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PEB/LOE PREPARATION ASSISTANCE PROGRAM FOR NINE DESTROYER-TYPE SHIPS OF COMNAVSURFPAC

May 1976

Prepared for

PERA(CRUDES)
PHILADELPHIA NAVAL SHIPYARD
Philadelphia, Pennsylvania

Under Contract N00140-74-D-0090-0010

ARINC RESEARCH CORPORATION

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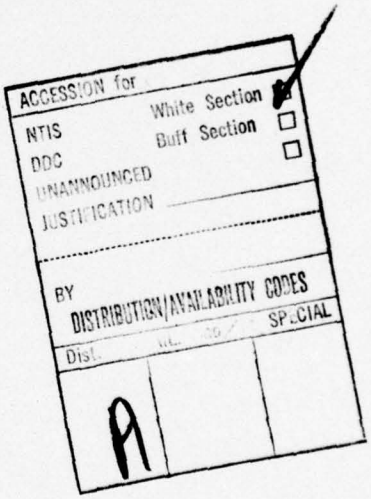
ABSTRACT

Results of the PERA(CRUDES) PEB/LOE Preparation Assistance Program are discussed. The effectiveness of that program in assisting selected ships in preparing for LOE is assessed; general conclusions on LOE preparation are presented; and recommendations concerning the continued implementation of the program are offered.



SUMMARY

The PERA(CRUDES) PEB/LOE Preparation Assistance Program was conducted under Contract N00140-74-D-0090, Delivery Orders 0004, 0008, and 0010. The program was initiated for USS FRANCIS HAMMOND (FF-1067), and MARVIN SHIELDS (FF-1066), continued aboard USS OUELLET (FF-1077) and SAMPLE (FF-1048), and completed with USS BUCHANAN (DDG-14), DECATUR (DDG-31), SOMERS (DDG-34), MORTON (DD-948), and RICHARD S. EDWARDS (DD-950). While this report has been written to document the PEB/LOE Preparation Assistance Program activities on the last five ships, it is presented in the form of a cumulative discussion of all program efforts to date.

The Corporation assisted personnel of the above ships in their initial use of the new PERA(CRUDES) guidance document, Type Management Plan and Program Outlines for Use in PEB/LOE Preparation; and provided further assistance, where requested, in the LOE preparation process.

Response of Hawaii, Incorporated, was tasked as a subcontractor to provide a Ship's Force Overhaul Management System (SFOMS) for all ships except RICHARD S. EDWARDS, which used a SFOMS created and implemented by Pearl Harbor Naval Shipyard personnel.

An objective of the study was to evaluate the effectiveness of the PEB/LOE Preparation Assistance Program. A baseline for making such evaluations was established and data pertaining to the LOE preparation efforts of all nine ships were compared against that baseline. The data generally indicate that the assistance program has proven effective; however, the extent of its effectiveness cannot be clearly established.

Also unresolved is the optimum scope of the assistance program. The commanding officers of five of the ships participating in this evaluation requested that the program be expanded to involve more active participation of PERA personnel in the LOE-preparation process – that is to actually conduct some preparation tasks. The type commander has undertaken the former ship's force function of preparing LOE administrative directives, which has substantially reduced the workload on ship's force during the pre-LOE period.

The least costly alternative to a full-scale assistance program is to reduce its scope to that of providing information and services only at the beginning of a ship's LOE preparation activity. A moderate in-between effort would be to provide visits to the ship throughout the LOE preparation period to supply the ship with the latest information on PEB methodology and practices being used by other ships, as was done in this program.

ABBREVIATIONS

CO	–	Commanding Officer
COMNAVSURFPAC	–	Commander Surface Force, U.S. Pacific Fleet
COSAL	–	Consolidated Ship's Allowance List
CSMP	–	Current Ship's Maintenance Project
ECCM	–	Engineering Casualty Control Manual
EDOM	–	Engineering Department Organization Manual
EO	–	Engineer Officer
EOOW	–	Engineering Officer of the Watch
LBNSY	–	Long Beach Naval Shipyard
LOE	–	Light-Off Examination
MTT	–	Mobile Training Team
PEB	–	Propulsion Examining Board
PERA(CRUDES)	–	Planning and Engineering for Repairs and Alterations (Cruisers and Destroyers)
PHNSY	–	Pearl Harbor Naval Shipyard
POAM	–	Plan of Action and Milestones
POT&I	–	Preoverhaul Test and Inspection
PMS	–	Planned Maintenance System
PQS	–	Personnel Qualification Standards
ROH	–	Regular Overhaul
SARP	–	Ship Alteration and Repair Package
SF	–	Ship's Force
SFOMS	–	Ship's Force Overhaul Management System
SORM	–	Ship's Organization and Regulations Manual

SY	–	Shipyard
TYCOM	–	Type Commander
WC	–	Work Center
XO	–	Executive Officer

TERMINOLOGY

Management Guide	–	Type Management Guide for Use in PEB/LOE Preparation, revised March 1976
Plan and Outlines	–	Type Management Plan and Program Outlines for Use in PEB/LOE Preparation, July 1974
Program Ship	–	A ship participating in the PEB/LOE Preparation Assistance Program
Baseline Ship	–	A ship not participating in the PEB/LOE Preparation Assistance Program, but selected for comparison of LOE preparation effectiveness

CONTENTS

1
INTRODUCTION

A program developed by PERA(CRUDES) to assist selected DD-, DDG-, and FF-type ships in their preparation for the 1200 PSI Propulsion Examining Board Light-Off Examination has been conducted by ARINC Research Corporation under Contract N00140-74-D-0090, Delivery Orders 0004, 0008, and 0010. Objectives of this PEB/LOE Preparation Assistance Program were, for each of the selcted ships, to:

a. Introduce the PERA(CRUDES) guidance document, Type Management Plan and Program Outlines for Use in PEB/LOE Preparation (hereafter referred to as "Plan and Outlines"); explain its use; evaluate its effectiveness as a LOE-preparation guidance document; and recommend any desirable changes to its content. The Plan and Outlines documents had been prepared under another contract by ARINC Research for DD-, DDG-, and FF-type ships.

b. Assist ship's force in assessing its starting position in major areas of LOE preparation, and in establishing planning milestones for the LOE.

c. Provide further assistance where requested or recommended. In particular:

   1) Review, from the viewpoint of any missing items that would be relevant to the LOE, the ship's POT&I report, SFOMS work package, CSMP, SARP, and any other documents requested by the ship for LOE preparation.

   2) Suggest administrative documents and methods used by other ships that have successfully prepared for LOE.

   3) Monitor the ship's progress in meeting its established milestones, for purposes of evaluating the practicality of the milestones recommended in the Plan and Outlines.

   4) Assist ship's force in utilizing and implementing SFOMS.

d. Evaluate the effectiveness of the PEB/LOE Preparation Assistance Program.

This assistance program was conducted incrementally under separate delivery orders of the contract. PEB/LOE assistance to USS FRANCIS HAMMOND (FF-1067) and MARVIN SHIELDS (FF-1066) was provided under Delivery Order 0004, and was reported on in ARINC Research publication 1224-01-1-1416, dated June 1975. The program was continued under Delivery Order 0008 for USS OUELLET (FF-1077) and SAMPLE (FF-1048) and reported on in publication 1228-01-1-1246, dated July 1975. The portion of the program just ended extended the program, under Delivery Order 0010, to USS BUCHANAN (DDG-14), DECATUR (DDG-31), SOMERS (DDG-34), MORTON (DD-948), and RICHARD S. EDWARDS (DD-950).

The assistance provided by ARINC Research has been in the form of ten separate tasks, as described in Section 2. Results of the PEB/LOE Preparation Assistance Program are discussed in Section 3, and conclusions and recommendations are presented in Section 4.

Appendix A describes the approach to compiling and interpreting data for evaluating the effectiveness of the assistance program, and presents the data on which the conclusions of this study are based. Specific items of PEB/LOE preparation assistance not covered in the general discussion are noted in Appendix B. Suggested improvements to the Plan and Outlines document are listed in Appendix C. (These improvements were incorporated and the Type Plan and Outlines were revised in March 1976 under Delivery Order 0018 of this contract and retitled Type Management Guide for Use in PEB/LOE Preparation.)

Included in all delivery orders was a directive to implement an automated SFOMS aboard each ship except RICHARD S. EDWARDS (DD-950), for which Pearl Harbor Naval Shipyard developed and implemented the SFOMS. This task was subcontracted to Response of Hawaii, Inc. Results and recommendations regarding SFOMS are included in this report where applicable.

2
TASK ACTIVITIES

To implement and subsequently evaluate the effectiveness of the PEB/LOE Preparation Assistance Program, ARINC Research conducted the tasks described in this section. These tasks do not represent a sequence of activities — the diverse assistance provided under this contract necessitated that they be performed in the sequence most helpful to ship's force and PERA(CRUDES) at any given time. The final task (10) provides for the documentation of the overall assistance program in terms of its value in helping the ships prepare for PEB/LOE.

Unless otherwise stated, the task discussions pertain to all ships assisted in this program: five under this delivery order, and four under previous ones.

2.1 TASK 1: ASSIST SF IN REVIEW OF POT&I, CSMP, AND SARP FOR LOE ITEMS

To determine which LOE discrepancies occurred most commonly, ARINC Research reviewed past PEB/LOE reports for COMNAVSURFPAC ships. The reviews were made at 6-month intervals, covering blocks of reports for the period 1 January-30 June 1974, 1 July-31 December 1974, and 1 January-30 June 1975. These discrepancies were listed cumulatively, and the lists were used in evaluating the POT&I, CSMP, SARP, and SFOMS work package for the ships participating in the PEB/LOE Preparation Assistance Program. Any commonly occurring discrepancy not covered in these publications was called to the attention of ship's force.

Also during the review of the SARPs, those work items noted as being deferred for forces afloat accomplishment were listed for use in later review of the SFOMS data reports (Task 3). After providing each ship with a list of questions and comments arising from these reviews, the ARINC Research representative returned about a month later to discuss their resolution.

2.2 TASK 2: ASSIST SF IN ESTABLISHING SPECIFIC MILESTONES FOR ACCOMPLISHMENT OF PLAN AND OUTLINES

ARINC Research met with ship personnel to introduce the Plan and Outlines, review the ship's position in all areas of preparation for LOE, and help in modifying the Plan and Outlines to fit the ship's particular circumstances relative to assignment of responsibilities and establishment of milestones for LOE preparation. A Gantt-type chart was developed to track LOE preparation status until the SFOMS was operational.

USS FRANCIS HAMMOND was visited on 26-27 March 1974 (ROH was scheduled to begin on 1 July). The major LOE-preparation problems recognized were difficulties in PQS implementation and the incompleteness or inapplicability of administrative publications (ship's organizational manual, SORM, EDOM, ECCM, etc.). FRANCIS

HAMMOND had taken positive steps in establishing a POAM. ARINC Research reviewed that document and offered recommendations for its improvement.

USS MARVIN SHIELDS was visited on 17-18 April 1974 (scheduled ROH start was 15 July). The major problem noted was that the SORM and EDOM were inadequate, and correcting them would probably require the major portion of LOE preparation time in the administrative area. A POAM had been prepared before the ARINC Research visit, but that plan was overly general and it was decided (on ARINC Research's recommendation) to utilize instead the "Plan" portion of the Plan and Outlines. Final establishment of LOE milestones was deferred until the arrival of the new CO and EO in late June.

USS OUELLET was visited on 26-27 June 1974 (ROH was scheduled to begin on 11 September). The major LOE-preparation problems recognized were the need for updating the EDOM and the list of engineering-space valves.

USS SAMPLE was visited on 31 July 1974 (scheduled ROH start was 13 August). Two major concerns were noted: the need for writing and validating a list of all valves in the engineering spaces, and ensuring that the ship was provided copies of equipment test procedures.

USS SOMERS was visited on 16-17 October 1974 (ROH was scheduled to start on 15 January). No major problems were noted. The LOE preparation activity was underway, and only scheduling was required to coordinate the activities.

USS MORTON was visited on 21-22 November 1974 (scheduled ROH start was 15 May). At that point in time the type commander had instituted a program to develop and publish the LOE-related administrative publications needed by individual ships, so the major concern was material condition.

USS RICHARD S. EDWARDS was visited on 25-26 November 1974 (scheduled ROH start was 21 March 1975). The ship's major concern was material condition. A secondary concern was using the PHNSY-generated SFOMS system; RICHARD S. EDWARDS was the first COMNAVSURFPAC ship designated to do so.

USS BUCHANAN was visited on 21-22 January 1975 (ROH start was scheduled for 19 February). Ship's force expected no problems in work management, since the ship's data management systems were well prepared. It was also expected that ship's force work schedules would be entered into the Long Beach Naval Shipyard (LBNSY) PERT network, a further advantage relative to work management.

USS DECATUR was visited on 11-12 February 1975 (ROH start was scheduled for 15 April). A major concern was that the new CO had just reported aboard and the EO would be leaving midway through the ROH. Another primary concern was shortage of personnel.

It was recommended to all ships that the Plan and Outlines tasks be entered into the SFOMS for management assistance in PEB/LOE preparation. However, only four of the nine ships (MARVIN SHIELDS, SAMPLE, BUCHANAN, and RICHARD S. EDWARDS) utilized this approach. Ship's force personnel of the other five ships favored the use of milestone charts.

2.3 TASK 3: REVIEW SFOMS DATA ENTRY FORMS FOR LOE ITEMS, COMPLETENESS, AND CORRECTNESS

For all ships except RICHARD S. EDWARDS, Response of Hawaii examined SFOMS data forms for completeness and correctness of data entry. ARINC Research, with the concurrence of PERA(CRUDES), decided not to review the SFOMS data entry forms for LOE items, but to wait until the ship's force work package had been smoothed out and review the first work-package printouts for the ships. This allowed time for all work planned for accomplishment by ship's force to be included in the work package, and for detection of any problems associated with work package organization.

The SFOMS "All Jobs" printouts were reviewed for LOE items, and notation was made of jobs reassigned at the Work Definition Conference for forces afloat accomplishment but not included in the work package. Any problems (data omissions, etc.) were noted and reported to the ships. A later check with the ships was made to assess their progress in correcting these discrepancies.

2.4 TASK 4: INSTRUCT SF IN IMPLEMENTATION AND UTILIZATION OF SFOMS

Ship officers were briefed on the uses of SFOMS in work package preparation and scheduling, and of SFOMS printouts as management tools. The SFOMS officer, his team, and the work center supervisors were instructed in preparation of the SFOMS data forms and smoothing of the workload.

2.5 TASK 5: INSTRUCT SF IN DATA ENTRY OF SFOMS INFORMATION

Ship's force, including the SFOMS team and work center supervisors, was provided in-depth training on manpower budgeting, workload estimating and refinement, and use of the SFOMS data entry forms.

2.6 TASK 6: PROVIDE WEEKLY SFOMS REPORTS

Weekly SFOMS reports were provided the ships (through Response of Hawaii or Pearl Harbor Naval Shipyard, as appropriate) from approximately 2 weeks before the start of overhaul until near its completion. For FRANCIS HAMMOND, MARVIN SHIELDS, and SAMPLE, late authorization to commence the SFOMS activity meant that the final adjustments to the work package were not made until one week before the ROH start, and therefore the weekly reports were still being modified up to the beginning of ROH due to work package readjustments. Final SFOMS updates were as follows:

Ship	ROH Completion	Last SFOMS Update
MARVIN SHIELDS	5 February 1975	31 January 1975
FRANCIS HAMMOND	14 March 1975	7 March 1975
SAMPLE	11 May 1975	15 April 1975
OUELLET	15 May 1975	22 April 1975
BUCHANAN	29 January 1976	21 November 1975

Ship	ROH Completion	Last SFOMS Update
DECATUR	15 February 1976	9 January 1976
SOMERS	10 November 1975	10 October 1975
MORTON	19 February 1976	30 January 1976
RICHARD S. EDWARDS	26 November 1975	7 November 1975

In addition to the weekly status reports, an initial one-time submission of the following SFOMS reports was made to the ships and PERA(CRUDES):

a. Manpower summary

b. "All Jobs" report

c. "All Material Items" report (in work center/job sequence number order, and by material stub number).

These initial SFOMS reports were delivered to the ships, and potential management uses of each report type was discussed. Ship's force was then free to choose the report formats that best suited its needs.

2.7 TASK 7: PROVIDE ASSISTANCE TO SF IN LOE PREPARATION

Continuing dialogue with ship officers was maintained concerning LOE-preparation methods and documents that had proven effective on other ships. Actual conduct of the LOE was witnessed, and the personnel involved were interviewed to gain information for refining the LOE preparation process.

Appendix B summarizes specific items of LOE preparation assistance rendered by ARINC Research to each of the nine ships.

2.8 TASK 8: MONITOR PROGRESS IN MEETING LOE PREPARATION MILESTONES

Problems in LOE scheduling and timeliness were noted throughout the preparation period and brought to the attention of ship's force personnel.

The status of Plan and Outlines key events, and of ship personnel-resource application, were continuously reviewed and recommendations were made where applicable.

2.9 TASK 9: MAKE REVISIONS TO THE PLAN AND OUTLINES

Throughout the LOE preparation phase, experience in applying the Plan and Outlines were noted, as were areas of potential improvement to that document. Recommendations for minor changes to the Plan and Outlines were submitted directly to the PERA(CRUDES) project engineer as each came to light. A final interview with each CO provided additional recommendations for improvement.

In January 1975 the DE-Type Plan and Outlines was updated and adapted in separate volumes to DD-, DDG-, and DLG-type ships. In March 1976 (under Delivery Order 0018) the above volumes were again revised and reissued as a Type Management Guide for Use in PEB/LOE Preparation for DD-, DDG-, and FF-type, and CG-16/26-class ships. Significant changes and improvements incorporated into the most recent revision are listed in Appendix C.

2.10 TASK 10: PREPARE FINAL REPORT

This final report under Contract N00140-74-D-0090, Delivery Order 0010, documents the results to date in the PEB/LOE Preparation Assistance Program.

3
RESULTS

The method by which ARINC Research Corporation collected and evaluated data that would indicate the effectiveness of the PEB/LOE Preparation Assistance Program is described in Appendix A. Results of the data evaluation, and associated conclusions, are given in this section. General conclusions and recommendations pertaining to the assistance program are presented in Section 4.

3.1 PEB/LOE RESULTS

Light-Off Examination results for the nine assistance-program ships were as follows:

Ship	LOE Date	Evaluation
FRANCIS HAMMOND	2 Dec 74	Satisfactory
MARVIN SHIELDS	18 Dec 74	Conditionally Satisfactory
OUELLET	17 Mar 74	Satisfactory
SAMPLE	2 Apr 74	Satisfactory
BUCHANAN	20 Oct 75;	Satisfactory
	6 Nov 75	Satisfactory
DECATUR	25 Nov 75 (Admin/Tng)	Satisfactory
	10 Dec 75 (Material)	
	19 Dec 75	Unsatisfactory
SOMERS	23 Jul 75;	Satisfactory
	8 Sep 75	Satisfactory
MORTON	17 Nov 75;	Satisfactory
	8 Dec 75	Satisfactory
RICHARD S. EDWARDS	9 Sep 75;	Conditionally Satisfactory
	14 Oct 75	Unsatisfactory

These results are summarized in Table 3-1 in terms of both ships (9) and plants (14). Also shown in that table are LOE results for other COMNAVSURFPAC ships that underwent LOE immediately before and during the period of this study. As shown in the table, the ships assisted in this program had a LOE-success ratio higher than the others. This can be taken as a conditional indicator of the success of the PEB/LOE Preparation Assistance Program, as will be discussed in subsequent paragraphs.

3.2 ASSISTANCE PROGRAM VS. BASELINE SHIPS

The effectiveness of the PEB/LOE Preparation Assistance Program was evaluated in terms of how well the nine ships assigned had prepared for LOE, versus how well four baseline (unassisted) ships had prepared for that examination. The baseline ships for the study were USS MEYERKORD (FF-1058) and ROARK (FF-1053) for single-plant ships, and HOEL (DDG-13) and WADDELL (DDG-24) for twin-plant ships. LOE results for single- and twin-plant ships are separated in this report since:

a. There are differences in ship's force workload versus available manpower for the two types, particularly in the LOE administrative training preparation area; and

b. PEB policy states that, after the first plant of a twin-plant ship has been examined, it will be reevaluated during evaluation of the second plant. At that time, both the condition and discrepancy-correction status of the first plant are evaluated. Thus, there is an increased possibility of LOE failure relative to single-plant ships.

3.2.1 Single-Plant Ships (Table 3-2)

For assistance-program ships, the average number of PEB-identified material and administrative discrepancies and personnel failing PEB examinations was from 19 to 31 percent lower than for the baseline ships (Table 3-2, items 1 through 3). A conclusion based on these factors is that PEB/LOE assistance-program ships should be expected to perform better in these three categories.

The ratio of shipyard costs for LOE preparation/discrepancy correction to material discrepancies was 15% lower for assistance-program ships than for baseline ships (item 5). However, it has been found that ship superintendents sometimes charge the cost of correction to the basic job order rather than a special "LOE discrepancy corrections" account. Thus, comparisons in this cost category are not necessarily valid.

Ship's force productive man-hours were much greater for assistance-program ships than for the baseline ships (item 6). The difference could be attributed simply to a larger work package, but the following factors relative to assistance-program ships might enter as well:

a. Ensurance that all jobs were entered in SFOMS

b. More attention to entering manpower expended

c. Better training in the use of SFOMS

TABLE 3-1. LIGHT-OFF EXAMINATION RESULTS

	Total	Satisfactory*	Unsatisfactory**	Ratio (%), Satisfactory/Total
A. SHIPS				
Program ships	9	7 (1)	2	68
Other ships; before program period	14	10 (2)	4	71
Other ships; during program period	14	9 (7)	5	64
Other ships; to date	28	19 (9)	9	70
B. PLANTS				
Program ships	14	12 (1)	2	86
Other ships; before program period	22	18 (2)	4	82
Other ships; during program period	23	18 (9)	5	78
Other ships; to date	45	36 (11)	9	80

*Includes those ships or plants evaluated "conditionally satisfactory" (number indicated in parentheses).

**Two-plant ships are included in the "unsatisfactory" category if either plant received that evaluation.

TABLE 3-2. SIGNIFICANT COMPARISONS OF PEB/LOE DATA IN SINGLE-PLANT SHIPS

Item	Individual Ships						Combined Ships		Average Ship		Ratio (%), Program to Baseline
	Baseline		Program								
	MEYERKORD	ROARK	HAMMOND	SHIELDS	OUELLET	SAMPLE	Baseline	Program	Baseline	Program	
1. PEB discrepancies, material	281	271	190	299	126	144	552	759	276	190	69
2. PEB discrepancies, administrative	123	102	88	142	46	67	225	343	113	86	76
3. Percentage failing examinations	41 (39 of 96)	33 (23 of 70)	32 (23 of 71)	34 (27 of 80)	26 (11 of 43)	26 (21 of 80)	37 (62 of 166)	30 (82 of 274)	37 (31 of 83)	30 (21 of 69)	81
4. Cost of SY LOE preparation/discrepancy correction, dollars	94,876	80,551	83,775	20,483	61,422	(Note 1)	175,427	165,680	87,714	55,227	63
5. SY cost per material discrepancy	338	297	441	69	487	(Note 1)	332	269	332	269	81
6. Productive manhours, Ship's Force Propulsion Space Work Center	11,103	17,965	34,982	24,096	(Note 2)	(Note 2)	29,068	59,078	14,534	29,539	203
7. ROH extension, days	34	27	0	-12	0	0	61	-12	31	-3	NA
8. Passed/failed LOE	Failed	Passed	Passed	Passed	Passed	Passed	1 passed 1 failed	4 passed	NA	NA	NA

NOTES: (1) Cost not identified.
(2) Data not available

d. Increased emphasis on propulsion space work, with augmentation of the work force from other work centers.

3.2.2 Twin-Plant Ships (Table 3-3)

A change in PEB policy to note only "significant" discrepancies in the LOE report letter came into effect between the period of PEB examination of the single- and twin-plant ships of this study. The numbers of discrepancies now noted are so relatively small that valid comparisons of LOE results between single- and twin-plant ships cannot be made. Therefore these categories will be considered separately in this report.

The twin-plant ships did reflect, as for the single-plant ships, low percentages of personnel failing LOE examinations relative to the baseline (item 3, Table 3-3). This suggests the usefulness of providing sample questions from other LOEs, reviewing the ship's training program periodically, and quizzing personnel in the manner of the PEB by an individual not normally on board. Ship personnel gain the experience of oral questioning, and the engineer officer is afforded the opportunity of evaluating their strengths and weaknesses.

The cost of LOE preparation and discrepancy correction (item 4, Table 3-3) was given in the departure report of only one of the five assistance-program twin-plant ships. That figure is more than double the highest corresponding expenditure for baseline ships.

SFOMS productive man-hours (item 6) were higher for twin-plant program ships than for the baseline ships. An important factor here might be the expected response to attention and assistance by outside forces. RICHARD S. EDWARDS had the Pearl Harbor Naval Shipyard SFOMS, and PHNSY personnel were aboard SOMERS in preparation for its LOE.

TABLE 3-3. SIGNIFICANT COMPARISONS OF PEB/LOE DATA IN TWIN-PLANT SHIPS

Item	Baseline		Individual Ships					Combined Ships		Average Ship		Ratio (%), Program to Baseline
	HOEL	WADDELL	BUCHANAN	DECATUR	MORTON	R.S. EDWARDS	SOMERS	Baseline	Program	Baseline	Program	
1. PEB discrepancies, material	55	40	18	69	14	60	22	95	183	48	37	77
2. PEB discrepancies, administrative	9	11	17	15	8	16	11	20	67	10	13	130
3. Percentage failing examinations	41 (39 of 96)	47 (26 of 55)	29 (19 of 66)	31 (18 of 59)	41 (24 of 59)	38 (16 of 42)	37 (18 of 49)	43 (65 of 151)	35 (95 of 275)	43 (33 of 76)	35 (19 of 55)	81
4. Cost of SY LOE preparation/discrepancy correction, dollars	162,894	181,867	(Note 1)	(Note 2)	(Note 1)	(Note 1)	427,785	344,761	427,785	172,381	427,785	248
5. SY Cost per material discrepancy	2,962	4,547	(Note 1)	(Note 2)	(Note 1)	(Note 1)	19,445	3,629	11,562	3,629	11,562	319
6. Productive manhours, Ship's Force Propulsion Space Work Centers	(Note 2)	33,951	27,627	32,451	28,413	57,719	83,627	33,951	229,837	33,951	45,967	135
7. ROH extension, days	0	0	(Note 2)	(Note 2)	0	0	0	0	0	0	0	NA
8. Passed/failed LOE	Part 1: Failed	Part 1: Passed	Part 1: Passed	Part 1: Passed	Part 1: Passed	Part 1: Passed	Part 1: Passed	Part 1: 1 Passed 1 Failed	Part 1: 5 Passed 0 Failed	NA	NA	NA
	Part 2: Passed	Part 2: Passed	Part 2: Passed	Part 2: Failed	Part 2: Passed	Part 2: Failed	Part 2: Passed	Part 2: 2 Passed 0 Failed	Part 2: 3 Passed 2 Failed			

NOTES: (1) Cost not identified.
(2) Data not available.

4
CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

The following general conclusions were drawn from this study:

a. Regardless of the type of data selected for LOE-preparation comparison purposes, the performance in PEB/LOE will be directly related to the ship's:

   1) Continuing effort to maintain a state of material, administrative, and training readiness (i.e., base readiness state on entering the ROH)

   2) Management ability, particularly when resources are severely limited

   3) General readiness to apply a positive attitude in complying with new requirements, using new programs designed to assist in the preparation effort, and offering ideas to improve those programs.

b. It is evident from the data compiled in this study that the ships participating in the PEB/LOE Preparation Assistance Program experienced better LOE results than the baseline set of COMNAVSURFPAC ships. However, the extent to which this can be attributed to the assistance program cannot be clearly established. Ship personnel were certainly motivated by the fact that particular attention (because of the assistance program) was being directed to the ships by PERA(CRUDES) and the type commander. Further, there is difficulty in compiling comparative LOE-related data for the different ships. Because of continually changing methods in preparation for LOE, it is doubtful that consistent, reliable data for making assistance-program effectiveness judgments will ever be available without the institution of a data gathering effort that could be as expensive as the assistance program itself.

c. For the ships examined in this study, and based on the overall experience of ARINC Research, it would appear that no regular overhauls of COMNAVSURFPAC ships have been extended for reasons directly related to LOE. Extension of ROH is a post-LOE decision, and would be significant (from the view of an LOE effectiveness study) only if a ship failed its LOE and extension of the overhaul period was required to correct the LOE discrepancies in order to pass re-examination. Further, it is not present practice to extend the ROH of a ship that passed its LOE so as to correct minor deficiencies noted during that examination.

d. Based on interviews with officers of the program ships, a valuable adjunct to shipboard personnel effort in LOE preparation is a program that will provide for:

1) Assistance in organizing the LOE preparation effort to prevent waste of time and resources by ship's force

2) Periodic review of preparation progress by a "non-reporting" outside observer, and advice and assistance where required

3) Observation of LOEs of other ships to learn of latest PEB methodology for the information of following ships

4) An indication of outside interest in this important PEB/LOE program, and a desire to assist ship's force in its preparation effort.

4.2 RECOMMENDATIONS

ARINC Research recommends that the PEB/LOE Preparation Assistance Program be continued for those ships that have not been examined by the Propulsion Examining Board, but that careful attention be given to the optimum scope of such a program. Three alternatives are possible:

a. Continue the assistance program at its present level

b. Expand the program to provide more active assistance to the ships in PEB/LOE preparation, i.e., direct help rather than consulting services

c. Limit the program to a short period, perhaps two weeks, at the beginning of LOE preparations.

The expanded program was suggested by the commanding officers of FRANCIS HAMMOND, MARVIN SHIELDS, OUELLET, DECATUR, and RICHARD S. EDWARDS. Their view was that the assistance program should: 1) provide all administrative publications needed to meet higher command requirements, and 2) correct discrepancies found in the ship's other programs and publications prior to LOE. In brief, such a program would be directed toward direct assistance rather than guidance. The first of the above recommendations is, in fact, being fulfilled by the recently instituted action of the type commander to generate and provide the ships with the required administrative publications.

A more limited approach to LOE preparation assistance, designed to provide the ships with an initial briefing and limited follow-up, is not recommended since it is even further from the level of assistance deemed necessary by the COs.

The recommended course is that the assistance program be continued at its present level. An investigation should be made of the possibility of providing one-time assistance at the type commander level, such as updating administrative manuals and preparing and promulgating a comprehensive training program that could then be made available to all ships.

It is recommended that the automated SFOMS be maintained as a management tool throughout ship overhaul.

APPENDIX A

DATA COMPILATION APPROACH, SUMMARY, AND INTERPRETATION

A.1 DATA CRITERIA AND TYPES

The data elements chosen for evaluation of the effectiveness of the PEB/LOE Preparation Assistance Program were those that are:

a. Available through presently established data collection systems

b. Usable in their available form without further manipulation

c. Considered most likely to reflect the general value of the Plan and Outlines and the assistance program

d. Expected to be available for all ships participating in this study

e. Least affected by other aspects of the ROH effort.

It was felt that these criteria could be met by the information given in the ships': 1) PEB 1200 PSI LOE Report letter, 2) Shipyard Departure Report letter, and 3) SFOMS manpower summary. From those sources, the following specific data elements were obtained:

a. Number of discrepancies noted by the PEB in the material preparation area

b. Number of discrepancies noted by the PEB in the administration preparation area

c. Number of men failing or exhibiting significant weaknesses in any of the PEB-administered examinations (written tests, EOOW seminars, and oral interviews with enlisted watchstanders)

d. Number of men participating in any of the PEB-administered examinations

e. Total dollars spent by the shipyard on jobs titled specifically for LOE preparation and/or discrepancy correction

f. Ship's force production man-hours spent in propulsion-plant work centers

g. Number of days the ship's availability was extended beyond or terminated before the originally planned ROH completion date

h. PEB final evaluation of the ship's LOE.

The means by which these data are applied to evaluate LOE preparation effectiveness will be discussed in Section A.3. The extent to which the data elements could be isolated to LOE-preparation evaluation from other ship-related activities is discussed in Section A.2.

A.2 DATA ELEMENT CONSIDERATIONS

The PEB/LOE report includes separate listings of discrepancies submitted by the ship and noted by the PEB during the LOE. Only the latter list was considered in this study, since the PEB makes particular efforts toward consistency in its examinations from ship to ship. The ship-generated discrepancy lists are considered more prone to reflect variances in personal viewpoints, work initiative, etc.

The PEB discrepancy lists and examination results provide indicators of the LOE preparation effort in three major areas — administration, material, and training. The number of administrative discrepancies is a factor almost wholly within the ship's control, and is thus a good LOE-preparation indicator. Dollars spent by the shipyard in LOE preparation and/or discrepancy correction will provide some measure of the shipyard effort to assist material preparation (either pre- or post-LOE).

Ship's force productive man-hours* expended in the propulsion space centers (EA04, EB01, EB02, EM01, and EM02) provide the best isolation of ship's force LOE-preparation effort in the material area. In those centers, almost no administrative effort is accounted for and training is included in the overhead figures. It is recognized that a compilation of man-hours expended on LOE-significant jobs would provide better data; however, all ships have not indicated these jobs or used consistent criteria for this designation.

The length of either an extension or early completion of a scheduled ROH date should be examined for possible indications of LOE preparation effectiveness; however, there is probably no clear correlation. While delays in ROH completion might, for example, be attributable to insufficient PEB/LOE preparation, it should be remembered that the PEB/LOE is merely a means of discovering problems that should be found and corrected even if there were no such program. The final evaluation of the PEB regarding ship's performance in the LOE is the ultimate test of the ship and shipyard preparation effort.

A.3 DATA ELEMENT SUMMARY

In terms of the data elements just discussed, the PEB/LOE results for this study are summarized as follows:

a. Table A-1, baseline single-plant ships (MEYERKORD and ROARK)

b. Table A-2, baseline twin-plant ships (HOEL and WADDELL)

c. Program single-plant ships (FRANCIS HAMMOND, MARVIN SHIELDS, OUELLET, and SAMPLE)

d. Program twin-plant ships (BUCHANAN, DECATUR, MORTON, RICHARD S. EDWARDS, SOMERS).

*A SFOMS term for actual man-hours expended by ship's force in conducting its planned work during ROH.

TABLE A-1. PEB/LOE DATA, BASELINE SINGLE-PLANT SHIPS

Item	MEYERKORD	ROARK	Combined	Average
1. PEB discrepancies, material	281	271	552	276
2. PEB discrepancies, administrative	123	102	225	113
3. Number taking examinations	96	70	166	83
4. Number failing examinations	39	23	62	31
5. Cost of shipyard LOE preparation/ discrepancy correction, dollars	94,876	80,551	175,427	87,714
6. Productive man-hours, ship's force propulsion space w.c.	11,103	17,965	29,068	14,534
7. ROH extension, days	34	27	61	31
8. Passed/failed LOE	Failed	Passed	1 Passed 1 Failed	NA

TABLE A-2. PEB/LOE DATA, BASELINE TWIN-PLANT SHIPS

Item	HOEL	WADDELL	Combined	Average
1. PEB discrepancies, material	55	40	95	48
2. PEB discrepancies, administrative	9	11	20	10
3. Number taking examinations	96	55	151	76
4. Number failing examinations	39	26	65	33
5. Cost of shipyard LOE preparation/ discrepancy correction, dollars	162,894	181,867	344,761	172,381
6. Productive man-hours, ship's force propulsion space w.c.	(Note 1)	33,951	33,951	33,951
7. ROH extension, days	0	0	0	0
8. Passed/failed LOE	Part 1: Failed Part 2: Passed	Part 1: Passed Part 2: Passed	Part 1: 1 Passed 1 Failed Part 2: 2 Passed	NA

Note (1) — Data not available.

TABLE A-3. PEB/LOE DATA, PROGRAM SINGLE-PLANT SHIPS

Item	HAMMOND	SHIELDS	OUELLET	SAMPLE	Combined	Average
1. PEB discrepancies, material	190	299	126	144	759	190
2. PEB discrepancies, administrative	88	142	46	67	343	86
3. Number taking examinations	71	80	43	80	274	69
4. Number failing examinations	23	27	11	21	82	21
5. Cost of shipyard LOE preparation/ discrepancy correction, dollars	83,775	20,483	61,422	(Note 1)	165,680	55,227
6. Productive man-hours, ship's force propulsion space w.c.	34,982	24,096	(Note 2)	(Note 2)	59,078	29,539
7. ROH extension, days	0	-12	0	0	-12	-3
8. Passed/failed LOE	Passed	Passed	Passed	Passed	4 Passed 0 Failed	NA

Notes: (1) Cost not identified.
(2) Data not available.

TABLE A-4. PEB/LOE DATA, PROGRAM TWIN-PLANT SHIPS

Item	BUCHANAN	DECATUR	MORTON	R.S. EDWARDS	SOMERS	Combined	Average
PEB discrepancies, material	18	69	14	60	22	183	37
PEB discrepancies, administrative	17	15	8	16	11	67	13
Number taking examinations	66	59	59	42	49	275	55
Number failing examinations	19	18	24	16	18	95	19
Cost of shipyard LOE preparation/discrepancy correction, dollars	(Note 1)	(Note 1)	(Note 1)	(Note 1)	427,785	427,785	427,785
Productive man-hours, ship's force propulsion space w.c.	27,627	32,451	28,413	57,719	83,627	229,837	45,967
ROH extension, days	0	(Note 2)	0	0	0	0	0
Passed/failed LOE	Part 1: Passed Part 2: Passed	Part 1: Passed Part 2: Failed	Part 1: Passed Part 2: Passed	Part 1: Passed Part 2: Failed	Part 1: Passed Part 2: Passed	Part 1: 5 Passed 0 Failed Part 2: 3 Passed 2 Failed	NA

Notes: (1) Cost not identified.
(2) Data not available.

Because of the small sample size and wide dispersion of data points, the data elements have been averaged for the ships.

A.4 DATA INTERPRETATION

The data compiled for the ships of this study can be interpreted to denote the following:

a. Data trends, rather than absolute values, will be the measure of the overall usefulness of the Plan and Outlines and the PEB/LOE Preparation Assistance Program.

b. The number of PEB-identified discrepancies is a measure of the effectiveness of a ship's preparation for LOE.

c. The percentage of men failing the PEB oral and written examinations measures a ship's effectiveness in the training area.

d. The ratio of dollars spent by the shipyard in LOE preparation and/or discrepancy correction to the number of PEB material discrepancies is a measure of the cost effectiveness of the ship's preparation effort in the material area.

e. Ship's force production man-hours in the propulsion space work center is a measure of a ship's manpower utilization in material preparation.

f. A "pass" or "fail" PEB evaluation is a reflection of the overall LOE preparation effort.

APPENDIX B

PEB/LOE ASSISTANCE SUMMARY

APPENDIX B-1

PEB/LOE ASSISTANCE TO USS FRANCIS HAMMOND

During the PEB/LOE Preparation Assistance Program, ARINC Research provided the following assistance to USS FRANCIS HAMMOND (FF-1067), in addition to those areas discussed previously in this report.

1. **Reviewed ship's safety instruction; prepared list of questions and comments and discussed them with EO.**
2. Reviewed EDOM and provided list of comments and questions.
3. **Made out SFOMS data entry forms for Plan and Outlines tasks, and suggested milestone dates.** Provided list of these dates to the ship for review and entry into SFOMS under a dummy work center.
4. **Reviewed ECCM for LOE items and proper organization.** Provided list of comments, questions, and recommendations.
5. **Prepared large chart of tasks and milestones for use by ship in tracking preparation progress.**
6. **Reviewed ship-generated LOE milestone dates for consistency and achievability.**
7. Reviewed SFOMS work center EB01 in detail for EO.
8. **Reviewed EOOW training plans and suggested improvements.**
9. Secured copies of messages regarding policies on changing of deck plates, valve wheels, and ladders from aluminum to steel, and delivered these messages to ship.
10. Reviewed engineering training outlines and provided list of questions, commands, and recommendations. Discussed listed items with EO.
11. Provided results of interview with PEB Capt. Leedom regarding current PEB policies.
12. Witnessed LOE and gathered information for dissemination to other ships.
13. Interviewed CO regarding assistance-program and LOE methods used for forwarding to other ships.

APPENDIX B-2

PEB/LOE ASSISTANCE TO USS MARVIN SHIELDS

During the PEB/LOE Preparation Assistance Program, ARINC Research provided the following assistance to USS MARVIN SHIELDS (FF-1066), in addition to those areas discussed previously in this report.

1. Made out SFOMS data entry forms for Plan and Outlines tasks and suggested milestone dates. Provided list of these dates to the ship for review and entry into SFOMS under a dummy work center.

2. Reviewed ECCM for LOE items and organization. Provided EO with list of questions, comments, and recommendations.

3. Produced and provided large chart of tasks and milestones for use by ship.

4. Reviewed ship-generated LOE milestone dates for consistency and achievability.

5. Conducted in-depth review of Engineering Department SFOMS package for items other than LOE problems.

6. Delivered copy of FRANCIS HAMMOND EDOM with questions and comments to EO to use as sample in preparing his own EDOM.

7. Reviewed LOE preparations and updated Plan and Outlines chart with milestones.

8. Updated SFOMS dummy work center LOE1 to agree with new ship-generated milestones.

9. Provided results of interview with PEB Capt. Leedom regarding current PEB policies.

10. Secured copies of messages regarding policies on changing of deck plates, valve wheels, and ladders from aluminum to steel; and delivered these messages to ship.

11. Reviewed Engineering Department standing orders and made up sample set from those produced by USS WHIPPLE. Discussed with EO.

12. Witnessed LOE and gathered information for dissemination to other ships.

13. Interviewed CO regarding assistance-program and LOE methods used for forwarding to other ships.

APPENDIX B-3

PEB/LOE ASSISTANCE TO USS OUELLET

During the PEB/LOE Preparation Assistance Program, ARINC Research provided the following assistance to USS OUELLET (FF-1077), in addition to those areas discussed previously in the report.

1. Provided results of interview with PEB Capt. Leedom regarding current policies.

2. Prepared suggested POAM for LOE preparation, delivered to ship for modification, provided final draft for use.

3. Reviewed SORM, EDOM, ECCM, and ship's PMS instruction for consistency and agreement with type commander policies. Provided lists of comments and questions.

4. Reviewed ship's SFOMS instructions. Discussed results of review with SFOMS Officer.

5. Reviewed ship's training instruction for LOE items and completeness. Discussed questions and comments with EO.

6. Prepared large chart of tasks and milestones for visual display and tracking of LOE progress by ship.

7. Prepared SFOMS input data sheets for LOE POAM for ship to review, modify, and enter.

8. Interviewed PEB member to answer questions raised by CO. Discussed answers with CO.

9. Reviewed Engineering Standing Orders. Prepared new standing orders by combining best features of those of OUELLET, REEVES, and RATHBURNE.

10. Reviewed WHIPPLE EDOM and compared with OUELLET's. Discussed suggested format and content with EO.

11. Discussed results of MARVIN SHIELDS LOE with CO.

12. Delivered to Overhaul Manager a list of questions asked by PEB of watchstanders on MARVIN SHIELDS and FRANCIS HAMMOND.

13. Delivered copy of FRANCIS HAMMOND training outlines to EO.

14. Reviewed WHIPPLE environmental control instructions and made list of comments and questions. Delivered copy of instruction and comments to EO for possible use.

15. Reviewed FRANCIS HAMMOND post-LOE POAM and delivered copy to CO with suggestions.

16. Reviewed MARVIN SHIELDS LOE report for EDOM discrepancies and delivered list to EO for correction of his own.

17. Conducted oral interviews of watchstanders in manner of PEB to assist EO to evaluate strengths/weaknesses of individuals.

18. Delivered advance copy of new Plan and Outlines Task A-18 to CO to enable timely use.

19. Delivered advance copy of new machinery test network to Overhaul Manager.

20. Prepared post-LOE POAM charts for EO use.

21. Witnessed LOE and gathered information for dissemination to other ships.

22. Interviewed CO regarding assistance-program and LOE methods used for forwarding to other ships.

APPENDIX B-4

PEB/LOE ASSISTANCE TO USS SAMPLE

During the PEB/LOE Preparation Assistance Program, ARINC Research provided the following assistance to USS SAMPLE (FF-1048), in addition to those areas discussed previously in this report.

1. Delivered list of questions asked by PEB of watchstanders on MARVIN SHIELDS and FRANCIS HAMMOND.

2. Provided results of interview with PEB Capt. Leedom regarding current PEB policies.

3. Delivered copy of OUELLET SFOMS instructions to XO for possible use.

4. Reviewed SORM, EDOM, COMNAVSURFPAC Shipboard Training Manual, 1200 PSI Management Manual, and ECCM for consistency and agreement with type commander policies. Provided list of comments and questions.

5. Reviewed, edited, and typed Engineering Night Orders.

6. Reviewed and edited ship's Repair Party Manual for consistency with other instructions and policy documents.

7. Delivered copy of FRANCIS HAMMOND training outlines to EO.

8. Reviewed various safety publications, made extracts, and delivered to EO for use in training.

9. Delivered copy of WHIPPLE environmental control instructions and comments to EO for possible use.

10. Delivered copy of FRANCIS HAMMOND post-LOE POAM to CO.

11. Prepared large chart of tasks and milestones for visual display and tracking of LOE progress by ship.

12. Discussed results of MARVIN SHIELDS LOE with CO and EO.

13. Reviewed ship-generated LOE milestones dates for consistency and achievability.

14. Witnessed LOE and gathered information for dissemination to other ships.

15. Interviewed CO regarding assistance-program and LOE methods used for forwarding to other ships.

APPENDIX B-5

PEB/LOE ASSISTANCE TO USS BUCHANAN

During the PEB/LOE Preparation Assistance Program, ARINC Research Corporation provided the following assistance to USS BUCHANAN (DDG-14), in addition to those areas discussed previously in this report.

1. Assisted in preparation of POAM. Delivered FRANCIS HAMMOND POAM and post-LOE POAM.

2. Reviewed SF work entered into SY PERT network.

3. Provided following items for assistance:

   a. PEB oral questions

   b. ARINC Research general observations for LOE preparation

   c. ARINC Research interview with PEB Capt. Leedom

   d. DATC school training outlines

   e. ARINC Research reviews of PEB/LOE reports for 1 July through 31 December 1974.

4. Attended LOE preparations progress meetings. Made suggestions where appropriate.

5. Provided copy of COMNAVSURFPAC MTT training outlines.

6. Provided copy of PEB methodology presentation.

7. Reviewed ship's safety organization and provided comments and questions.

8. Reviewed EDOM and provided comments and questions.

9. Delivered copy of COMNAVSURFPAC tentative EDOM watch station list and engineering organization chart.

10. Assisted EO in conducting review of LOE readiness in administration area.

11. Delivered copy of OUELLET post-LOE POAM.

12. Discussed new PEB policies with CO and EO.

13. Provided new discrepancy list from review of LOE reports of 1 January through 30 June 1975, and copy of new PEB letter to COs.

14. Discussed results of SOMERS LOE.

15. Delivered copy of new PEB EO/EOOW seminar questions.

16. Interviewed CO and EO regarding program and LOE methods used, for forwarding to other ships.

17. Witnessed LOE and gathered information for dissemination to other ships.

18. Quizzed personnel in manner of PEB to assisting strengths and weaknesses of individuals.

APPENDIX B-6

PEB/LOE ASSISTANCE TO USS DECATUR

During the PEB/LOE Preparation Assistance Program, ARINC Research provided the following assistance to USS DECATUR (DDG-31), in addition to those areas discussed previously in this report.

1. Assisted in POAM preparation. Provided copy of SOMERS POAM for assistance.

2. Provided discrepancy list resulting from ARINC Research review of PEB/LOE reports for 1 July through 31 December 1974.

3. Provided copy of MARVIN SHIELDS EDOM LOE discrepancy list, and FRANCIS HAMMOND post-LOE POAM.

4. Delivered copy of proposed equipment test sequence network.

5. Provided sample operating record forms.

6. Reviewed LOE preparation progress and provided questions and comments.

7. Reviewed EDOM and delivered marked copy with comments.

8. Provided copy of BUCHANAN Addendum to COMNAVSURFPAC 1200 PSI Management Manual, with ARINC Research review of comments on addendum.

9. Delivered MTT training outlines.

10. Provided copy of WHIPPLE environmental control instructions.

11. Provided copy of PEB methodology presentation.

12. Delivered copy of latest PEB oral questions.

13. Discussed new PEB policies with EO. Delivered copy of OUELLET post-LOE POAM.

14. Reviewed status of questions and comments from ARINC Research review of SFOMS, SARP, and CSMP.

15. Delivered copy of PEB EDO/EOOW seminar questions.

16. Discussed results of SOMERS LOE.

18. Delivered new discrepancy list from review of LOE reports for 1 January through 30 June 1975, and copy of new PEB/LOE letter to COs.

19. Quizzed personnel in manner of PEB for EO to gather information on strengths and weaknesses.

20. Interviewed CO and EO for suggestions to improve the program.

21. Witnessed LOE and gathered information for dissemination to other ships.

APPENDIX B-7

PEB/LOE ASSISTANCE TO USS SOMERS

During the PEB/LOE preparation assistance program, ARINC Research provided the following assistance to USS SOMERS (DDG-34), in addition to those areas discussed previously in this report.

1. Delivered copy of LOE preparation progress review questions.
2. Met with CO and EO to discuss LOE preparations and progress and make suggestions.
3. Assisted in formulating POAM.
4. Reviewed POAM and provided suggestions and comments.
5. Provided results of interviews with PEB Capt. Leedom.
6. Provided copy of FRANCIS HAMMOND training outlines and discussed possible uses, strengths, and weaknesses.
7. Provided comments on BUCHANAN POAM. Assisted in updating POAM to reflect latest changes.
8. Discussed training schedule and last-minute shortfalls and adjustments required.
9. Provided information regarding new PEB policies resulting from witness of LOE aboard other ships.
10. Secured copy of log sheets with high and low temperature and pressure limits for distribution to other ships.
11. Witnessed LOE and gathered information for dissemination to other ships in program.
12. Interviewed EO and CO for comments and suggestions on improvement of program.

APPENDIX B-8

PEB/LOE ASSISTANCE TO USS MORTON

During the PEB/LOE Preparation Assistance Program, ARINC Research provided the following assistance to USS MORTON (DD-948), in addition to those areas discussed previously in this report.

1. Developed preliminary POAM for review by ship's force.
2. Provided discrepancy results from ARINC Research review of PEB/LOE reports for 1 July through 31 December 1974.
3. Provided a copy of LOE preparation progress review questions to EO.
4. Conducted in-depth discussions of LOE preparation progress with EO, and made recommendations.
5. Provided copy of ARINC Research review of BUCHANAN EDOM for possible use.
6. Discussed new PEB policies resulting from witness of LOE aboard other ships.
7. Delivered sample logs with high/low temperature/pressure limits indicated.
8. Delivered copy of PEB EOOW/EDO seminar questions.
9. Provided lists of significant LOE discrepancies resulting from review of LOE reports.
10. Conducted in-depth administrative review as requested.
11. Witnessed LOE for gathering of information and distribution to subsequent ships.
12. Interviewed CO regarding assistance-program and LOE methods used for forwarding to other ships.

APPENDIX B-9

PEB ASSISTANCE TO USS RICHARD S. EDWARDS

During the PEB/LOE Preparation Assistance Program, ARINC Research provided the following assistance to USS RICHARD S. EDWARDS (DD-950), in addition to those areas previously discussed in this report.

1. Provided copy of FRANCIS HAMMOND post-LOE POAM.
2. Provided discrepancy list resulting from ARINC Research review of PEB/LOE reports for 1 July through 31 December 1974.
3. Provided copy of LOE preparation progress questions.
4. Assisted in updating of milestones chart.
5. Reviewed LOE preparations progress with EO and made recommendations.
6. Provided copy of ARINC Research review of BUCHANAN EDOM.
7. Discussed status of questions and comments on ARINC Research review of SARP.
8. Discussed new PEB policies from witnessing other LOEs.
9. Reviewed status of questions and comments on ARINC Research review of POT&I, and CSMP.
10. Reviewed casualty control manual for discrepancies.
11. Provided comments and questions.
12. Discussed correctable problems.
13. Delivered PEB EOOW/EDO seminar questions.
14. Provided new lists of significant discrepancies.
15. Witnessed LOE to gather information for other ships in program.
16. Interviewed CO and EO for suggested improvements to program.

APPENDIX C

RECOMMENDED CHANGES TO PLAN AND OUTLINES

Resulting from the PEB/LOE Preparation Assistance Program to date have been the following recommendations for improvement of the Type Management Plan and Program Outlines for Use in PEB/LOE Preparation, July 1974. Indicated where applicable is the task number of the Plan and Outlines to which the recommendation applies.

1. Modify references to reflect the administrative change to the COMNAVSURFPAC organization, and to include the many new publications and policy instructions issued by COMNAVSURFPAC.

2. Eliminate references to a division commander, which are no longer applicable.

3. Include a warning not to underestimate the typing burden in administrative preparation. (Task A-1)

4. Include sufficient instructions for ship's force to conduct their own review of publications, i.e., what problems they should look for in their administrative documents. Stress the fact that particular ship-generated addenda to basic publications must be correctly placed, e.g., details of electrician duties should be in the EDOM instead of the SORM since the latter is an all-hands publication. (Task A-1)

5. Suggest the desirability of appointing a Printing Officer to take care of follow-up on form publication printing requirements and delivery. (Task A-1)

6. Include a recommendation that the EOCC manual be validated in the LOE preparation period. (Task A-3)

7. Delete the outlines for the SORM and EDOM, since each of these publications has been issued as a standard. (Task A-4)

8. Add references and instructions for establishing a fire doctrine for major engineering spaces. (Task A-5)

9. Change the task on electrical safety to include general safety. (Task A-6)

10. Include a recommendation to denote with red markings the problems noted in logs and operating records during LOE preparation. These marked logs and records can then be used for training purposes, to show where errors occurred. (Task A-9)

11. Remove indications that logs and records should show standard operating temperatures and pressures; only high and low limits are required. (Task A-9)

12. Stress the need for CO/XO involvement in indoctrination and gaining concurrence with new policies. Include a recommendation that Plan of the Day notes be written on LOE preparation status. Include a recommendation that the CO verbally address different divisions each week to keep personnel motivated for LOE preparation. Indicate that CO's personal involvement will be an assistance to the continuing effort of the department heads. (Task A-12)

13. Stress the importance of continuing contact with the shipyard personnel in getting selected records updated. (Task A-14)

14. Add a description of the post-LOE POAM requirements, and an outline of the contents of that chart. (Task A-16)

15. Revise and combine training tasks T-1, T-2, T-3, and T-4. The preparation phase in these tasks is much simpler and can be stated more concisely than presently indicated in the Plan and Outlines. Several steps that can be combined for clarity are: 1) identify the billets for both auxiliary and underway watch bills; 2) match people to billets; 3) start a watch-station qualification program; 4) specify what each man needs for interim and final qualification (disregard rate structure); and 5) establish the watch stations for which personnel are to be trained, and assign PQS items.

16. Include a caution that PQS organization and implementation can be a bigger problem than expected – do not underestimate the amount of work involved. (Task T-1)

17. Eliminate reference to the Ship's Manning Document; form 1080 is more valuable in assessing personnel gains and losses. (Task T-3)

18. Change the task regarding training aids to indicate that none are available to forces afloat. Any use of training aids will be at shore facilities. (Task T-7)

19. Include cautions regarding space security instructions, which should cover what the Security Patrol is to look for and what action he should take. (Task T-12)

20. Include references to Mobile Training Team advisories, which are now being published. (Task T-13)

21. Expand the phrase "Identify all valves" to a requirement for making a list of valves and submitting it to PMS for preparation of an equipment guide list (EGL). (Task M-1)

22. Suggest that a tickler list rather than individual cards be maintained for gages. (Task M-2)

23. Add a caution that all unused damage control equipment should be locked up to prevent pilferage, which has been a major problem. (Task M-5)

24. Stress the fact that the shipyard performs no maintenance on equipment that is out of commission but not removed from the ship or scheduled for shipyard repair. (Task M-11)

25. Add a reminder to requisition the LOE kit list early, since these are high usage items. (Task M-14)

26. Add "Locked Open", "Locked Closed", and "High Voltage" signs to the LOE kit list. (Task M-14)

27. Add packing glands and body bonnet studs of various sizes to the list of the LOE kit. (Task M-14)

28. Stress that updating the CSMP on departure from the shipyard represents a considerable effort. (Task M-21)

29. Change the timing of post-ROH CSMP and COSAL updates to run from C-1 to C+1. Information is generally not available much earlier than that, and time is not available for updating during those last weeks during the ROH. (Tasks M-21, -22)

30. Include cautions that 1) all equipment reinstalled at LOE is currently scheduled for PMS, and 2) all MRCs are held onboard and are in place. (Task A-15)

31. Include a note that the current charter of MTT is to inspect administrative and training areas for LOE readiness and make recommendations; their assistance does not extend to corrective actions. (Task T-13)

32. Clarify the misconception that the "PEB kit" is provided to the ship. (Task M-14)

33. Expand the description of installation of the updated 3M package to place emphasis on the installation of new equipment and cards. (Task A-15)

34. Revise the POAM schedule to conform with the COMNAVSURFPAC Maintenance Manual.

35. Add a flow chart of LOE-preparation task activities for use if PERT network programs are available in the shipyard.

36. Insert applicable PEB/LOE discrepancies and list of publications to be reviewed in each task, so that individual task descriptions can stand alone and may be removed.

37. Include a blank copy of POAM Gantt-type chart.

38. Revise the Plans and Outlines to accommodate new ship type designations (DD, DDG, CG-16/26, FF).

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Results of the PERA(CRUDES) PEB/LOE Preparation Assistance Program are discussed. The effectiveness of that program in assisting selected ships in preparing for LOE is assessed; general conclusions on LOE preparation are presented; and recommendations concerning the continued implementation of the program are offered.

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