Effect of Substrate Contaminates on the Life of Epoxy Coatings Submerged in Sea Water Jun 1991 | | |
| 0332 Evaluation of New Surface Preparation and Coating Repair Techniques in Ballast Tanks - Interim Report (3-year Results) May 1991 | | |
| 0341 Procedure Handbook for Shipboard Thermal Sprayed Coating Applications Mar 1992 | | |

| KEY | RATING DESCRIPTION |
|---|---|
| *0* | No knowledge/ no interest |
| 1 | Interested; will look at information |
| 2 | Have information; considering it |
| 3 | Have studied information; no application intended |
| 4 | Information looks useful; application planned |
| 5 | Applied once; no further application seen |
| 6 | Have applied on limited scale; may apply again |
| 7 | Have applied substantially; information useful |
| 8 | Constant application on-going; information valuable |
| 9 | Need more information; wider application |

**RATING SYSTEM FOR NSRP PROJECTS EVALUATION**

# APPENDIX B

## SPC Panel Meeting
## Management and Administration

## Questionnaire/Worksheet

**NATIONAL SHIPBUILDING RESEARCH PROGRAM**

\+ + +

**PROJECT BENEFIT ANALYSIS**

**and**

**EVALUATION OF PANEL MEETINGS AND ADMINISTRATION**

\+ + +

**INTERVIEW QUESTIONNAIRE**

Date _____

Shipyard Coded Identity _____

(Note: Shipyard identity will not be revealed in the published report.)

Shipyard/Company Name _____
Location/Address _____

| | | | |
|---|---|---|---|
| Persons Contacted | | | |
| Position/Title | | | |
| Mailing Address | | | |
| | | | |
| Telephone | | | |
| Panel Interest | | | |

Shipyard/Company Size (#) _____ Production Workers (#) _____

Ship Types _____

New Construction (Y/N) _____ Repair (Y/N) _____ Union (Y/N) _____

Current Workload Size _____

Remarks _____

## QUESTIONNAIRE

Panel SP-_____

Name_____ Company_____ Date_____

## PANEL MEETINGS AND ADMINISTRATION

How often do you attend _____

Do/should others in your Company attend _____

Are the meetings of value to you _____

How can the meetings be improved _____

Increase/decrease number of meeting days _____

Continue/change meeting format _____

Continue/change content of meeting _____

Broaden/restrict who can attend _____

What should be added to the agenda _____

What should be dropped from the agenda _____

Should meeting be held in conjunction with other organizations _____

Are meeting minutes of value to you _____

How can the NSRP be of more assistance to your company _____

What Projects would you like to see carried out _____

_____

_____

**Do** you have on-going NSRP Projects (identify) _____

_____

_____

What would you like to see investigated - problem areas _____

_____

_____

What message would you like transmitted to this Panel _____

_____

_____

**PROJECT REPORTS AND NSRP INFORMATION**

Do you receive adequate information on NSRP Project Reports _____

_____

Do you get the 'Yellow Book' NSRP Bibliography of Publications _

_____

Have you ever ordered a Report from the NSRP Library _____

_____

Is the NSRP Newsletter of value to you _____

_____

How can NSRP information be communicated more effectively _____

_____

Would you prefer to have a single point of contact within your company for information on meetings, availability of NSRP reports on projects, and other NSRP matters? _____

_____

What person in your company would serve best as this point of contact?

_____

_____

# APPENDIX C

## SPC Panel SP-3 Projects Listing based on Benefits Evaluation

## APPENDIX C

### SPC Panel SP-3 Projects Listing based on Benefits Evaluation

This is an abbreviated listing of SPC Panel SP-3 projects, based on the benefit value (number of* 's) assigned to each project, highest to lowest. This listing is included as an aid to understanding which types of projects were found to be of most (and least) interest and value to the using community, based on the user comments received during this survey.

*NSRP 0307* * * * * * * * *
*TITLE:* **Abrasive Contaminants and Their Effect on** Coating Performance.
A *UTHOR:* National Steel and Shipbuilding Company.
DATE: January 1990 CosT: *$20,000.*

**NSRP 0312** *** * * * * * * ***
**TITLE: Evaluation of New Surface Preparation and Coating Repair Techniques in Ballast Tanks.**
AUTHOR: National Steel and Shipbuilding Company.
DATE; July 1990 COST: $40,000.

**NSRP 0332** *** * * * * * * ***
**TITLE: Evaluation of New Surface Preparation and Coating Repair Techniques in Ballast Tanks Interim Report (Three Year Results).**
*AUTHOR:* Associated Coating Consultants Inc.
*DATE:* May 1991 COST: (Not available)

**NSRP 0295** * * * * * * *
*TITLE:* Development of Standard Procedures for Shipboard Paint Inspection.
*AU7HOR:* Thomas Radakovich.
*DATE:* September 1988 COST: (Not available)

**NSRP 0309** * * * * * * *
*TITLE:* **Impact of V.O.C. Regulation on Shipbuilding and Ship Repair.**
*AU7HOR:* National Steel and Shipbuilding Company.
*DATE:* January 1990 COST: $19,545.

**NSRP 0316** * * * * * * *
*TITLE:* **The Economics of Shipyard Painting, Phase III**
*AUTHOR:* Gary Higgins and Steven Garlick.
*DATE:* October 1990 COST: (Not available)

**NSRP 0341** * * * * * * *
**TITLE: Procedure Handbook for Shipboard Thermal Sprayed Coating Applications.**
*AUTHOR:* Roger Snyder, Larry Shul and Les Hansen.
*DATE:* March 1992 COST: (Not available)

**NSRP 0275** * * * * * *
*TITLE:* **Work Planning for Shipyard Surface Preparation and Coating (SP and C) - A Training Manual.**
*AUTHOR:* DDL OMNI Engineering Ltd.
*DATE:* January 1987 COST; $75,000.

**NSRP 0302** * * * * * *
*TITLE:* **The Economics of Shipyard Painting Phase 11, Bid Stage Estimating.**
*AUTHOR:* National Steel and Shipbuilding Company.
*DATE:* December 1988 COST: $80,000.

**NSRP 0313** * * * * * *
**TITLE: The Cost Effectiveness of Flame Sprayed Coatings for Shipboard Corrosion Control.**
*AUTHOR:* National Steel and Shipbuilding Company.
*DATE:* hdy **1990** **COST: $72,500.**

*NSRP 0288* * * * * *
*TITLE:* **Marine Coatings Performance - Ten Year Report.**
**AUTHOR:** Associated Coating Consultants for National Steel and Shipbuilding Company.
DATE: july 1988 COST: (Not available)

**NSRP 0329 * * * * ***
**TITLE: The Effect of Substrate Contaminants on the Life of Epoxy Coatings Submerged in Sea Water**
*AUTHOR:* Dr. Gerald Carl Soltz.
*DATE:* June 1991 COST: (Not available)

**NSRP 0280 * * * ***
**TITLE: Cathodic Protection/Partial Coatings versus Complete Coating in Ballast Tanks - Five Year Report.**
*AUTHOR:* Associated Coating Consultants for National Steel and Shipbuilding Company
*DATE:* November 1987 COST: (Not available)

**NSRP 0311 * * * ***
**TITLE: Performance Testing of Marine Coatings: New Test and Evaluation Procedures.**
*AUTHOR:* National Steel and Shipbuilding Company.
*DATE.-* June 1990 COST: *$79,500.*

**NSRP 0270 * * ***
**TITLE: Adoption of Japanese Prefabrication Priming Procedure to U.S. Shipbuilding Methodology.**
*AU7HOR:* **KTA-TATOR,** Inc. for Avondale Shipyards.
*DATE:* August 1987 COST: $178,000.

---

**NSRP 0294 ****
**TITLE: Automated Painting of Small Parts.**
*AUTHOR:* National Steel and Shipbuilding Company.
*DATE:* August 1989 COST: (Not available)

**NSRP 0306. ****
**TITLE: Corrosion Protection by Calcite-Type Coatings.**
*AUTHOR:* National Steel and Shipbuilding Company.
*DATE:* October 1989 CosT: *$70,000.*

---

**Additional copies of this report can be obtained from the National Shipbuilding** Research Program Coordinator of the Bibliography of Publications and Microfiche Index. You can tail or write to the address or phone number listed below.

**NSRP Coordinator**
**The** University of Michigan
Transportation Research Institute
Marine Systems Division
2901 Baxter Rd.
Ann Arbor, MI 48109-2150
Phone: (313) 763-2465
Fax: (313) 936-1081