Benefit Analysis of SPC Panel SP-I Projects & Evaluation of SPC Panel SP-1 Management and Administration

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

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

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FINAL REPORT

✠ ✠ ✠

BENEFIT ANALYSIS OF SPC PANEL SP-1 PROJECTS

and

EVALUATION OF SPC PANEL SP-1 MANAGEMENT AND ADMINISTRATION

✠ ✠ ✠ ✠ ✠

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In Behalf Of
SNAME SPC PANEL SP-1

FACILITIES AND ENVIRONMENTAL EFFECTS

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.

The survey of SPC Panel SP- 1 on Facilities and Environmental Effects is reported herein. The purpose of this survey was (1) to determine the type of project most beneficial in the past, and therefore most likely to yield the largest benefit in the future, and (2) to determine how the direction of Panel SP- 1 itself might be improved.

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 Facilities and Environmental Effects community to gain the necessary information. 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 20 years by SNAME Ship Production Committee Panel SP-I on Facilities and Environmental Effects under the National Shipbuilding Research Program. It has found that those projects offering timely information and assistance in the environmental and hazardous material areas have yielded the most value in the shipyard community. Several facilities-related projects of wide application potential have also been beneficial to the shipyard users of this information.

This Task has also assessed the opinion of the shipyard using community on the administration and management of Panel SP- 1 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 faithful communications among SPC Panels, and between Panel SP- 1 and the ECB (Executive Control Board of the Ship Production Committee of SNAME). These matters 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-1 is active takes on additional weight as efforts unfold to prepare our shipyard community for entry into the international commercial market. Facilities questions may not be of immediate and prime importance, but surely environmental and hazardous material issues are at the forefront of concern, and may determine whether our shipyard industry will survive or fail. The “playing field” of environmental regulations and requirements is definitely not a level one where foreign shipyard practices are concerned. It is therefore necessary that U. S. shipyards become so proficient in the handling of environmental and hazardous material matters that the cost of these activities does not price us out of the competition. Relief from regulations is not likely, nor is it realistic. In time, foreign governments may move toward more stringent controls, but for the foreseeable future we must upgrade our proficiency without spending ourselves to death. That kind of accomplishment is a tall order. We are fortunate that SPC Panel SP-1 is active, available, and intellectually able to address the challenge.

TABLE OF CONTENTS

FINAL REPORT

/ / / / /

BENEFIT ANALYSIS OF SPC PANEL SP-1 PROJECTS

and

EVALUATION OF SPC PANEL SP-1 MANAGEMENT AND ADMINISTRATION

BACKGROUND

GeneraI Discussion

This Project was designed: (1) to investigate the benefits that may have resulted from SPC Panel SP-1 Facilities and Environmental Effects projects carried out over the first 20 years of Panel operations; and (2) to evaluate how the management of Panel SP-1 itself is currently viewed by the using community. 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- 1 might be improved.

This Project would consist of interviews with members of the Facilities and Environmental Effects 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-I Panel Members toward their action on panel operations and projects in the future.

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 area of SPC Panel SP- 1 on Facilities and Environmental Effects.

Report No.	Benefit Value
NSRP 0035	* * *
NSRP 0074	* * * *
NSRP 0077	* * * * * *
NSRP 0106	* * * *
NSRP 0128	* * * * *
NSRP 0135	* * * * *
NSRP 0142	*
NSRP 0153	* * * * *
NSRP 0165	* * * * *
NSRP 0167	* * * *
NSRP 0190	* * * * *
NSRP 0202	* * *
NSRP 0203	* * * * *
NSRP 0206	* *

Report No.	Benefit Value
NSRP 0208	* * *
NSRP 0230	* * * *
NSRP 0231	* * * * *
NSRP 0237	* * * * * *
NSRP 0250	* *
NSRP 0251	* * * * * *
NSRP 0315	* * * * * *
NSRP0317	* * * * *
NSRP 0322	* *
NSRP 0330	* * * * * * * * * *
NSRP 0342	* * * * * * *
NSRP 0345	* * * * * * * * *
NSRP 0350	* * * * * * * *

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 ANALYSIS.*

NOTE : Appendix C is an abbreviated listing of these same projects (NSRP Number; *TITLE, AUTHOR; DATE; COST)* 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 survey.

NSRP 0077 * * * * * *

TITLE: Feasibility Study on Development of an Economical System for Cleaning Dry Docks Prior to Flooding.

AUTHOR: Avondale Shipyards, Inc., New Orleans. LA.

D.4TE: October 1978 *COST:* **(Not** available)

ABSTRACT: The primary objective of this project was to determine effective and economical means of cleaning drydocks prior to flooding in order to comply with EPA criteria. The EPA has been considering enforcing regulations requiring broom cleaning of drydock floors and the eventual use of vacuum cleaning. Utilizing broomclean as EPA's criteria, **two** crucial factors of dry docking operations should be effected: time and manhours. (45 p.)

BENEFIT ANALYSIS: MIXED VALUE. Although 47% of those interviewed had no knowledge of this report and no interest in the material, representatives from three shipyards indicated that the information was useful to them. This report spawned use of the term "broom clean". which was popular in the late 1970s. This material also was a contribution to the 1979 requirements in the Clean Water Act. It is similar to the effort described in the current BMP (Best Management Practices) for drydocks.

NSRP 0106 * * * *

TITLE: Requirements Report: Computer Software System for a Semi-Automatic Pipe Handling System and Fabrication Facility.

AUTHOR: IBM, for Avondale Shipyards, Inc., New Orleans, LA.

DATE: May 1980 *COST:* (Not available)

ABSTRACT: Avondale has entered into a detailed study to design a cost effective and semi-automatic method of fabricating pipe which will reduce the labor, material handling, storage space. and required fabrication area. This report presents the requirements of the computer software that must be developed to create pipe detail drawings through the pipe shop. Those requirements are separated into two major categories: the Computer Aided Drawing System and the Pipe Handling and Fabrication System. Section 11 of this report describes the application in terms of work flow and functions performed. Section III deals with the information necessary. Section IV describes the significant design constraints that must be considered during the design of the system. (114 p.)

BENEFIT ANALYSIS: MIXED VALUE. This project grew *from* the study leading to the semi-automatic pipe fabrication facility at Avondale. 79% of those interviewed had no knowledge of this report and no interest in the material. 150%. indicated familiarity with the report. Only the author shipyard indicated application of this material, however.

NSRP 0128 * * * * *

TITLE: Long-Range Facilities Plan.

AUTHOR: Todd Pacific Shipyards Corporation. Los Angeles Division.

DATE: July 31, 1981 COST: (Not available)

ABSTRACT: The principal objective of the long-range plan is to provide a baseline against which all projected changes to the yard facilities may be measured in order to assure the orderly and efficient progress of yard improvement. This report includes a history of the yard, and long-range facilities plans addressing land requirements, material handling, communications, utilities. buildings, and major equipment. An appendix includes a report on the future business potential of Todd Shipyards Corporation prepared by International Maritime Associates. (200 p. approx.)

BENEFIT ANALYSIS: MIXED VALUE. Although 89% of those interviewed had no knowledge of this report and no interest in the material, representatives from two shipyards (other than Todd) cited use of this material over several years as baseline information. Establishment of an historical database was the basic purpose of this project (along with the 3 other long range plans discussed below). The backup data for these reports, developed using the Muther System. is known to be still available today.

NSRP 0135 * * * * *

TITLE: Semi-Automatic Beam-Line Feasibility Study.

AUTHOR: Avondale Shipyards, Inc., New Orleans, LA.

DATE: November 1981 *COST:* (Not available)

ABSTRACT: The goal of this project was the design of a semi-automatic system of beam fabrication to reduce labor costs. to revise the usual material handling methods. to upgrade flow efficiency, and to bring

NSRP 0142 *

TITLE: Long Range Plan for Peterson Builders, Inc.

AUTHOR: Shipbuilding Consultants, for Peterson Builders, Inc.

DATE: February 22, 1982 *COST:* (Not available)

ABSTRACT: PBI began preparation of a long-range business and facilities plan in 1980. Investigations were directed toward an understanding of the PBI market and competition, physical, financial. and labor constraints on future development and the capability of inhouse systems and organization to handle current and future complex shipbuilding programs. Short-term, intermediate, and long-range plans are discussed in detail. (110 P.)

BENEFIT ANALYSIS: LOW VALUE. This report established a facilities baseline for PBI. None of the people interviewed were familiar with this report or interested in the material. (See also the comments on NSRP 0128 above.)

NSRP 0153 * * * * *

TITLE: Long Range Facilities Planning. Executive Summary and Vols. I-V.

AUTHOR: National Steel and Shipbuilding Company.

DATE: April 1982 *COST:* (Not available)

ABSTRACT: NASSCO'S Facilities and Industrial Engineering Department developed a long-range facilities master plan covering all essential operations. Many alternatives were considered and evaluated in depth. The contents of this report have been divided into five volumes: Plan Guide Lines: Long Range Capabilities; Industrial Survey; HI Survey; and Exhibits. (1,038p. total)

BENEFIT ANALYSIS: MIXED VALUE. 79% of those interviewed had no knowledge of this report and no interest in the material. However, representatives from 2 shipyards (other than NASSCO) indicated use of this material, with one of those citing possible use again in the near future. Note that at 1038 pages, this report is the largest in size produced to date under the NSRP. (See also the comments on NSRP 0128 above.)

NSRP 0165 * * * * *

TITLE: Avondale Shipyards, Inc., Long Range Facilities Plan,

AUTHOR: Avondale Shipyards, Inc.

DATE: February 1983 *COST:* (Not available)

ABSTRACT: Participating shipyards developed a Long-Range Facilities Plan covering all activities in owned and/or leased facilities and owned and/or leased land. Each plan was prepared to give a clear picture, in summary form, on how the Yard has developed, What the busiess and facilities situation is NOW, what top management sees as being the long range plan for the yard, and the short and intermediate range steps to meet that plan. Within the scope of the overall plan, facilities improvement projects were identified for future action. (70 p.)

BENEFIT ANALYSIS MIXED VALUE. 89% of those interviewed had no knowledge of this report and no interest in the material. A representative from one shipyard (other than Avondale) indicated considerable use of the material, however. This report was a major assist in developing a facilities plan at his shipyard, where previously the contents of a facilities plan were essentially unknown. (See also the comments on NSRP 0128 above.)

NSRP 0167 * * * *

TITLE: Semi-Automatic Pipe Handling System and Fabrication Facility Phase II Implementation.

AUTHOR: Avondale Shipyards, Inc.. New Orleans, LA.

DATE: March 1983 *COST:* (Not available)

ABSTRACT: Phase I determined feasibility through site interviews with knowledgeable individuals in other shipyards as well as visits to pipe fabrication plants in Japan, Europe, and the U.S. The second phase included design of the overall facility layout as well as selection or fabrication of individual machines, and installation of the new equipment according to a phasing plan which allowed production to continue in the existing building throughout the installation and remodeling process. The project report describes the facility and the sequence of tasks, and provides numerous photographs. (72 p.)

BENEFIT ANALYSIS: MIXED VALUE. 25% of those interviewed were familiar with this report, but only the author shipyard indicated any use or application of the material. The remaining 75°/0 had no knowledge of the report and no interest in the material.

NSRP 0190 * * * * *

TITLE: Process Lanes Feasibility Study.

AUTHOR: Avondale Shipyards. Inc.

DATE: February 1984 *COST:* $216,000.

ABSTRACT: A process lane system is described. Process lanes, when implemented correctly, are known to reduce labor costs, increase flow efficiency, and decrease space requirements for operations and storage areas. The goal of this project was to design a process lane system that would realize these benefits and increase shipbuilding productivity. (108 P.) (Project identified as 1-82- 1.)

BENEFIT ANALYSIS: MIXED VALUE. This was a description of the author shipyard going into the final phases of their upgrading efforts in the area of product layout toward becoming a shipbuilding factory. 85% of those interviewed had no knowledge Of the report and no interest in the material. The remaining 15% were familiar with the report, but only one of them indicated limited application of the material in his shipyard (other than Avondale).

NSRP 0202 * * *

TITLE: Metal Forming Systems Research.

AUTHOR: Roggendorffand Partners Co., Ltd., for Avondale Shipyards, Inc.

DATE: January 1985 *COST:* $24,150.

ABSTRACT: This report describes and compares three- and four-roller systems for forming steel plates by rolling. The report provides necessary background material to be used in new rolling machine design and selection. (95 p.) (Project identified as 1-83-3.)

BENEFIT ANALYSIS: LOW VALUE. 21% of those interviewed were familiar with this report, but none of them indicated any use or application of the material. One person called it "a weird report". The report includes documentation of the fabrication of cylinders and cones using a 3-point and a 4-point bending system for rolls.

NSRP 0203 * * * * *

TITLE: The Nesting and Marking of Ship Parts Cut From Steel Plate.

AUTHOR: Harry Hooper, Consultant, for Avondale Shipyards, Inc.

DATE: February 1985 *COST:* $30,000.

ABSTRACT: In this report, the methods presently used by United States' shipbuilders for preparing, nesting and marking plate parts are discussed. The use of existing computer technology is explored as a means for improving these operations by conserving plate and reducing operational costs. (50 p.) (Project identified as 1-83-l.)

BENEFIT ANALYSLS: MIXED VALUE. The shipyard community had purchased the computer system AUTOKON in the 1970s. This project was "a shot at parts nesting from SPADES" a hull steel design system. Although only 31% of those interviewed were familiar with this report. a representative from one shipyard (other than Avondale) cited use of this material "at least once" during attempts to nest plates in order to reduce waste. A representative from another shipyard (other than Avondale) said that he was using the material "right now" in studying parts nesting.

*NSRP 0206 * **

TITLE: Slew Cranes in Shipyards.

AUTHOR: M.A.N.-Wolffkran, for Avondale Shipyards, Inc.

DATE: May 1985 COST: (Not available)

ABSTRACT: A study was completed to determine slew cranes characteristics for cost effective operations in American shipyards. Slew crane theory and practice were discussed to provide background for developing the evaluation criteria. Five cranes were studied in detail: double-boom (gooseneck) crane. single boom crane with level luffing, balance boom with level luffing, single boom crane with normal luffing, and turntable crane with normal Iuffing. Each crane was evaluated for speed, accuracy, energy consumption, first cost, maintenance cost, safety and operator training. A column mounted crane with a single, unbalanced boom with appropriate Ming characteristics was determined to be the best crane for use in American shipyards. (71 p.)

BENEFIT ANALYSIS: LOW VALUE. Only 10% of those interviewed were familiar with this report, and none of them indicated any use or application of the material. One person said that this was "a promotion of a particular crane supplier for level-luffing cranes". He went on to say that the report received mixed reviews, and "probably did clarify the situation".

NSRP 0208 * * *

TITLE: Fitting and Welding Cylinders.

AUTHOR: Roggendorffand Partners Co., Ltd., for Avondale Shipyards, Inc.

DATE: April 1985 *COST:* (Not available)

ABSTRACT: A flexible system for the assembly of large steel reinforced cylinders was described. Production equipment and operation sequencing was described in detail for fitting, welding, and turning cylinders and associated stiffeners. (10 1 p.)

BENEFIT ANALYSIS: LOW VALUE. A technique for rolling up cylinders had been developed, and now the question was how do we fit and weld them". This report was familiar to only 10% of those interviewed, and no application or use of the results was cited by any of them. The rest had no knowledge of the report and no interest in the material.

NSRP 0230 * * * *

TITLE: Pipe Storage and Movement Study.

AUTHOR: Denson Engineers, Inc., for Avondale Shipyards, Inc.

DATE: February 1986 *COST:* **(Not** available)

ABSTRACT: The purpose of this study was to evaluate various pipe purchasing, handling and storage practices in the shipbuilding industry. From these evaluations, recommendations were made for reducing material costs and improving productivity in accordance with the objectives of the National Shipbuilding Research Program. (152 p.) (Project identified as 1-84-2.)

BENEFIT ANALYSIS: MIXED VALUE. 21% of those interviewed were familiar with this report. A representative from one shipyard (other than Avondale) cited use of the information on material flow to improve the situation at his shipyard. The remaining 79% of those interviewed were not familiar with the report and had no interest in the material.

NSRP 0231 * * * * *

TITLE: Report on Moving Personnel and Light Material Onto a Ship and about a Shipyard.

AUTHOR: The Leawood Group, Richard Muther and Associates, for Avondale Shipyards. Inc.

DATE: November 1985 *COST:* **(Not** available)

ABSTRACT: This document gives the results of a 1985 study performed at Avondale. The basic purpose of this project was to determine the cost of the present methods of moving light materials and people between yard operations and on and off ships, and to develop new methods and/or equipment to reduce the high cost of these functions. Many of the recommendations developed for Avondale could be applicable at other U.S. shipyards. (173 p.) (Project identified as 1-84- 1.)

BENEFIT ANALYSIS: MIXED VALUE. A representative from one shipyard (other than Avondale) called this "an extensive report containing good information. It involves jib cranes mounted to the ship structure for light loads, minimizing the need for larger cranes. It also recommends the use of elevators for moving people, especially with tool boxes in tow". His shipyard had applied the findings on a limited scale, and might do so again in the future. One other person interviewed was familiar with the report. but the remaining 89% had no knowledge of the report and no interest in the material.

NSRP 0237 * * * * * *

TITLE: A Study of the Effects of Applying CAD/CAM Techniques to a Shipyard Sheet Metal Shop.

AUTHOR: Hany Hooper, consultant to Avondale Shipyards, Inc.

DATE: May 1986 *COST: $11,670.*

ABSTRACT: In this report. conventional and CAD/CAM manufacturing methods used in a shipyard sheet metal shop for producing duct fittings and other labor intensive products manufactured from sheet and plate are discussed. Time studies comparing the two methods as they apply to these products are presented. (60 p.) (Project identified as 1-SP-1.)

BENEFIT ANALYSIS: MIXED VALUE. This was a re-study of an earlier SP-8 project carried out is a shipyard sheet metal shop, with ManTech involvement. It is related to NSRP 0315 below. which has the same thrust. A representative from one shipyard (other than Avondale) indicated substantial application of the findings. One other interviewee said that he was familiar with the material. 90%. of those interviewed, however, indicated no knowledge of the report and no interest in the material.

NSRP 0250 * *

TITLE: Study of the Mechanized Manufacture and Welding of Reinforced Shell Units From Rolled Shell Plate and Tee Bar Segments.

AUTHOR: Roggendorff and Partners Co., Ltd., for Avondale Shipyards.

DATE: July 1986 *COST:* $30,720.

ABSTRACT: Simple stage-by-stage production with step-by-step mounting and time recording control establishes a system eminently suitable for the accurate handling and positioning of a workpiece relative to the operation to be performed. This study attempts to describe two mechanized methods of shell ring manufacture; both are according to a stage-by-stage production method. (72 p.) (Project identified as 1-SP-2.)

BENEFIT ANALYSIS: LOW VALUE. This project was a follow-on look at lower runs of shell plate and skin reinforcing systems. Only 10% of those interviewed were familiar with the report, and none of them cited any use or application of the material. The remaining 90% had no knowledge of the report and no interest in the material. It appears that any benefits gained from this project were limited to the author shipyard.

NSRP 0251 * * * * * *

TITLE: Tower Cranes in Shipyards.

AUTHOR: Emscor and Man-Wolffran. for Avondale Shipyards.

DATE: October 1986 *COST:* $22,000.

ABSTRACT: It is apparent that the cranes traditionally used in U.S. shipyards do not offer the performance, the flexibility, or the cost-effectiveness of cranes available in Europe and the Far East. This study examines the suitability of tower cranes for use in dockyards in the U.S. Their cost and cost-effectiveness are studied, and applications for which they are particularly suited are presented in detail. (101 p.) (Project identified as I-83-2.)

BENEFIT ANALYSLS: MIXED VALUE. Only 15% of those interviewed were familiar with this report. The remaining 85% had no knowledge of the report and no interest in the material. A representative from one shipyard (other than Avondale) cited substantial use of the material, however. Information on the "Christmas Candle" crane at NorShipCo is included in this report.

NSRP 0315 * * * * * *

TITLE: Group Technology/Flow Applications in Production Shops.

AUTHOR: William *S. Oaks,* H.B. Bongiomi, W. O. Appleton. and Vincent F. Bobrowicz.

DATE: February 1988 *COST: $146,920.*

ABSTRACT: This report discusses classification and coding as a method for developing functional groups of similar product types. This is a contrast to other methods such as process analysis or manual/visual search. Application of more than one method is required to avoid errors introduced when only one method is relied upon. A review of statistical concepts of classes is introduced. A general approach to the development of a classification and coding scheme is presented. Two case studies are presented the first dealing with shop applications, the second with installation of steel outfitting items. (69 p.) (Project identified as 1-83-5.)

BENEFIT ANALYSIS: MIXED VALUE. This project is related to NSRP 0237 above. It discusses a numerically controlled plasma cutting and punching system. The findings provoked changes in crane and product layout in the sheet metal shop at the author shipyard. However, 84% of those interviewed were not familiar with the report and had no interest in the material. 10% of those interviewed were familiar with the report, but did not cite any use or application of the findings in their shipyards.

NSRP 0317 * * * * *

TITLE: Semi-Automatic Web-Line Feasibility Study.

AUTHOR: Richard Price and Harold Tabony.

DATE: December 1984 *COST:* (Not available)

ABSTRACT: The objective of this project was to design a cost effective semiautomatic method of prefabrication, fabrication and assembly of web sections, known as a semiautomatic web line. The goal was to reduce material handling, fitting and welding labor, and at the same time bring about improved flow efficiency, space utilization and integration with other advanced manufacturing practices and scheduling. (175 p.)

BENEFIT ANALYSIS LIMITED VALUE. This was the next logical step in a steel shop. building on the semi-automatic beam line feasibility study provided by NSRP 0135 above. A representative from one shipyard (other than the author, Avondale) cited use of this material in developing a shapes processing proposal at his shipyard. 15% of those interviewed were familiar with the report. but did not indicate any use or application of the material. The remaining 79% had no knowledge of the report and no interest in the material.

NSRP 0322 * *

TITLE: Movement and Storage of Pipe and Shapes.

AUTHOR: Albert W. Horsmon, Jr. and Howard M. Bunch.

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

ABSTRACT: A system is described for cIassifying pipe and shapes into unit loads and the attributes of various moving and storing devices are applied to unit loads and loose materials. An index to the various movement and storage equipment supplies is provided. Finally, a methodology is presented for analyzing various material handling systems and choosing the best alternatives. (107 p.) (Project identified as 1-87-3.)

BENEFIT ANALYSIS: LOW VALUE. 79% of those interviewed had no knowledge of this report and no interest in the material. The remaining 21% were familiar with the report, but did not indicate any use or application of the material. One person said that the project "was originated by Avondale, but won by the University of Michigan". He added that there was "some good information in it, but it was not shipyard friendly" in its presentation style.

NSRP 0330 * * * * * * * * *

TITLE: 1990 C1ean Air Act Impact on Shipyard Painting Operation.

AUTHOR: Lynwood P. Haumschilt.

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

ABSTRACT: This report gives the necessary background information on the Clean Air Act to cover the control technique guidelines for shipbuilding and ship repair which is required to be promulgated by the Environmental Protection Agency by November 15, 1993. Also, an explanation on how to interface with federal, state, and local regulators in regard to establishing air pollution rules and regulations as they relate to Volatile Organic Compounds (VOC). The past, current, and proposed efforts by the U.S. Navy concerning VOC'S is also covered. (23 p.)

BENEFIT ANALYSIS: HIGH VALUE. Despite its small size of only 23 pages, this report received the highest praise of all SP-1 projects to date. 74% of those interviewed were familiar with the report. One said that the report had "raised the general level of awareness" at his shipyard. Another said that the report was "a prime study, an excellent report providing good background information". A third said that the "information is useful to those trying to stay abreast of requirements". Representatives *from* two shipyards specifically cited extensive use of the material in the report.

NSRP 0342 * * * * * * *

TITLE: Hazardous Material Tracking Systems: Scanning Module.

AUTHOR: Insight Industries

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

ABSTRACT: This report involves the development, explanation, and application of the Hazardous Materials Tracking System's (HMTS) on-line electronic image of the Material Safety Data Sheet (MSDS) and the reasons for its necessity. This report is the result of a six-month study of the methods, design and programming for this scanning system. (26p.)

BENEFIT ANALYSIS: HIGH VALUE. This project was designed to assist a shipyard in keeping track of their toxic release inventory. Representatives from three shipyards cited use of the material. either directly or in connection with developing their own systems. Not all comments on this report were favorable. however. One person called the report "useless". Two others said that they "did not use it" as they had

NSRP 0345 * * * * * * * *

TITLE: Environmental Compliance Inspection Checklist for Shipbuilding Facilities.

AUTHOR: John Martin and John Wittenborn.

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

ABSTRACT: This checklist was developed to assist shipyards in determining their level of environmental compliance with federal regulatory requirements. The checklist addresses the full range of processes and operations found in the shipbuilding industry, and the environmental regulations that apply to them. The checklist was prepared using current available environmental checklists and published literature sources on environmental auditing. A draft checklist was reviewed by various representative shipyards to assure that all shipyard processes were covered. (126p.)

BENEFIT ANALYSIS: HIGH VALUE. Representatives from 4 shipyards indicated use of this material. One said that the material was used in their auditing efforts. Another said that the material \vas adapted to their existing system. In all, 47% of those interviewed cited some use or application of this material. Only 32% of those interviewed indicated no Knowledge of the report and no interest in the material, with another 10% indicating familiarity with the report but intending no application of the findings. The remaining 11% were currently deciding what they will do with the material.

NSRP 0350 * * * * * * * *

TITLE: Staging Systems for Ships During New Construction and Repair.

AUTHOR: J. Frank Santoyo

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

ABSTRACT: Present scaffolding methods used by most shipyards are costly and, in general inefficient. The need to develop innovative scaffolding methods and to use state-of-the-art scaffolding systems and equipment is imperative. This report concentrates on scaffolding systems devoted primariIy to exterior hulls and the use of other equipment utilized to make this operation more cost efficient. This area of shipbuilding could have significant impact in reducing costs, a necessary reduction in order for the American commercial market to expect to become competitive in the world-wide market place. (40p.)

BENEFIT ANALYSIS HIGH VALUE. 53% of those interviewed had no knowledge of this report and no interest in the material. However, 15°/0 of those interviewed stated that this material was either currently being used, or that application was planned for the near future. A representative from one shipyard (other than the author, NASSCO) promptly initiated a dialog with a vendor for a "stud welding machine gun" after reading about this technique in the report. He had inquired of the author who such a vendor might be, and then proceeded to establish direct communications with that vendor on equipment availability, cost, and other particulars of interest to his shipyard. A representative from another shipyard who was currently deciding about application of the material, asked why hanging staging was not included in the report. His question was promptly directed to the author of the report. In general, the presentation style and the numerous photographs in this report made it quite friendly to the family of shipyard readers, which was perhaps limited to those who operate in the facilities area.

MANAGEMENT OF SPC PANEL SP-1 ACTIVITIES

General Discussion

This section describes the opinions of those interviewed relative to the administration of SPC Panel SP- 1 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-1.

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 inteviewed constitute the core of Panel SP- 1 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 two pages is a matrix showing SPC Panel SP- 1 Meeting Attendees for the 10 most recent meetings. This matrix reveals which shipyards and other activities have been supporting SP- 1 by having a representative in attendance at these meetings. The date and location of each meeting is indicated, along with the company afiliation of those in attendance. Note that 40% of these companies have had a representative at three at more of these meetings.

Attendee Affiliation (Location)	May '90 - Annapolis, MD	Oct '90 - Groton, CT	Feb '91 - New Orleans, LA	Jun '91 - Sturgeon Bay, WI	Oct '91 - Portland, OR	Jan '92 - San Diego, CA	May '92 - Pascagoula, MS	Oct '92 - Cocoa Beach, FL	Feb '93 - Tampa, FL	May '93 - Virginia Beach, VA
Acurex Corp. - ESD	X									
AMCCE - BD			x							
Amega Engineering, Inc.		x			x	x				X
Army Material Command HQ										
Atlantic Coast Enviro Pdts										X
Atlantic Marine, Inc.								X	X	X
Avondale Industries, Inc.							x	x		X
Barton Mines								x		
Bath Iron Works		X			X		x	x	x	X
Bay Planning Coalition, S/F, CA										
Bay Shipbuilding Co.				x						
Becktel Corp.										
Beth Ship - Sabine							X-		X	X
Bethlehem Steel Corp.	x									
BMS and Associates				x	x		x	x	x	
Cascade General, Inc.						X				
CEM-Corp.										X
Charleston NSY						x	x	x	x	X
Collier Shannon									x	X
Compliance Engineering										X
Continental Maritime			x	X						
Devoe Coatings Co.				x						
Dow Chemical										
DTRC (NSWC - Carderock)	x	x	x	x	x			X		X
Environmental. Inc.					x	x				
GUI										
Fraser Env System										
GD/EB Div.	x	x	X		x	x		x		
Ingalls Shipbuilding Div.			X	X			x			
Insight industries			X	X					X	
International Paint				X						
Jet Edge										
JJG Associates				x						
Long Beach NSY						X-				
Mare Island NSY										X

Meeting Attendees
SPC Panel SP-1
Facilities and Environmental Effects

Attendee Affiliation											
Marinette Marine		x									
Maritime Administration, U. S. DoT		x		x	x		x			x	x
Metco/Perkin - Elmer					x						
Metro Machine Corp.				x							
Midwest Research Institute									x		
NASSC0		x	x	x	x	x	x	x	x	x	x
Nav sea					x	x	x		x		x
NDC - Environmental Excellence									x	x	
Newport News Shipbuilding		x	x		x	x	x	x	x	x	x
Norfolk NSY					x						
NorShipCo			x	x	x		x		x	x	x
OP&L											x
Penn State - APL										x	
Peterson Builders, Inc.			x	x	x	x	x		x	x	
Portland Ship Repair - Port of Portand			x	x		x	x		x	x	
Portsmouth NSY				x	x				x	x	
Puget Sound NSY			x								
R-P-M and Associates, Inc.		x	x		x	x	x	x	x	x	x
Sandroid System, Inc.									x	x	
shipbuilders Council of America						x	x	x			
Southwest Marine, Inc.		x	x	x	x	x	x		x		x
SupShip Groton											x
SupShip Pascagoula								x			
:ampa Shipyards				x				x		x	
Todd Shipyards Corp.		x									
Triad Engineering					x						
WA											x
U. Michigan - TRI			x								
U. S. C. G.		x	x	x		x	x		x		
United Technologies - USBI				x			x				
West State Inc.						x			x	x	x
A/Wins Enterprise, Inc.		x									
Woodward-Clyde Consultants								x	x		

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?

41% of those interviewed attended all of the meetings. 47% of those interviewed attended 1 or 2 meetings each year. Two interviewees had attended one time only, and that was several years ago.

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?

53% answered this question favorably. The rest offered no response to the question. Several interesting comments were made during the discussion of this question that illustrate what sort of "values" are involved here. The most prevalent reply was that networking was the biggest advantage gained from the meetings. A few other comments were offered, however. These comments are summarized below, as nearly verbatim as possible:

- Seeing what other shipyards are doing about the (environmental) regulations. We get to pick up on things that we may have missed. Group comments are always better than a single voice.

- The commentary by John Wittenborn (on the current status of environmental regulations) is good.

- General information is gained during informal discussions, such as the breaks, and during after-hours gatherings. Relationships build, and then information flows.

- We gain better insight into shipbuilding, and learn about common problems and concerns.

How can the meetings be improved? In particular,

Increase/decrease number of meeting days?

41% felt that the present meeting arrangement of 2 to 2-1/2 days should be continued. 2 interviewees would drop one day, while 1 other interviewee would add 1 to 1-1/2 days. One other interviewee would hold meetings only 2 times per year (rather than 3). The rest had no opinion.

Continue/change meeting format?

While 41% said that no changes were needed, and another 41% voiced no opinion, there were two specific comments on this matter, as follows:

1. Add a period for free-flow of information (offered by two separate people).
2. Add a fill day of discussions jointly with SP-3.

Continue/change content of meeting?

Responses to this question indicated satisfaction with the present meeting content, although four specific comments were made, as follows:

1. Presentations and "coffee-clutches" are the most valuable.
2. Discussions of "political issues" should be dropped, as they area waste of time.
3. Perhaps reduce the time committed to shipyard tours. Most attendees have seen a shipyard before.
4. Vendors helping with information are good, but not just to sell their wares.

Broaden/restrict who should attend?

22% of those interviewed found the attendee mix to be satisfactory, while 44% offered no response to the question. One person felt that the Panel has a good "core group", but that others may not be comfortable because of their unfamiliarity with what is going on. He went on to say that we must work to make sure that attendees are not intimidated by the "heavyweights", adding that it "took him a long time to become comfortable in that community". Six people offered specific comments, as follows:

1. One wanted more shipyards to be represented.
2. One wanted more Navy representation.
3. One wanted fewer vendors in attendance.
4. One wanted more vendors in attendance.
5. One wanted more shipyard facilities people in attendance.
6. One wanted more lower-level people in attendance.

What should be added to the agenda?

Four people 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. A period for free-flow of information.
2. More video presentations.
3. More vendor presentations.
4. More commentary similar to that provided by John Wittenborn (on the current status of environmental regulations, and similar matters of common interest).

What should be dropped from the agenda?

While 30% of those interviewed said that nothing should be dropped from the agendas, and 35% of those interviewed offered no response to this question, there were two specific comments by two different people on what should be dropped from the agendas, as follows:

1. The 1/2 day for a shipyard tour should be dropped.
2. The commentary by John Wittenborn (on the current status of environmental regulations) should be written up and distributed, rather than given orally.

Should meetings be held in conjunction with other organizations?

28% of those interviewed said that holding a meeting in conjunction with other SPC Panels, or during the same time frame as a related technical/NSRP symposium, would be worthwhile. For example, air toxics might prompt a joint meting between SP- 1 and SP-7; training considerations might argue for a joint meeting between SP- 1 and SP-9. Another 33% favored meetings held in conjunction with SPC Panel SP-3, specifically. Two people said that joint meetings should not be held at all. TWO other people said that meetings should not be held in conjunction with the Ship Production Symposium. One person favored a week-long series of meetings, rather than meetings for 2 or 3 days each requiring separate travel. The rest offered no opinion.

Are meeting minutes of value to you?

39% answered "yes", and only 6% said "no". The rest had no opinion. Five specific constructive comments were made in response to this question, as follows:

1. Minutes need to be published earlier (comment made by 3 people).
2. Minutes need to be bound, and have an index (comment made by 2 people).

(Note: Some SPC Panels are doing this already, notably Panel SP-3).

3. A drafl of the minutes should be provided at the meeting, so that individual note-taking can be avoided.
4. A local stenographer should take the minutes of the meeting. These could be produced by the next day, and be corrected before the meeting is adjourned. These formal

minutes could be distributed 2-weeks after the meeting. The Chairperson could publish a summary of the meeting for general use, but the detailed minutes would be available to those who are interested in them.

5. Minutes are lacking in response time and in substance, and are geared to "technocrats". We need a better format that is more "user-friendly". If the (current) minutes are given to someone who is unfamiliar with Panel activities, they are not useful. The minutes should be designed to convince other people of the importance of the NSRP, and inspire them to attend consistently.

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:

- Keep having meetings among Environmental Managers and Facilities people, and similar specialty areas in the shipyards. Different regions of the USA or the States themselves may produce different requirements, making it difficult to have a common checklist for compliance. This also makes the BMP (Best Management Practice) approach a bit difficult, because you may do more than is really required of you.

- The NSRP is OK except for the financial delays with the projects. "If we don't fix this situation, the Panels will be history".

- We need improvement at the user level in dissemination of NSRP information within their own shipyards. Basic distribution of reports is OK now, but passing the information along is up to the recipients, who should also brief their own top management and not leave the job to someone else.

- We need a global look at where the shipyard industry is going, that is, the entire shipyard industry - as though it were under only one roof. The NSRP is not prepared to treat this question, because it is only a drop and not a river. The NSRP is not the vehicle, and does not have the capability. The necessary change is revolutionary, not evolutionary.

- The tape on the NSRP is helpful. People are really trying to do their best to improve. However, our customers have never been present, so people do not have the benefit of feedback from them. We should develop Panel programs to be more complete by bringing in customers, vendors, equipment suppliers, etc. to help us fufill our intentions. We might get agreement to try our procedures on the customer's ships, in fact. Better work procedures, technologies, and efficiencies would result. We could do things like put a new coating in a patch area on a ship for an actual trial period at sea.

- We need a bulletin board arrangement for our NSRP Library. We need to tie our (Panel) Chairpersons and the ECB together with E-Mail. The Bulletin Board could be used for Environmental Studies and Testing type information. on what others might have done or are doing.

. We need to improve information flow among all of the Panels. Activities by other Panels may impact, or be of interest to, the environmental area.

. Current and pending environmental regulations have the biggest impact on shipyards. Treat this area effectively, and "you will help me". Make the information more specific to each environmental area in the Country, so that differences can be seen.

- We need to speed up the project cycle. We need some items now, not 2 years from now. Environmental law changes will not wait.

- The ECB has been ineffective. We need new ideas and ways to invigorate the NSRP. We may need to delete the ECB, and set up a separate non-profit corporation for the NSRP. We should have the Program Managers function from a central location. We should shorten the 3 year queue (for projects). We should eliminate the dinosaurs. We should "get on with it", and without the restrictions imposed by the SNAME connection.

Ž We are looking 20 years ahead into the future (at our shipyard). Vision is the real attribute needed for improvements in performance and for correction of our on-going workload. We are in a wait-and-see mode. If the NSRP "cuts it", we will continue to support. If not, we will go separately, e.g. with ARPA (Advanced Research Projects Agency), and treat what needs to be done to support our work in the future, such as a market survey, financial information, regulatory matters, etc.

- Get the senior management of the NSRP more in tune with industry needs in the future. There is excess shipyard capacity, so we should decide what to do about it and how the NSRP can be of assistance.

- The USA is a maritime power (through the U. S. Navy), but is not a maritime country. We have not been a maritime country since the days of the clipper ships. We have been a railroad country, but not a maritime country. We need the political side to treat this issue.

- We might let the ECB review the prioritization of projects by a new group that is in tune with the facts, and then let the ECB make suggestions for improvement, instead of having the ECB try to do it all by themselves.

Ž When the administration changes, the environmental position changes - it just did so with the shift from a republican to a democratic administration. We need the NSRP to keep up.

- Perhaps we should have regional meetings to attract (involvement by the) shipyards, with participation by the Navy, the regulators, and all of the other players. It might help to have both National and regional groups.

- Environmental requirements are driving the facilities design activities more than many people realize.

- Training, low interest loans, standards, benchmarks, etc. might take the place of "subsidies" and help to save the shipyard industry from collapse.

- We need better circulation of project information and general information from other shipyards to help in understanding where the shipyard industry stands.

- Make things more "hands on" and less "information only". It is difficult to read a report, and then try to apply that report. Devices and instruments can make application more possible. We can go to that shipyard and actually operate the equipment. Visually-oriented, hands-on demonstrations are good, instead ofjust reading about it in a report.

- We need NSRP participation by the smaller shipyards, not just the big ones. The character of the NSRP will change without it. Smaller shipyards may not have the capacity to take on the large projects, but they could participate with a large shipyard. They also might use a consultant to do the leg work and administration, including writing the Final Report and updates, but use the smaller shipyard as the "laboratory", with shipyard inputs as needed. If we have several shipyards, including the smaller ones, involved and supportive of a project, then finding for that project is more likely. If only one shipyard is in it, money may be difficult to get because they probably cannot justify the "subsidy".

What Projects would you like to see carried out?

44% of those interviewed had specific comments on this question, as follows:

- We have good project content now, but it takes too long for the development /approval cycle. We need a faster arrangement.

- Our projects are OK -we just don’t get to them.

- A project to interface with our customers - Exxon, ARCO, Chevron, etc. - to get these people to the table.

- Ways to blast a ship 2 years hence, that is truly effective and acceptable.

- We need quicker projects, with results in two months.

- Development of recyclable containers for paints and solvents. Plastic is recommended for investigation.

- Education is very important. The needs are there. Safety is another area needing attention.

- There is a tendency to start a project and then continue to do spin-offs of it, rather than finishing up and then going on to another new project. We need really new projects.

- Priorities change with time, so earlier information, abstracts, and positions need to be revisited periodically to see how they might fit today.

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 a project.

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:

- Implementation of no, or low, VOC coatings in our containment areas. PM- 10's will be right around the corner.

- Get an influential person to communicate with the CEO's and tell them about the value of the NSRP. The top-down idea is good, but not enough push is made to educate this (top) group. They are still living in the past. The Navy is gone. We must compete in the global marketplace. We have the technology to make huge improvements, but without the understanding and support by the CEO we cannot get there.

- We need a fast-track for projects so that we can move quickly as we need to do. Abrasive grit blasting should be #l priority for SP-I. It can shut down a shipyard environmentally. We cannot wait. We must speed up and get on with 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 should encourage smaller shipyards to attend meetings, even though they may not be able to afford the time and expense of serving as host.

- Projects finding must get corrected - or the whole thing will collapse.

- We should use the information that we have already amassed in our library. Good information is just waiting to be used.

- Our water filtration project (phase II) cannot wait for the ECB to decide whether this is, or is not, a worthwhile project. We must go forward. This should have been done 1-1/2 to 2 years ago. Research is at the point of having the system in place and ready to go.

- Our BMP activities would make a great video for distribution throughout the Country, at a cost of about $10,000.

. Work with SP-3 closely, so that we get coordinated consideration of common concerns. Referring (a body of concern) to another Panel is not good, because the referral does not make a faithful presentation of the details - it cannot take the place of personal background coupled with intensity of concern. The smaller shipyards need to understand the paint situation so as to comply with environmental laws. We do not have any mechanism to get this done. We need improved communications in both directions (SP- 1 / SP-3). Round table discussions might help. We need results in 2 months or so.

. We should use what we have already done - before we redo the same body of work.

. (NSRP) projects take so long that we have done the work ourselves before the (NSRP) project even got started.

PROJECT REPORTS AND NSRP INFORMATION

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

76% of those interviewed answered "Yes", and only 12% answered "No". The rest had no response to this question.

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

Here 65% answered "Yes", and 24% answered "No". The rest had no response to this question.

Have you ever ordered a Report from the NSRP Library?

24% of those interviewed answered this question in the affirmative, and said that they had received the reports promptly and in good order. Similar comments were received about the AVMAST Library of training materials. It is clear that the procedure for obtaining project reports and training materials from the NSRP Library is working satisfactorily.

Is the NSRP Newsletter of value to you?

50% of the interviewees answered this question in the affirmative. 35% answered in the negative. Several people saw the Newsletter only when it was routed to them by someone else. 35% of those interviewed asked to have their names added to the mailing list for the Newsletter, which 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:

- It depends on the people in the shipyard - whether the information received is distributed to those who need it, or is "filed".

- Get a mailing list that goes as deep into the shipyard as the general foreman level. These people tend to be stable. Distribute regular updates on the NSRP. Send them often, such as one page listings. Do it consistently. Use a check-off card to make getting a copy (of a report) easier for them.

- Shipyards that maintain a technical library should put NSRP information in it as the repository for this information. Then a person will seek out the information when a problem occurs, whereas Panel attendees will get the information on a continuing basis.

- The user level needs to disseminate the information within their own shipyards. They need to brief their own top management, and not leave this job to someone else.

- Information must go both top-down and bottom-up. This will help to avoid the situation where an ECB member did not know about a project going on in his own shipyard.

- Get a good mailing list together. Send the Newsletter to everyone. The recent video (on the NSRP) is good.

- Use a bulletin board for information exchange.

- Have the single point of contact (discussed below) present information to groups and sections of the shipyard. Have an NSRP presentation at all other societies, organizations, seminars, meetings, etc. on a regular basis.

- Have Panel meetings all at the same time and place.

- We were not familiar with the NSRP 3 years ago. The NSRP had not "visited" with the CEO's and the engineering groups to make them aware of this Program. This resource was therefore not known to the industry. We need a group of people, perhaps 3, to carry the message, and explain our capabilities to those targets we select who might be interested in us. We need the CEO's to take on certain issues, and get it done.

- The SCA (Shipbuilders Council of America) has tried to promote the "maritime country" idea, but has not made it.

- Push the Newsletter.

- A marketing approach is needed. Include items in (existing) shipyard newspapers. Use flyers when promoting a larger idea or a major change. A single-sheet flyer could be distributed easily via the shipyard mail system. Target specific areas, like environmental. Send flyers and information to that targeted group. With their pre-knowledge of the NSRP already provided, they will understand the flyers easily and quickly.

- Meet at other shipyards and use more involvement of local people. This can include the local news media to cover the meeting.

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. Specific comments were as follows:

• It depends on the size of the shipyard. At ours, it could be helpful.

• This could provide a consensus of real need, rather than just what is brought up at a Panel meeting.

• This could be tied to the project cycle - perhaps one local shipyard meeting per quarter.

• This could provide a more coordinated shipyard position, and could be helpful.

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

This follow-up question prompted the feeling by 35% 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. This person should, however, be a "driving force" to promote the NSRP. Only one comment 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- 1.

Those Associated with the Benefits derived from Project Reports

1. The projects yielding the MOST benefit value were those treating environmental and hazardous material issues of current interest.

2. Also considered highly beneficial were the recent assessment of staging systems, and several earlier facilities-related investigations such as the economical cleaning of drydocks prior to flooding, applying CAD/CAM techniques in a shipyard sheet metal shop, group technology flow applications in shipyard production shops, and tower cranes in shipyards.

3. Long range shipyard-specific facilities plans, and several specialized investigations of certain production processes were less beneficial to the using community.

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:

- Adding a period for free-flow of information and concerns.
- Limiting discussion of "political issues".
- Adding a full day of discussions jointly with Panel SP-3.
- 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:

- Earlier publication of the agenda to regular and prospective attendees.
- More video presentations.
- More vendor presentations.
- Adding a period for free-flow of information and concerns.

E. A meeting in conjunction with another SPC Panel could be beneficial, especially with Panel SP-3.

F. Meeting minutes published sooner, and in a bound format, would improve action item response and information retrieval. In addition, providing an advance set of minutes to each attendee before the meeting is adjourned could be helpful by eliminating the need for individual attendees to take notes.

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. Communications between the Panel members and other Panels, and with the ECB, have not been satisfactory.

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

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

14. In summary, SPC Panel SP- 1 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 Facilities and Environmental Effects 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 environmental area should receive prime attention. Facilities projects with wide application potential should also be favored.

Those Associated with Panel Meeting Administration

2. The present practices for Panel meetings should be continued, with only minor adjustments (see pages 32 and 33 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 area of communications between Panel members and other Panels and with the ECB should be studied, and improvements should be effected as soon as possible.

7. Steps to shorten and stabilize the finding 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-1

SP-1 PROJECTS LISTING

NSRP		KEY	REMARKS
0035	Material Handling Equipment Study - Vols I and II 1973		
0074	Feasibility Study of Semi-Automatic Pipe Handling System and Fabrication Facility 1978		
0077	Feasibility Study on Development of an Economical System for Cleaning Dry Docks Prior to Flooding 1978		
0106	Requirements Report: Computer Software System for a Semi-Automatic Pipe Handling System and Fabrication Facility 1980		
0128	Long-Range Facilities Plan (Todd LA) 1981		
0135	Semi-Automatic Beam-Line Feasibility Study (Avondale) 1981		
0142	Long Range Plan for Peterson Builders, Inc. 1982		
0153	Long Range Facilities Planning. Executive Summary and Vols I-V (NASSCO) 1982		

NSRP		SP-1 KEY	REMARKS
0165	Avondale Shipyards, Inc., Long Range Facilities Plan 1983		
0167	Semi-Automatic Pipe Handling System and Fabrication Facility Phase 11 Implementation (Avondale) 1983		
0190	Process Lanes Feasibility Study (Avondale) 1984		
0202	Metal Forming Systems Research 1985		
0203	The Nesting and Marking of Ship Parts Cut from Steel Plate 1985		
0206	Slew Cranes in Shipyards 1985		
0208	Fitting and Welding Cylinders 1985		
0230	Pipe Storage and Movement Study 1986		

NSRP	SP-1 KEY	REMARKS
0231 Report on Moving Personnel and Light Material onto a Ship and about a Shipyard 1985		
0237 A Study of the Effects of Applying CAD/CAM Techniques to a Shipyard Sheet Metal Shop 1986		
0250 Study of the Manufacture and Welding of Reinforced Shell Units from Rolled Shell Plate and Tee Bar Segments 1986		
0251 Tower Cranes in Shipyards 1986		
0315 Group Technology / Flow Applications in Production Shops Feb 1988		
0317 Semi-Automatic Web-Line Feasibility Study Dec 1984		
0322 The Movement and Storage of Pipe and Shapes Mar 1991		

NSRP	KEY	REMARKS
0330 1990 Clean Air Act: Impact on Shipyard Painting Operations Jul 1991		
0342 Hazardous Material Tracking Systems: Scanning Module Jan 1992		
0345 Environmental Compliance Inspection Ckecklist for Shipbuilding Facilities Apr 1992		
0350 Staging Systems for Ships During New Construction and Repair Jun 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

Questionaire/Worksheet

NATIONAL SHIPBUILDING RESEARCH PROGRAIM

\+ + +

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-1 Projects Listing based on Benefits Evaluation

APPENDIX C

SPC Panel SP-1 Projects Listing based on Benefits Evaluation

This is an abbreviated listing of SPC Panel SP-1 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 0330 * * * * * * * * *
TITLE: 1990 Clean Air Act Impact on Shipyard Painting Operation.
AUTHOR: Lynwood P. Haumschilt.
DATE: July 1991 *COST:* (Not available)

NSRP 0345 * * * * * * * *
TITLE: Environmental Compliance Inspection Checklist for Shipbuilding Facilities.
AUTHOR: John Martin and John Wittenborn.
DATE: April 1992 *COST:* (Not available)

NSRP 0350 * * * * * * * *
TITLE: Staging Systems for Ships During New Construction and Repair.
AUTHOR: J. Frank Santoyo
DATE: June 1992 *COST:* (Not available)

NSRP 0342 * * * * * * *
TITLE: Hazardous Material Tracking Systems: Scanning Module.
AUTHOR: Insight Industries
DATE: January 1992 *COST:* (Not available)

NSRP 0077 * * * * * *

TITLE: Feasibility Study on Development of an Economical System for Cleaning Dry Docks Prior to Flooding.

AUTHOR: Avondale Shipyards, Inc., New Orleans, LA.

DATE: October 1978 COST: (Not available)

NSRP 0237 * * * * * *

TITLE: A Study of the Effects of Applying CAD/CAM Techniques to a Shipyard Sheet Metal Shop.

AUTHOR: Harry Hooper, consultant to Avondale Shipyards, Inc.

DATE: May 1986 *COST: $11,670.*

NSRP 0251 * * * * * *

TITLE: Tower Cranes in Shipyards.

AUTHOR: Emscor and Man-Wolffkran, for Avondale Shipyards.

DATE: October 1986 *COST:* $22,000.

NSRP 0315 * * * * * *

TITLE: Group Technology/Flow Applications in Production Shops.

AUTHOR: William S. Oakes, H.B. Bongiomi, W. O. Appleton, and Vincent F. Bobrowicz.

DATE: February 1988 *COST:* $146,920.

NSRP 0128 * * * * *
TITLE: Long-Range Facilities Plan.
AUTHOR: Todd Pacific Shipyards Corporation, Los Angeles Division.
DATE: July 31, 1981 *COST:* (Not available)

NSRP 0135 * * * * *
TITLE: Semi-Automatic Beam-Line Feasibility Study.
AUTHOR: Avondale Shipyards, Inc., New Orleans, LA.
DATE: November 1981 *COST:* (Not available)

NSRP 0153 * * * * *
TITLE: Long Range Facilities Planning. Executive Summary and Vols. I-V.
AUTHOR: National Steel and Shipbuilding Company.
DATE: April 1982 *COST:* (Not available)

NSRP 0165 * * * * *
TITLE: Avondale Shipyards, Inc., Long Range Facilities Plan.
AUTHOR: Avondale Shipyards, Inc.
DATE: February 1983 *COST:* (Not available)

NSRP 0190 * * * * *
TITLE: Process Lanes Feasibility Study.
AUTHOR: Avondale Shipyards, Inc.
DATE: February 1984 *COST:* $216,000.

NSRP 0203 * * * * *
TITLE: The Nesting and Marking of Ship Parts Cut From Steel Plate.
AUTHOR: Harry Hooper, Consultant, for Avondale Shipyards, Inc.
DATE: February 1985 *COST:* $30,000.

NSRP 0231 * * * * *
TITLE: Report on Moving Personnel and Light Material Onto a Ship and about a Shipyard.
AUTHOR: The Leawood Group, Richard Muther and Associates, for Avondale Shipyards, Inc.
DATE: November 1985 *COST:* (Not available)

NSRP 0317 * * * * *
TITLE: Semi-Automatic Web-Line Feasibility Study.
AUTHOR: Richard Price and Harold Tabony.
DATE: December 1984 *COST:* (Not available)

NSRP 0074 * * * *
TITLE: Feasibility Study of Semi-Automatic Pipe Handling System and Fabrication Facility.
AUTHOR: Avondale Shipyards, Inc. New Orleans, LA.
DATE: April 1978 COST: (Not available)

NSRP 0106 * * * *
TITLE: Requirements Report: Computer Software System for a Semi-Automatic Pipe Handling System and Fabrication Facility.
AUTHOR: IBM, for Avondale Shipyards, Inc., New Orleans, LA.
DATE: May 1980 COST: (Not available)

NSRP 0167 * * * *
TITLE: Semi-Automatic Pipe Handling System and Fabrication Facility Phase II Implementation.
AUTHOR: Avondale Shipyards, Inc., New Orleans, LA.
DATE: March 1983 COST: (Not available)

NSRP 0230 * * * *
TITLE: Pipe Storage and Movement Study.
AUTHOR: Denson Engineers, Inc., for Avondale Shipyards, Inc.
DATE: February 1986 COST: (Not available)

NSRP 0035 * * *
TITLE: Material Handling Equipment Study - Vols. I and II.
AUTHOR: Ingalls Shipbuilding, Division of Litton Systems, Inc.
DATE: 1973 COST: (Not available)

NSRP 0202 * * *
TITLE: Metal Forming Systems Research.
AUTHOR: Roggendorff and Partners Co., Ltd., for Avondale Shipyards, Inc.
DATE: January 1985 COST: $24,150.

NSRP 0208 * * *
TITLE: Fitting and Welding Cylinders.
AUTHOR: Roggendorff and Partners Co., Ltd., for Avondale Shipyards, Inc.
DATE: April 1985 COST: (Not available)

NSRP 0206 * *
TITLE: Slew Cranes in Shipyards.
AUTHOR: M.A.N.-Wolffran, for Avondale Shipyards, Inc.
DATE: May 1985 COST: (Not available)

NSRP 0250 * *
TITLE: Study of the Mechanized Manufacture and Welding of Reinforced Shell Units From Rolled Shell Plate and Tee Bar Segments.
AUTHOR: Roggendorff and Partners Co., Ltd., for Avondale Shipyards.
DATE: July 1986 COST: $30,720.

NSRP 0322 * *
TITLE: Movement and Storage of Pipe and Shapes.
AUTHOR: Albert W. Horsmon, Jr. and Howard M. Bunch.
DATE: March 1991 COST: (Not available)

NSRP 0142 *
TITLE: Long Range Plan for Peterson Builders, Inc.
AUTHOR: Shipbuilding Consultants, for Peterson Builders, Inc.
DATE: February 22, 1982 COST: (Not available)

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 call or write to the address or phone number listed below.

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