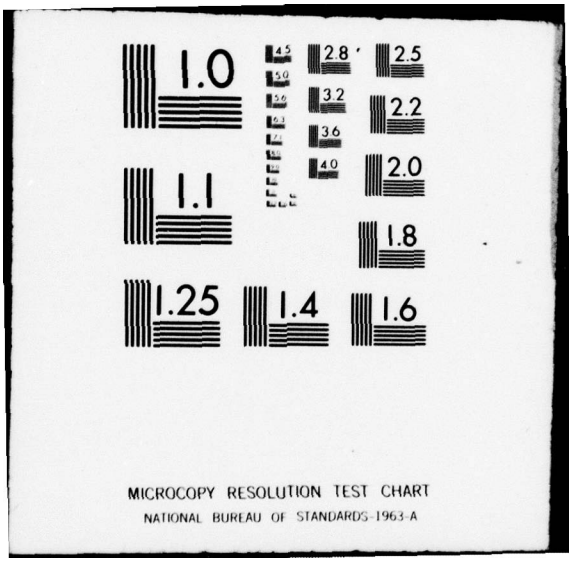
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Technical Report: NAVTRAEQUIPCEN 76-C-0055-2

REVISING THE SH-2F (LAMPS MK I) INSTRUCTIONAL SYSTEM WITHIN THE FRAMEWORK OF INSTRUCTIONAL SYSTEMS DEVELOPMENT

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(6) Revising the SH-2F (LAMPS MK I) Instructional System within the Framework of Instructional Systems Development.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

(18) 1. REPORT NUMBER: NAVTRAEQUIPC (19) 76-C-0055-2

2. GOVT ACCESSION NO.

(9) 3. RECIPIENT'S CATALOG NUMBER

4. TITLE (and Subtitle)
Revising the SH-2F (LAMPS) Instructional System Within the Framework of Instructional Systems Design.

5. TYPE OF REPORT & PERIOD COVERED
Final Report.
March 76 - December 1978

6. PERFORMING ORG. REPORT NUMBER

(10) 7. AUTHOR(s)
Susan Hearold
Jerome Bresee
Dann Bergman

(15) 8. CONTRACT OR GRANT NUMBER(s)
N61339-76-C-0055

9. PERFORMING ORGANIZATION NAME AND ADDRESS
Courseware, Inc.
10075 Carroll Canyon Road
San Diego, CA 92131

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
(12) 164p.

(11) 11. CONTROLLING OFFICE NAME AND ADDRESS
Naval Training Equipment Center
Orlando, FL 32813

12. REPORT DATE
January 1979

13. NUMBER OF PAGES
163

14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)
Same as 11.

15. SECURITY CLASS. (of this report)
UNCLASSIFIED

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)
Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)
ISD
SH-2F
Training (Design, Development)
Aircrew Training
Instruction (-al design, -al development)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
This report covers the activities of the follow-on project for revision of instructional material developed under Contract in 1975-1977 and for development of additional instruction materials for aircrew training of SH-2F antisubmarine warfare helicopter pilots and sensor operators.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

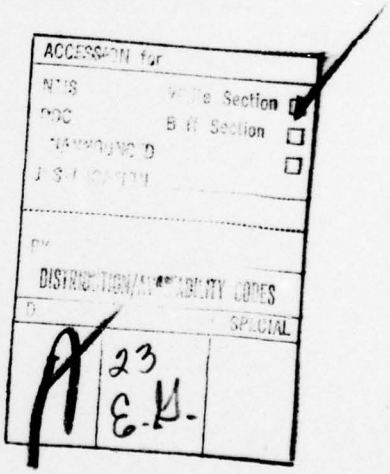
SUMMARY

This report covers the activities of the project for revision of instructional material developed under contract in 1975 - 77 and for development of additional instructional materials for aircrew training of SH-2F antisubmarine warfare helicopter pilots and sensor operators.

Five major tasks were completed: revision of aircrew segments, complete rewriting of pilot system familiarization segments, design and development of instructional material for a five-week course in tactics, writing of test items on all instructional segments, and preparation of a position paper describing a performance evaluation design.

The revision and development of instructional material followed an instructional systems development (ISD) approach. Broadly, the steps followed were:

1. Identification of objectives
2. Sequencing of instruction
3. Media selection
4. Lesson specification
5. Authoring
6. Navy review
7. Materials production.



PREFACE

The work discussed in this report represents the culmination of the formal development, implementation, evaluation and revision of the SH-2F (LAMPS MK I) Aircrew Training Program. This effort was one of four such projects (A-6E, EA-6B, E-2B/E-2C and SH-2F Weapons Systems) begun in early 1975 by the Naval Training Equipment Center for the Naval Air Systems Command, to develop aircrew training systems and to establish the requirements for implementing the systems approach to training within the Naval aviation community. This program was the first of the four to go on-line and fleet feedback indicates a marked improvement in the overall quality of the program graduates.

The objective of this task was to accomplish the revisions generated during the six month evaluation of the program following its implementation at HSL-31 in December of 1976 and at HSL-30 in January of 1977, and to update materials that had been effected by weapon system changes made after program implementation. The work was performed by Courseware, Inc. under Contract N61339-76-C-0055.

Appreciation is expressed to those personnel of HSL-31, HSL-30, COMNAVAIRPAC, COMNAVAIRLANT, ASWWINGPAC and HELSEACONWING ONE who made significant contributions to this project.

Robert G. Bird

Robert G. Bird
Acquisition Director

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SECTION I

INTRODUCTION

The initial development of the SH-2F aircrew training followed an instructional systems development (ISD) approach. A recognized component of an ISD model is continuous monitoring to identify deficiencies and obsolete information that can be used to specify revisions, thus leading to an improved product. Late in 1977, after about a year of implementation, preliminary information indicated several areas that needed revision. First, there were a number of lessons that contained technical or instructional errors. Second, instruction in LAMPS tactics, which originally had been selected for training at the fleet squadron level, was redesignated for training by the Fleet Replacement Squadron (FRS). This instruction needed to be designed, developed and produced. Third, the scope and feasibility of the existing student evaluation system needed to be revised. Both classroom exams and trainer-based performance measurement were identified as inadequate.

Acting on these findings, the Naval Training Equipment Center initiated the formation of a Navy/Contractor team to update the SH-2F training material. The essential problem addressed in this project has been that of providing a set of procedures and a staff to meet revision and new development requirements according to the basic ISD model.

This report summarizes the procedures followed, the resulting products and the resources expended during the project, Revising the SH-2F (LAMPS) Instructional System Within the Framework of Instructional Systems Design.

The four tasks in this project were: revision of existing instruction, design and development of tactics material, development of classroom tests, and design of performance evaluation procedures. In Section II of this report the background, methodology, activities, problems and solutions, resources and products of each task are individually summarized and in Section III gives a list of recommendations for future ISD activities designed to continue the improvement and development of SF-2F aircrew training while Section IV shows the resource utilization log for this project.

SECTION II

IMPLEMENTATION AND WORK ACCOMPLISHED

PROJECT ORGANIZATION AND STAFFING

The roles of the organizations participating in the SH-2F follow-on project were as follows:

Naval Training Equipment Center (NAVTRAEQUIPCEN)--Project coordination, direction, and direct on-site monitoring through periodic visits.

Contractor--On-site training, guidance, and review with respect to ISD process and techniques.

HSL-31--Provision of subject matter expertise and on-site project facilities, including work areas.

HSL-30--Provision of subject matter expertise for tactical training front-end analyses and research of selected tactical topics.

Fleet Aviation Specialized Operational Training Groups Pacific (FASOTRAGRUPAC)--Reproduction of all developed material.

The project staffing for both HSL-31 and the contractor underwent changes as dictated by project activities. The contractor's staff increased following front-end analysis in order to handle development demands and then increased again at the onset of production. Additional Navy personnel were assigned during the authoring phase and then reassigned elsewhere as authoring ended. Figure 1 is a diagram of the contractor's staff and Figure 2 is a diagram of the Navy ISD Team Organization.

The Supervising Instructional Psychologist was a senior person who evaluated the Project Director's work and provided both design input and quality control at critical points during the project.

The Project Director, an instructional psychologist, was fully responsible for the technical quality of project work, the timeliness of project deliverables, and the project budget.

The Administrator/Coordinator assisted the Project Director in budget and contract management, personnel, administration, reports, and other matters which bore on the projects' timeliness and adherence to budget.

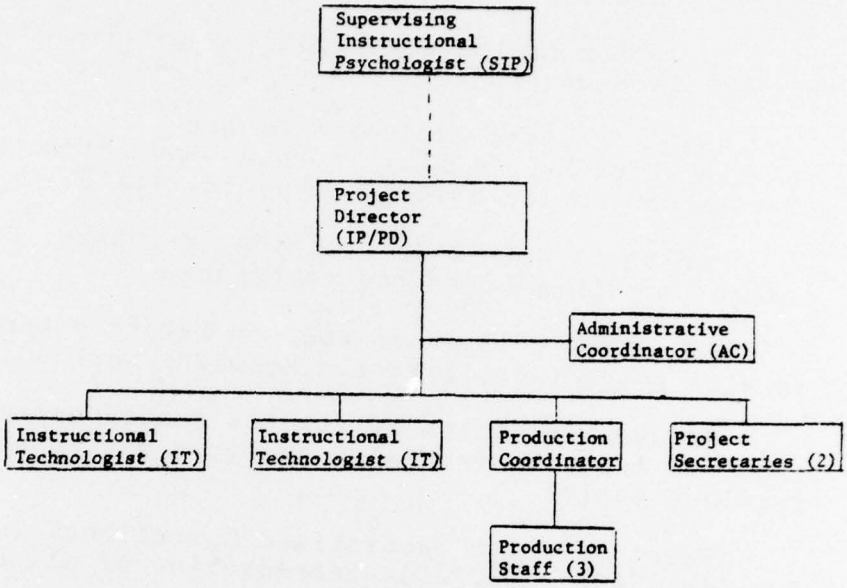


Figure 1. Contractor's Staff Organization

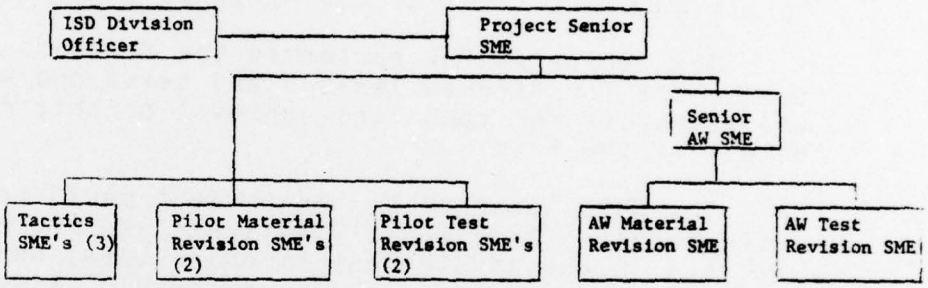


Figure 2. Navy ISD Team Organization

The Instructional Technologists were M.A. level people with education and experience in instructional analysis, design, development, and evaluation. Their principal function was in monitoring the work of the Navy SMEs.

The functions of other designated staff are self-explanatory.

The ISD Division Officer was responsible to HSL-31's Training Department Officer for the implementation of instruction developed during the initial ISD effort, and took delivery of completed revisions and newly-developed tactical instruction on behalf of the Navy, providing for technical review commensurate with acceptance.

The project Senior SME coordinated SME activities with HSL-31 and the contractor, scheduled and directed SME work, and provided technical review of all developed material prior to its submission to the ISD Division Officer for acceptance.

The Senior AW SME performed the function of the Project Senior SME for Aircrew lessons and tests and was delegated the authority for technical approval of this material on behalf of the Navy.

The SMEs assigned to the project performed initial authoring of all original (tactical) and revised material, assisted in the development of objectives, and provided an initial review of each other's material. Five groups of SMEs were formed to perform the following tasks:

Tactics SMEs provided technical expertise for the development of task analyses, objectives hierarchies and their subsequent sequencing, and first-draft authoring of all tactics instruction.

Pilot Materials Revision SMEs authored the first draft of all revised lessons, with primary emphasis on the revision of System Familiarization Workbooks.

Pilot Testing Revision SMEs generated test items for all segments including revisions, new material, and existing segments.

The AW Materials Revision SME authored the first draft of all revised Aircrew lessons.

The AW Test Revision SME generated test items for all AW segments where existing items were identified as inadequate.

PRODUCT DEVELOPMENT AND PRODUCTION

Several revision and development efforts were conducted simultaneously. These were the rewriting of systems familiarization segments, revision of other pilot segments, revision of aircrew segments, and initial development of tactics material. Each of these efforts followed quite similar procedures once the objectives for a segment had been identified and sequenced. The general task flow and personnel responsibilities are outlined in Appendix A. This document was a working copy distributed to all involved persons. The process of identification and sequencing of objectives was unique to each effort and is discussed separately for each in the following sections.

Navy Subject Matter Experts (SMEs) were the original authors and content experts for all lessons. They were a key element in all revision and development efforts. To improve the SMEs' authoring capability, three author training courses were conducted during this contract, two by contractor and one by the ISD Division Officer while monitored by a Contractor Instructional Technologist (IT). This training proved highly desirable for all ISD personnel.

REVISION OF EXISTING INSTRUCTION--SYSTEMS FAMILIARIZATION SEGMENTS

A decision to rewrite all existing system familiarization segments was based on evaluation data supplied by Navy ISD officers. The original one hundred thirty-two segments were designed to familiarize the pilot with the aircraft's 23 main systems, the system's components, and the interrelationships among the various systems. Data revealed that the original segments included an excessive amount of technical material which the pilots would most likely never use. Data also revealed that students disliked the three-column formatting, claiming that it was fragmented and, therefore, difficult to read. Finally, students stated that they needed an opportunity to practice their ability to retain systems information before testing out of the segment.

A number of decisions were made based on reviews of the material by the Instructional Technologist (IT), Senior Subject Matter Expert (SSME), and two Subject Matter Experts (SMEs) assigned to the project. The decisions included: 1) the restructuring of all systems workbooks from the three-column format to a paragraph format, thus increasing readability, 2) the addition of Help and Practice sections

which would give students an opportunity to test their retention rate, and 3) the breaking up of large systems into smaller subsystems. This last decision increased the number of systems and instructional lessons from twenty-three to thirty-three.

At a later date, two systems were deleted because they taught entry-level material; one system was deleted because its components were logically related to, and therefore included in, two other systems; four systems were deleted because they were sufficiently covered in the Tactics lessons; and one large system was divided into two subsystems. The deletions and additions stabilized the number of System Familiarization systems and related lessons to be developed at twenty-seven.

A specification sheet stating objectives, possible reference material, and rewrite instructions was developed for each lesson. Revision and subsequent production were completed as described in Appendix A. Appendix B presents a list of the twenty-seven lessons developed for systems familiarization. A copy of one of the new systems familiarization lessons appears in Appendix C.

PROBLEMS AND SOLUTIONS. Major problems did not occur during the revision of the systems familiarization sequents.

REVISION OF EXISTING INSTRUCTION--OTHER PILOT SEGMENTS

At the beginning of the project, the Senior SME identified thirty-four pilot segments (besides system familiarization segments) as needing revision. Each of these lessons was reviewed by an IT/SME team. The review comments were written on a revision specification sheet (see Appendix D). When the first set of SMEs finished the ISD training material, they began revision efforts with one of these lessons, using the specification information to guide their work. A turn-over in Navy personnel and the completion of the tactics objective hierarchy lead to a decision that tactics and system familiarization lessons would receive priority over other pilot lesson revisions. Except for nine segments already well along in the production process, work on pilot lessons was stopped.

In addition a new set of Naval Air Training & Operating Procedures Standardization Program (NATOPS) changes affected several of the lessons that were almost finished. These were redone and put through the rest of the production steps. The Navy ISD team is continuing to revise the pilot lessons that the present personnel feel have technical errors or NATOPS changes in them. Production will be completed by

FASOTRAGRUPAC. A list of pilot segments identified for revision but not revised appears in Appendix E. A list of the pilot segments that were revised appears in Appendix F.

PROBLEMS AND SOLUTIONS. Many hours of labor were spent by both Courseware and the Navy on beginning the revision of segments later dropped from the syllabus, held for NATOPS changes, or determined by the ISD Division Officer as not needing revision. Better communication among all involved parties early in the project is necessary to avoid this situation in future contracts.

REVISION OF EXISTING INSTRUCTION--AIRCREWMAN SEGMENTS

Aircrewman segments were identified for revision by discrepancy cards turned in by instructors and students. Mainly these cards identified technical errors or changes that made the lesson inaccurate. Less frequently a segment was selected for revision because it did not seem to teach the objective, thus needing an improved instructional approach. One Navy Aircrew SME was responsible for all revisions. Initially, he worked fairly independently under a SSME. With a change in Senior AW SME, the Aircrew SME began working more closely with contractor personnel who reviewed the SME revisions. From that step on, the revision procedure was the same for these segments as for all others. A list of the revised aircrewman segments appears in Appendix G.

Mandays expended on revision of existing materials are reported in Table 1.

PROBLEMS AND SOLUTIONS. The nature of the revisions made in aircrew material varied from minor technical errors to the design and development of new segments. However, when the revisions were minor, it did not follow that the effort involved in production was also minor due to the original formatting scheme used for these segments. The three-column layout with shading between steps had to be uniquely designed for each page. The addition of a single line often required the production of an entirely new page. No satisfactory solution to this problem was found, but a complex layout was avoided on all new development.

TABLE 1. MAN-DAYS EXPENDED FOR REVISION OF EXISTING INSTRUCTION[1]

TASK	PERSONNEL CLASSIFICATION					
	CONTRACTOR				GOVERNMENT[2]	
	IP	IT	SEC	PROD	SSME	SME
1.1 Examine Cirriculum Evaluation Data	2.5	1.6	0	0	0	0
1.2 Develop Revision Specifications	1.5	27.8	3.6	1.2	0	0
1.3 Make Revisions	.7	10.9	6.2	0	4.4	74.5
1.4 Review Revisions	5.2	30.6	1	0	0	5.6
1.5 Produce Revised Materials	.5	.7	35.0	96.	0	0
TOTAL TASK (to nearest day)	10	72	46	97	4	80

[1] Mandays expended through December 15, 1978.

[2] Government mandays expended is an underestimate. Mandays reflect time on specific task only, not meetings, group reviews, SME discussions etc.

TACTICS MATERIALS DESIGN AND DEVELOPMENT

The identification of tactics objectives began on April 17 with the arrival of a SME from HSL-30. Under the guidance of the contractor's on-site staff, he and the project's first Senior SME produced a task analysis and objectives hierarchy, completing this effort on April 28. This task analysis is presented in Appendix H, and the resulting objectives hierarchy is printed in Appendix I. At this point, the objectives hierarchy called for many more components of instruction than the number specified in the contract. The project's first Senior SME then proceeded to condense this hierarchy and arrived at a version calling for the development of roughly 200 components of instruction, three times the number estimated in the contract.

On May 15, due to the impending retirement from the Navy of the project's first Senior SME, a new Senior SME was assigned. He called a meeting of several of the officers assigned to the ISD division, and the contractor's on-site staff. At this meeting, a decision was made to reduce the scope of the original objectives hierarchy.

The original objectives hierarchy was developed largely as an exploratory effort, and was an attempt to convert the analysis of tasks performed by a fully qualified aircraft commander into training objectives. The condensed version produced by the first Senior SME reflected his desire to train an immediately deployable Air Tactical Officer (ATO). The personnel present at the May 15th meeting accepted this version as input data, then attempted to define the constraints and assumptions under which the final tactics training program would be developed. This attempt was not entirely successful, but the need to reduce the scope of the proposed tactics course was clearly identified, and the original Senior SME was assigned the task of further condensing the objectives hierarchy. To save time, it was decided that this task would be performed in conjunction with the next two projects tasks, the selection of media and the grouping of objectives into lessons.

The next three tasks of the development process: selecting media, grouping objectives into lessons, and developing tactics lessons are discussed in one section due to the simultaneous manner in which they were eventually performed. This final course of action was dictated by the time required to resolve the varying points of view about the scope of the tactics syllabus and the length of time that elapsed between initiation of tactics development on April 17, and the availability of SMEs for authoring on July 10.

During the time between the initial review of the condensed objectives hierarchy and the arrival of SMEs for authoring, the project's first Senior SME proceeded to develop, based on the first condensation of the objectives hierarchy, a set of rough lesson specifications which established a preliminary grouping of objectives and a tentative selection of instructional media. The primary result of significance from this effort was the identification of the major units of instruction.

Upon the arrival of SMEs for tactics authoring, an author training course was conducted by the ISD Division Officer using materials provided by the contractor. This course was monitored by contractor personnel, and concluded on July 13, at which time the tactics authors began writing their initial segments based on the rough specifications developed by the first Senior SME.

After tactics authoring had been underway for approximately 1 week, it became clear that the scope of the tactics syllabus, then comprising approximately 150 to 175 instructional components, was still too large for development to be completed within the time allotted in the contract, or for that much material to be taught within the five weeks allowed for tactics instruction.

Therefore, a second review meeting was held on July 24, attended by the contractor's on-site staff, officers from the ISD division, the Squadron Training Department officer, the project's first Senior SME, and the relieving Senior SME. At this meeting, a more complete definition of constraints and assumptions was achieved. Because all graduates of the Fleet Replacement Squadron must attend the Antisubmarime Warfare School and must receive additional training upon assignment to a fleet squadron, the scope of the FRS tactics syllabus was redefined to reflect a revised set of goals. The Fleet Replacement Squadron will provide graduates able to proceed without difficulty through both the pre-deployment ATO course given by the fleet squadrons and the Antisubmarine Warfare School. FRS students will receive training in sensor theory and characteristics, standard tactical doctrine for sensor employment, navigation using the MK-6 and PT-429, an introduction to the standard ASW reference publications and messages, and the capabilities and characteristics of Soviet weapons systems and platforms, as well as U.S. ASW weapons and platforms.

Under these guidelines, the final number of instructional components stabilized at approximately 100. Although this figure exceeded that estimated by the contract, it was decided to attempt the development of all 100 components, rather than produce only a portion of the desired tactics course.

Authoring began in earnest on July 25, following a procedure designed to allow the tasks of final media selection, objectives grouping, and actual lesson development to be telescoped into the now smaller time frame. Borrowing the list of major units produced by the project's first Senior SME as the gross structure of the course, the necessary lessons and segments were filled in as detailed below.

Upon assignment of a major unit of instruction, the authoring SME's first task was to determine the major lesson topics, and then the nature of each segment within each lesson. This task was accomplished with the close assistance of the contractor staff, and indeed was an objectives hierarchy development in miniature. Before actual authoring began, the authoring SME, the assisting contractor staff member, and the project's Senior SME all reviewed and approved the objectives and their sequence. Wherever possible, applicable portions of the original objectives hierarchy were inserted.

Final media selection was accomplished during this period of initial authoring. It was decided to produce all tactics lessons in workbook form for the following reasons:

1. This medium was determined to be instructionally sound for all identifiable classes of tactical objectives.

2. Workbooks allow for easier revision, an important factor in this constantly changing content area.

3. In the opinion of the authoring SMEs, no significant gains in palatability would be realized by employing other media.

4. The large amount of material to be developed, coupled with a collapsed development time frame, was a further recommendation for the use of the workbook medium due to its relative ease of production.

Once actual authoring had begun, it was realized that a large amount of material might be available from VS and VP Fleet Replacement Squadrons which, if not useful in its existing form, would at least save valuable research time and increase the level of standardization of ASW training across communities. Accordingly, visits were made to the West Coast Fleet Replacement Squadrons of both these communities, and

much useful material was collected. It is estimated that use of this material saved the tactics development team several weeks.

Review, revision, and final production of tactics lessons proceeded according to the process specified in Appendix B. A list of units, lessons, segments, and segment objectives for tactics materials appears in Appendix J.

Mandays expended on tactics material design and development are reported in Table 2.

PROBLEMS AND SOLUTIONS. This section describes the significant problems encountered during the development of the tactics course, action taken as a result, and recommended action to be taken on future projects.

Inadequate Estimate of Scope. The final version of the tactics syllabus contained a quantity of instruction that was approximately 100% greater than the amount of instruction estimated, even though the original tactics objectives hierarchy had been condensed considerably. On future projects, it is recommended that extreme care be used in assessing the nature of each task before the request-for-proposal (RFP) is released.

Change in Development Priority Favoring Tactics. This change in priority resulting from the problem mentioned above meant that much of the work performed in the early stages of the contract, dealing with revision of existing instruction, had to be abandoned in a partially completed state. A partial solution to the problem was achieved by turning specifications for revisions over to the Navy for later in-house implementation. This problem should not arise on future contracts.

Change of Senior SME. This event, while not significant in and of itself, impacted many intra-project procedures and policies, particularly the development of tactics in that the change in Senior SME was the primary factor in the redefinition of the syllabus scope. While this redefinition was necessary and beneficial, it interrupted lines of review and approval of material under development and hindered decisions on future tasks. It is recommended that such a change in personnel be avoided whenever possible on future projects.

TABLE 2. MAN-DAYS EXPENDED FOR TACTICS MATERIALS DEVELOPMENT[2]

TASK	PERSONNEL CLASSIFICATION					
	CONTRACTOR				GOVERNMENT[2]	
	IP	IT	SEC	PROD	SSME	SME
2.1 Identify Objectives	3.4	8.5	.75	0	0	0
2.2 Select Media [3]	0	0	0	0	0	0
2.3 Group Objectives into Lessons	1.5	.95	1.4	0	0	0
2.4 Develop Specs and Lessons	0	1.3	1.25	0	0	50.0
2.5 Review Lessons	5.63	7.25	0	0	2.25	6.25
2.6 Produce Prototype of Lessons	0	0	0	0	0	0
2.7 Tryout Lessons [4]	0	0	0	0	0	0
2.8 Revise Lessons	14	8	9	0	3	0
2.9 Produce Lessons	0	0	32 0	83	0	0
Total Task (to nearest day)	25	38	44	83	5	56

[1] Mandays expended through December 15, 1978.

[2] Government mandays expended is an underestimate. Mandays reflect only time spent on specific task only, not meetings, group reviews, SME discussions, etc.

[3] Media selection completed as part of tasks 2.3 and 2.4.

[4] Handled by ISD Officer. Time not logged.

Absences of Contractor's Project Manager. In the earlier stages of the project, contractor's project director was often pulled away from the project by other company duties. This retarded the decision making process and eventually necessitated a change in contractor project management. While this management change was made with ample time for the relieving manager to "understudy" the original manager, problems occurred that were similar in nature to those encountered with the change of the Navy's Senior SME.

Late Arrival of Full Complement of Authoring SMEs. The project had been underway for roughly four months before authoring SMEs were available to begin work on the tactics course. This delayed the development of the most usable form of the objectives hierarchy and the start of tactics authoring.

It is recommended for future projects that SMEs be identified and assigned soon enough for author training to be completed prior to the completion of any needed front-end analysis, and that one of the criteria used in selecting SMEs be their availability throughout the run of the contract.

DESIGN CLASSROOM TESTING PROCEDURES--AIRCREWMAN

REVIEW PRESENT TESTS. Aircrewman test items had been developed during the initial SH-2F project and had been revised by Navy personnel. A review of the revised test items was deemed desirable. For this purpose, a Navy Aircrewman (AW) began annotating all test items. The annotation included the number of the Unit Test, the number of the test question, and the title and number of the segment from which the test question originated. The IT assigned to the testing task was able to review each test item by comparing the item with its segment's objectives and subject matter. The IT made a number of observations based on his review of three unit exams: 1) most of the test items were adequate and did not need to be revised; 2) all segment objectives were not tested on all forms of a unit exam; 3) information from the Introduction and Important Notes and Comments sections was being tested; 4) some items asked the student to perform a behavior not specified in the objective; 5) some questions were not correctly written; 6) a number of test items did not conform to the ATSS computer formatting system; and 7) it was deemed desirable to add review questions. A working paper was written based on the stated observances and was distributed to appropriate Navy personnel for their comments and recommendations.

GATHER DATA ABOUT CONSTRAINTS/DEVELOP SET OF TEST SPECIFICATIONS. The working paper concluded that the annotation process should continue and that the following suggestions should be incorporated:

1. Add test questions to all test forms so that all objectives are covered on all exams.

2. Inform the student that he may be tested on all materials in the workbook, including Introduction and Important Notes and Comments information.

3. Rewrite test questions to match objectives.

4. Reformat technically incorrect test items if it is convenient to do so.

5. Whenever possible, rewrite test questions as multiple choice items to conform to a format compatible with ATSS.

6. Add review items or review exams.

DEVELOP TESTS. Based on a Navy decision, the annotation process continued and was finished in mid-October. At that time, a different SME was assigned to make the revisions specified in the working paper.

DESIGN AND DEVELOPMENT OF CLASSROOM TESTS--PILOT

REVIEW PRESENT TESTS. Pilot exams had also been developed during the initial SH-2F project. Navy ISD officers requested that these exams be revised for the following reasons: 1) a number of questions tested NATOPS material and not necessarily ISD workbook information, and 2) many of the questions tested unimportant or "nice-to-know" information. It was decided that the revised exams should test only important workbook material and be as realistic, situational, and performance oriented as possible.

GATHER DATA ABOUT CONSTRAINTS/DEVELOP SET OF TEST SPECIFICATIONS. It was desirable, as with Aircrewman Testing, that Pilot Testing be formatted in a manner compatible with the ATSS computer systems (Multiple Choice, Matching, True/False or One Word Answer).

SMEs were given instruction on writing technically correct test items and were informed of a method for identifying suitable testing material.

A working paper entitled Design Recommendations for the SH-2F Testing System was written and reviewed by appropriate Naval personnel. A revised version of this paper is available under separate cover.

DEVELOP TESTS. The SMEs assigned to the testing task were asked to develop two to four test questions per segment. No items were written for Systems Familiarization Segments.

REVIEW AND REVISE TESTING MATERIALS. All test items were reviewed by the IT for technical errors. Questions were then reviewed by the SSME.

PRODUCE TESTS. One complete unit exam was produced in two forms. At that point, it was decided not to produce the exams because the segments contained in the units are to be resequenced by Navy ISD after the conclusion of this contract. Instead, each test item was placed on a 4 X 6 card. The cards included the name and number of the segment from which the item was derived, the item, and the correct answer. Included as a deliverable was a form listing the number of questions written for each segment.

Mandays expended in designing and developing classroom tests are reported in Table 3.

PROBLEMS AND SOLUTIONS. The sporadic time available to the assigned SME to work on aircrewman testing led to slow progress in following through on the revision recommendations. Before the end of the contract, the first aircrewman testing SME left the Navy. The task was continued by another SME, but progress was slow. No major problems occurred during the revision of pilot test items.

DESIGN OF PERFORMANCE EVALUATION PROCEDURES

During the initial ISD effort very detailed and elaborate performance evaluation procedures were developed. When attempts were made to implement them, the procedures proved to be impractical. The forms that instructors were required to complete could not easily be filled out during flight. In addition, some tasks were so finely divided that instructors were unable or unwilling to make the numerous separate scores. The Navy ISD personnel had begun to develop a simplified revision of the performance evaluation procedures and wanted some guidance in completing this task to ensure valid, reliable and practical measures.

TABLE 3. MAN-DAYS EXPENDED FOR DEVELOPING CLASSROOM TESTS[1]

	PERSONNEL CLASSIFICATION					
	CONTRACTOR				GOVERNMENT[2]	
TASK	IP	IT	SEC	PROD	SSME	SME
3.1 Review Present Tests	8.5	0	0	0	0	0
3.2 Gather Data About Constraints	0	1.2	0	0	0	0
3.3 Develop Set of Test Specifications	1.7	5.6	1.1	0	0	0
3.4 Develop Tests	3	1.2	0	0	0	6.7
3.5 Review Tests	1.7	7.5	0	0	.12	0
3.6 Revise Tests	0	0	0	0	0	0
3.7 Produce Tests	0	0	0	0	0	0
TOTAL TASK (to nearest day)	15	15	1	0	0	7

[1] Mandays expended through December 15, 1978.

[2] Government mandays expended is an underestimate. Mandays do not reflect SME time of all Navy personnel involved in writing.

The procedure used in this task was for a Courseware IP to review existing performance evaluation procedures, identify the constraints, develop a set of recommendations, have the recommendations reviewed by the appropriate Navy personnel and then revise the recommendations. These steps and the resulting recommendations are presented in a separate document entitled Recommended SH-2F Revised Performance Evaluation System Design.

Mandays expended in this task are presented in Table 4.

TABLE 4. MAN-DAYS EXPENDED FOR DESIGNING PERFORMANCE EVALUATION PROCEDURES[1]

	PERSONNEL CLASSIFICATION					
	CONTRACTOR				GOVERNMENT[2]	
TASK	IP	IT	SEC	PROD	SSME	SME
4.1 Review Present Performance Eval. Procedures	1.1	0	.5	0	0	0
4.2 Identify Constraints	0	0	0	0	0	0
4.3 Develop Set of Recommendations	2.2	.2	0	0	0	0
4.4 Review Recommendations	0	0	0	0	0	0
4.5 Revise Recommendations	3	0	0	0	0	0
TOTAL TASK (to nearest day)	6	0	0	0	0	0

[1] Mandays expended through December 15, 1978.

[2] Navy time on this task was not recorded.

SECTION III

CONCLUSION/RECOMMENDATIONS

Following the basic ISD model that calls for continuous monitoring and updating, the need for some specific revisions in the original SH-2F instructional material was identified, leading to the present contract. Under this contract, system familiarization segments were rewritten, numerous technical and instructional deficiencies in AW lessons were corrected, tactic lessons were developed and new test items were written. These efforts used all the resources of the present contract. However, during the course of the contract, additional ways to improve the SH-2F aircrew training were identified. This section describes these ideas that occurred to the Courseware staff as they conducted this project. The following ideas may be considered our recommendations for the next phases in the continuous process of materials revision.

FURTHER DEVELOPMENT OF TACTICS INSTRUCTION

This section describes instructional tools that could be developed at a future date which would enhance the tactics course as developed under this contract.

WRITTEN - SIMULATION TESTS AND INSTRUCTION. A multistepped, branched written simulation could be used as either a test or an instructional tool. In either case, it would function to present the student with a realistic starting point in a tactical scenario, and require him to make a series of decisions about actions to be taken at the points in the unfolding scenario where these decisions would be made in the corresponding real-world situation. The data he would receive after each decision point would depend on the decision made. For example, if a student decided that a MAD tactic should be employed, the feedback he would receive at that step would be appropriate for a MAD tactic. Furthermore, no other data such as passive sonobuoy data, would be given. This format would allow for multiple-choice paths to the correct solution of the problem which could, with careful planning, represent the decision and actions of an actual tactical mission with a high degree of accuracy. In Table 5 is a partial example of such a simulation.

The left-hand column represents the data the student receives and alternative decisions available to him. An asterisk has been placed by the answer that the hypothetical student has chosen, and the data that he receives as a result of that choice follows immediately, along with the next set of decisions he must make as a result of the data he has

received. Note that if the hypothetical student had selected a different response, a different set of data, with different resultant alternatives, would be presented to him. The right-hand column points out important points in constructing the simulation.

Table 5 shows a very small portion of a very simple simulation. It should be noted that due to lack of technical expertise on the part of this writer, the data presented in the various portions of the example simulation are not complete; however, in an acceptable simulation they should be every bit as complete and realistic as is the data the student receives in a real situation.

A further point to be noted is that this approach should be reserved for the latter stages of any given unit of instruction; the student must learn how to deal with the components of such a simulation before he undertakes the simulation itself. The simulation would appear to be particularly valuable as a preparatory step to an actual WST or aircraft exercise.

A tactical simulation could be produced in several mediated forms, such as on TICCIT, in a workbook, or as a random-access slide presentation with an accompanying workbook. The random-access option has the advantage of allowing the student more rapid access to alternatives, while the workbook approach allows a greater economy and ease of preparation. Regardless of the media selection, it is felt that this approach would offer a valid, realistic method of instruction which should allow the student to get more readily the feel of the actual behavior that his job will require of him. Further explanation and examples of written simulations can be found in the book Construction And Use of Written Simulations by Christine H. McGuire, Lawrence M. Solomon and Philip Bashook, The Psychological Corporation, 1976.

ADDITONAL INTRODUCTORY MATERIAL. Since the FRS tactical course is the first formal exposure to ASW encountered by most students, it is felt that their overall understanding of ASW and the LAMPS mission could be facilitated by some instructional component or activity which presents to them, in as realistic a setting as possible, the full nature of their jobs when deployed. This could be accomplished using a carefully scripted and photographed videotape or motion picture presentation of a typical LAMPS mission from brief to debrief. The film would serve as an advance organizer for the tactics workbooks, and as a motivator for students.

TABLE 5. EXAMPLE OF TACTICAL WRITTEN SIMULATION

SIMULATION	COMMENTS
As you proceed on a line of bearing of 270 degrees on a TASS vector, at an altitude of 500 feet, and at a distance of 15 miles from the ship, your sensor operator informs you that he has a random MAD contact. You proceed to (choose one): 1. Drop a passive sonobuoy. *2. Drop a smoke flare and enter an M-1 pattern. 3. Drop a flare and a passive sonobuoy. 4. Drop pattern A-4.	--Realistic form Data is presented in real temporal order and is not pre-digested.
You proceed through one complete M-1 pattern, but receive no word of another MAD contact. You then proceed to (choose one): 1. Continue in an M-1 pattern. *2. Expand to M-2. 3. Abandon M-1, mark on top of your smoke flare, and proceed on course 270. 4. Drop pattern A-4.	--Requires sequential decisions a. Steps are inter-dependent. b. Steps are representative of actions which could be taken in a real situation. --Decisions are irrevocable
Your sensor operator reports a MAD contact and drops a smoke flare at a point indicating movement of the contact on a course reciprocal to that of your original heading. You then proceed to (choose one): 1. Enter an M-5 pattern. *2. Inform the ship of this second contact; request weapons-free and enter an M-5 pattern. 3. Proceed with air plan A-5. 4. Position for attack and drop.	--Decisions have branched consequences The data that is obtained depends upon the nature of the decision. --Allows for individual approaches This is a function of the branching nature of the instruction.

When the possibility for a film was first explored, it was decided that such a product, while useful, might be prohibitively difficult to develop. As an alternative, it is suggested that beginning tactical students be allowed to observe a tactical mission from the instructor's console of the Weapons System Trainer. By following the entire mission on the CRT-displayed geographic plot, it appears likely that the beginning student may obtain a clearer picture of the relationship of the instructional material that he will study to the actual task of hunting submarines.

DEVELOPMENT OF INSTRUCTION ON ADDITIONAL TOPICS IN LAMPS TACTICS. As was described in an earlier section of this report, the original tactical objectives hierarchy identified many areas of instruction that were left undeveloped following the final determination of the scope of the FRS tactical syllabus. If at some future date the scope of this syllabus is changed, the original objectives hierarchy can serve as a starting point, if not the complete framework, for the development of more advanced instruction.

FURTHER DEVELOPMENT OF OTHER INSTRUCTION

COMPREHENSIVE PRACTICE SEGMENTS. The Grim Symptom series is a set of slide/tapes that present a malfunction or emergency and the related corrective action. Because each slide-tape presents only one problem, the practice or review at the end of the lesson does not provide adequate practice in discriminating the symptoms of one malfunction or emergency from another. A summary practice segment is recommended. In this segment, a number of scenarios of symptoms would be given and the student would identify the problem and corrective action for each. This practice would better prepare the student for the related WST flights.

WRITTEN STUDY GUIDE. The SH-2F instructional materials are presented by workbook, slide/tape, videotape, and random access slides. Presently, the student can take the workbook and random access written guides home for review (if they are not classified information). The other media must be reviewed in the learning center by rewatching the entire lesson. To facilitate review, present concise statements of the objective and generality, and provide practice items, it is recommended that a one-page study guide be developed for slide/tape and videotape segments. Written guides would also provide a means of making technical changes quickly and could be checked out just like the workbooks. A prctotype of a study guide is presented in Appendix K.

CONCEPT EXAMPLES AND NON-EXAMPLES. The Work Area instructional materials were originally desired in order to teach the identification of acceptable and unacceptable aircraft conditions. Presently, the instruction only shows examples of acceptable aircraft. The preferred method for teaching a concept is to present matched examples and non-examples. This would require pictures of aircraft or aircraft components with a single alteration highlighting one unacceptable condition. These pictures may be difficult to obtain, but would provide an efficient means to teach the discrimination between acceptable and unacceptable aircraft conditions.

USER'S GUIDE. It is recommended that a user's guide to the SH-2F training materials and course be developed for the students. The guide would be a written statement describing the instructional material and the course organization, and how to use the material to get the most from the course.

STANDARDIZATION OF EVALUATION CRITERIA. The relationship between the PQS standards, the NATOPS exams and the ISD course exams should be reviewed. All three are used to evaluate students, yet the congruence of these tools is undetermined. No data has been gathered regarding the adequacy of the ISD materials in preparing students for NATOPS and PQS exams. If the ISD course evaluations do not match the other two evaluation criteria, there are several options. The first is to alter the ISD material. Because of the methodology used in developing the objectives for these materials, this option is not recommended as the primary means for creating congruence. A second option is to review the appropriateness and importance of content in the NATOPS exams, removing items that measure unimportant facts. A third option would be to add segments of instruction to the ISD material on how and what to study to meet the evaluation criteria of the PQS standards and the NATOPS exams. This would be desirable if, for example, the NATOPS exams are found to cover different content and cannot be altered.

SECTION IV

RESOURCES

PERSONNEL

A summary of mandays expended on the project by personnel category appears in Table 6.

TIME

The contract tasking and phasing chart appears as Figure 3. The phasing of the tasks did not coincide with this plan. In particular, the actual development phase of all tasks took much longer than planned. Consequently the production staff was swamped with work in October and November.

There were several reasons for this extended development phase. One reason was an underestimate by the contractor on how much SME effort was necessary for each task, partially because the revisions and development effort was more extensive than anticipated. Although the SMEs were very knowledgeable, more background research was necessary than initially expected. Also much time was spent in group discussions to reach agreement on format, objectives and content scope. Another reason for the extended development phase was that SMEs changed during the contract, causing a drop in productivity during transition periods. A third reason was that the SMEs' auxiliary duties within the squadron and duties of keeping on current flying status made large blocks of time unavailable for project use. This problem existed at the beginning of the project but was resolved for the second half when the Project Senior SME curtailed most of the additional SME activities. Production increased appreciably at that point.

EQUIPMENT AND FACILITIES

During the course of the project, on-site office space and desks and chairs were necessary for the following Courseware employees: one project director, two instructional technologists, two secretaries, and four artists/production staff. The need for a close working relationship with the Navy SMEs and ISD officers meant that adjacent office space for nine Navy personnel was also necessary. The review and development of classified material required a secure filing cabinet which was supplied by the Navy. Artist and office supplies, a typewriter, and a

TABLE 6. MAN-DAYS EXPENDED FOR SH-2F FOLLOW-ON PROJECT[1]

	PERSONNEL CLASSIFICATION					
	CONTRACTOR				GOVERNMENT[2]	
	IP	IT	SEC	PROD	SSME	SME
TOTAL ACROSS TASKS	67	125	100	180	9	143

[1]Mandays to nearest day expended from March 1, 1978, through December 15, 1978.

[2]Government mandays expended is an underestimate. Mandays reflect time in specific tasks only, not meetings, group revisions, SME discussions, etc.

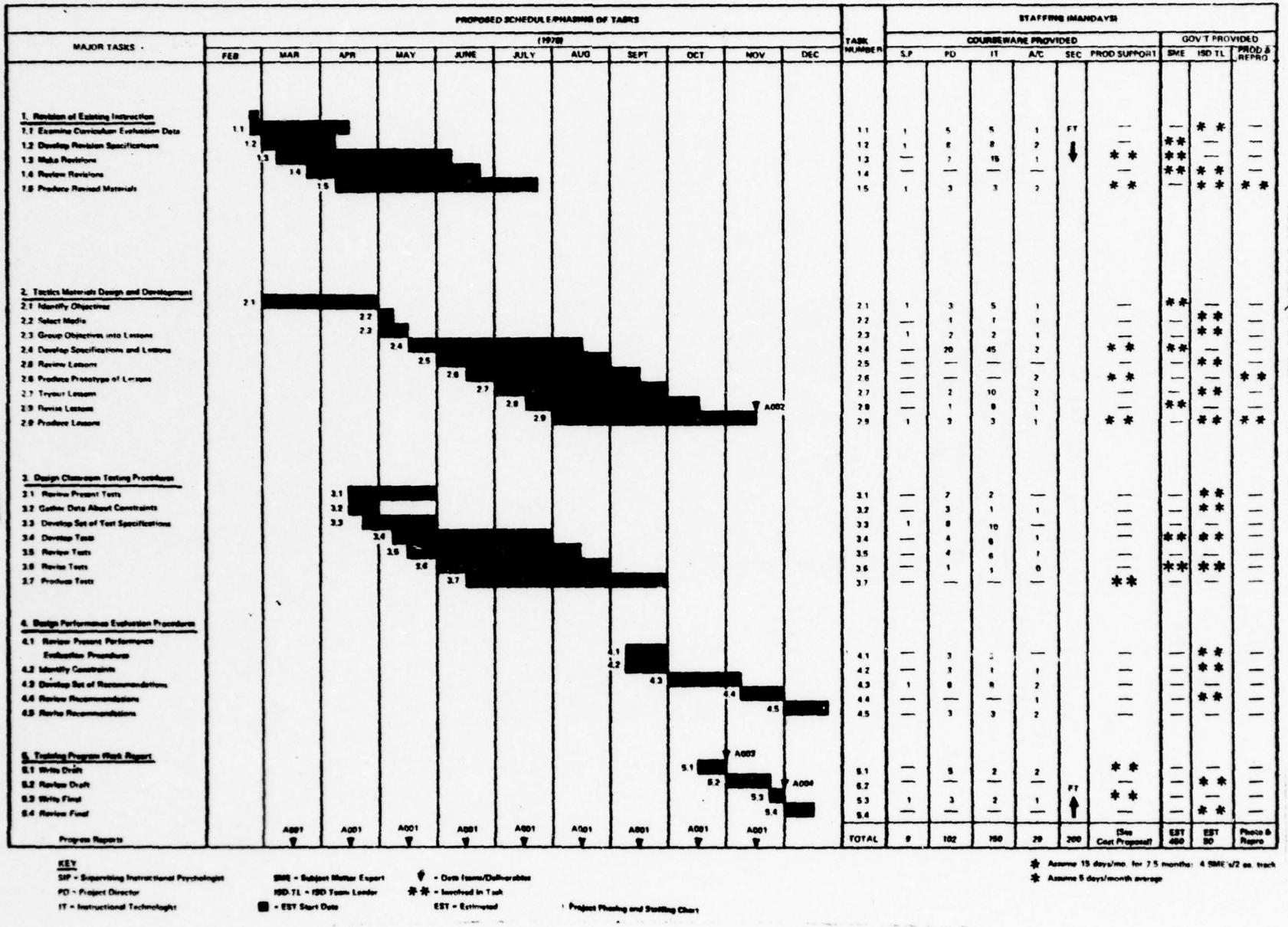


Figure 3. Contract Tasking and Phasing Chart

composer were provided by the contractor. A stat camera at the contractor's home office supplemented a stat camera on base for creating graphics.

LABOR EXPENDED

Table 7 reports on the expenditure of labor and the commitment of funds to perform this effort. This Table has two parts; first dealing with the entire Contract No. N61339-76-C-0055, including all modifications and revisions; second, reports only the status of the modification P00004. This section covers all of the work covered in this report. The content of this Table is current to December, 1978.

TABLE 7. LABOR EXPENDED FOR SH-2F PROJECT

Entire SH-2F Contract, Part I

Total Work-Days Expended 5,564

Modification Number P00004, Part II

Total Work-Days Expended 752

Appendix A

TASK FLOW AND PERSONNEL RESPONSIBILITIES FOR LESSON DEVELOPMENT

TASK FLOW AND PERSONNEL RESPONSIBILITIES FOR LESSON DEVELOPMENT

Tasks

1. Author First Draft
   SME, IT .....
   Discussion with SSME.....
   Discussion with Artist.....
2. Author/Artist Conference.....
3. Develop Art.....
4. Type Draft.....
5. Review, Revise Art and Text Together
   SME.....
   IP.....
   SSME.....
   IT.....
6. Clean up presentation of text and art.....
7. Validation.....
8. Review/Revise
   IT, SME .....
   IP.....
   SSME.....
   IT.....
9. Compose Text.....
10. Paste up Text and Art.....
11. Review Final Product
    SME.....
    SSME.....
    IP.....
    IT.....
12. Delivery.....

TOTAL .....

Description of task flow and personnel responsibilities for each task in lesson development.

1. Author First Draft

SME will meet as necessary with IT and SSME on content and presentation.

SME will meet with artist to discuss possibilities for illustrations that could influence the writing/presentation.

SME will write or tape a draft.
As necessary to clarify the material, the secretary will type individual pages. To reduce time and expense, the drafts should be written as neatly as possible. Initially writing double spaced would help during successive revisions.

IT will review the draft, including illustration requests.

SME and IT will continue to exchange the draft until both are satisfied.

SME will write in where the illustrations will go. Each graphic will be numbered and identified in the text as follows:

FOR TACTICS
The Unit letter and numer, the Lesson number, the Segment number, and, in parentheses, the Figure number. The following example refers to Tactics Unit 1, Lesson 2, Segment 1, Figure 1:

Insert Figure T 1.2.1 (1)

The Figure numbers will be sequencial through the Lesson.

When the text is composed, the figure will be numbered with only the digit(s) in parehtheses, e. g. Figure 1

FOR AIR CREW, SYSTEM FAMILIARIZATION, ETC. the numbering system will not be used in the composed text and will be sequencial for the segment for purposes of validation and paste up.

2. Author/Artist Conference

ARTIST will review SME suggestions, making own recommendations about what illustrations would be effective and requesting information to clarify illustration requests.

SME and Artist will give each proposed illustration a label, if not already labeled by SME.

3. Develop Art

ARTIST will prepare all illustrations.

ARTIST will number each illustration with the same numbering as the SME used.
Artist will also give a label or title to each illustration, as decided upon in Artist/Author Conference.
Artist will xerox original illustrations and file these separately.
The xerox will be put with the written material and sent to the Secretary.

4. Type Draft

SECRETARY will type the entire draft in the appropriate format and xerox one copy.
The original will be filed separately.
The secretary will pencil in editing suggestions on the xerox copy (as time permits). The xerox copy of text and illustrations will be integrated, stapled, and returned to the file.
The file will be sent to the SME for review.

5. Review/Revise Art and Text Together

Each Reviewer should write his comments in pencil on the typed xerox copy of the lesson.

SME should check that typed version is correct, checking for:
missing sentences
words misinterpreted
editing that changed the meaning
appropriate formatting
appropriate illustrations, correctly labeled, congruent with the written text, and complete (i.e., no missing illustrations)

IP should review for:
instructional adequacy
readability/editing

SSME should review for:
appropriateness of content--neither too much nor too little
accuracy of content
readability

NOTE: THE DESCRIPTION OF THE TASK IS NOT MEANT TO BE LIMITING, BUT RATHER HIGHLIGHT THE CRITICAL POINTS DURING THE REVIEW

IT should determine appropriateness of revision suggestions. Decide what action is needed to resolve any differences of opinion (e.g., have group meeting, check NATOPS manual).

Clean up copy to synthesize changes, erasing or whiting-out comments not incorporated.

Check for congruence in formatting across segments/lessons.

Determine how content or format changes made in this segment/ lesson affect other segments.

6. Clean Up Presentation of Text and Art

SECRETARY will take original copy of text and clean it up by retyping or whiting-out or carefully writing in revisions as necessary for validation. The the lesson will be xeroxed, and xerox illustrations inserted after appropriate pages. The xerox of the lesson will be sent to the ISD Division Officer for validation. The original text will be returned to the Secretary's file. The lesson folder will be filed.

7. Validation

ISD Division Officer will conduct the validation, returning each lesson as soon as possible. No originals will go to validation. Production will keep all original illustrations. The Secretary will keep all original text.

8. Review/Revise

IT and SME will look over comments from validation and decide necessary action.

SME will revise material as necessary.

IP
SSME } Reviews revision, if major. Otherwise, no action.
IT

9. Compose Text

SECRETARY will compose text, including labels for illustrations, using validated copy.
Secretary will proof-read composed material

10. Paste up Text and Art

PRODUCTION STAFF will paste up composed text and original art.
The pasted up lesson will be xeroxed and the original returned to the production art file.

11. Review Final Product

The production xerox of the composed lesson will circulate for review.

SME
SSME
IP

Check that illustrations are appropriately placed.
Check that all revisions were correctly incorporated.
Check composed text.
Check formatting and presentation.

IT Final comprehensive review. If no changes are made, the xerox will be sent to the Secretary with a note that the original is ready for delivery. If changes are needed, recycle through steps 9 - 11.

12. Delivery

SECRETARY will prepare cover letter for product delivery of the original pasted-up lesson. The xerox will go into the Courseware file, and the lesson moved to the FINISHED file.

Appendix B

REVISED SYSTEM FAMILIARIZATION LESSONS

REVISED SYSTEM FAMILIARIZATION LESSONS

Landing Gear System
Rescue Hoist System
Rotor Brake System
Windshield Wiper and Washer System
Transmission Oil System
Armament System
Electrical Power Supply System
Engine System
Flight Control System
Caution Lights System
Fuel System
Transmission Drive System
Rotor System
Power Plant Lub System
ASE System
Hydraulic System
Airframe System
Fire Detection and Extinguishing System
Blade Track System
Communication System
Navigation System
Wheel Brake System
Environmental System
Cargo Hook System
Lighting System
Mad System
Engine Fuel Control System

Appendix C

SAMPLE OF NEW SYSTEM FAMILIARIZATION LESSON
RESCUE HOIST SYSTEM

SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM



AUTHOR: LT Bill Kemp

OBJECTIVES

1. Given a control of the Rescue Hoist System, state its location and function.
2. State the sources of power for the Rescue Hoist System.
3. State the operating parameters and safety features of the Rescue Hoist System.

INTRODUCTION

The rescue hoist is mounted above the cabin door, forward of the No. 2 engine. It permits rescue capabilities, personnel transfers, and internal cargo operations.

SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM

GENERALITY

The controls of the Rescue Hoist System include: a hoist power switch, hoist up-down switches, manually operated up-down switch, cable cut/sling drop power switch, and a drop button.

HOIST POWER SWITCH is located on the hoist and hook panel on the cockpit overhead console. Electrical control power is provided by the 28-volt D.C. primary bus. When the hoist power switch is in the "armed" position, the hydraulic lines to the hoist motor are pressurized by the Hydraulic Power Supply System.

HOIST UP-DOWN SWITCHES (2) are located on the pilot's cyclic grip stick and on the hoist operator's grip in the cabin. Actuation of either switch controls the direction of the flow of hydraulic fluid to the hoist motor which will retract or extend the hoist cable. The electrical circuits are arranged to allow the pilot's switch to override the hoist operator's switch.

MANUALLY OPERATED HOIST UP-DOWN SWITCH is located on the starboard cabin bulkhead aft of the rescue door. It allows for operation of the hoist if an electrical failure occurs.

CABLE CUT/SLING DROP POWER SWITCH is located on the hoist and hook panel on the cockpit overhead. It energizes the cable cut/cargo hook drop button.

DROP BUTTON is located on the pilot's collective box. When energized and pressed, it will cause a cable cutter cartridge to fire and sever the cable near the hoist cable drum.

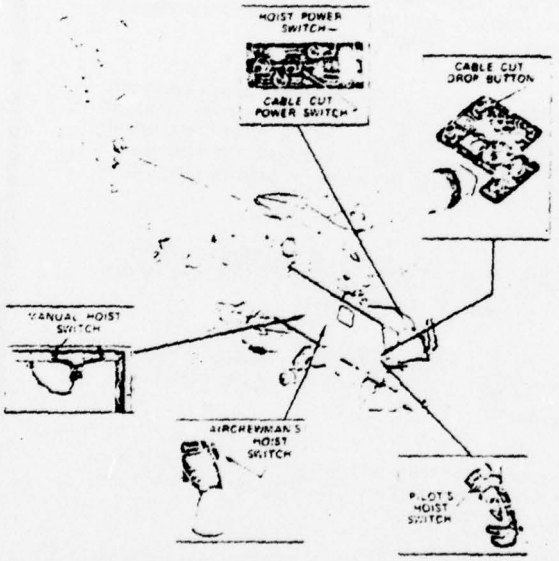
The hoist drum contains 100 feet of cable. The last 15 feet of the cable are painted red for a visual warning of maximum cable extension. The hoist operates at 100 fpm (feet per minute) in either direction. An automatic spring-loaded brake prevents the cable from unwinding in the event of hydraulic failure. Up and down limit switches stop the hoist at both extremities of travel when electrical control is being used.

SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM

HELP

If you need help locating the controls of the Rescue Hoist System, study the diagram below.



SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM

HELP

If you need help stating the function of the Rescue Hoist controls, study the table below.

	CONTROL	FUNCTION
1.	Hoist Power Switch	Arms the system with hydraulic fluid.
2.	Pilot's Hoist Up-Down Switch	Permits the pilot to control the up-down electrical hoist operations.
3.	Hoist Operator's Hoist Up-Down Switch	Permits Rescue Crewmen to control up-down electrical hoist operations.
4.	Manual Hoist Up-Down Switch	Permits manual up-down hoist operations if electrical failure occurs.
5.	Cable Cut/Sling Drop Power Switch	Arms the cable cut feature.
6.	Cable Cut Drop Button	Fires cable cut cartridge when armed.

SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM

HELP

If you need help remembering the sources of power, the operating parameters or the safety features of the Rescue Hoist System, study the table below.

POWER		SOURCE
Hoist Control Power	———	28v Primary D.C.
Hoist Cable Power	———	Hydraulic Fluid

COMPONENT		PARAMETER
Hoist Cable Length	———	100 feet
Hoist Cable Speed	———	100 fpm

SAFETY FEATURES

1. Automatic Spring Loaded Brake
2. Red paint on last 15 feet of cable
3. Automatic limit switches when electrically controlled

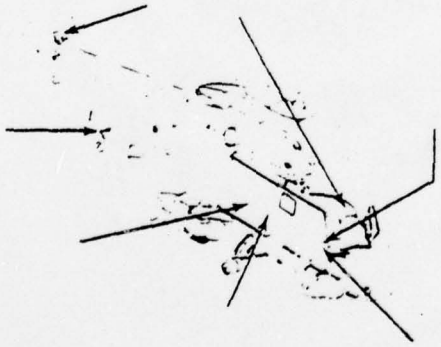
SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM

PRACTICE

On the diagram below, find and label the following controls:

1. Cable Cut Drop Button
2. Pilot's Hoist Switch
3. Hoist Power Switch
4. Cable Cut Power Switch
5. Aircrewman's Hoist Switch
6. Manual Hoist Switch



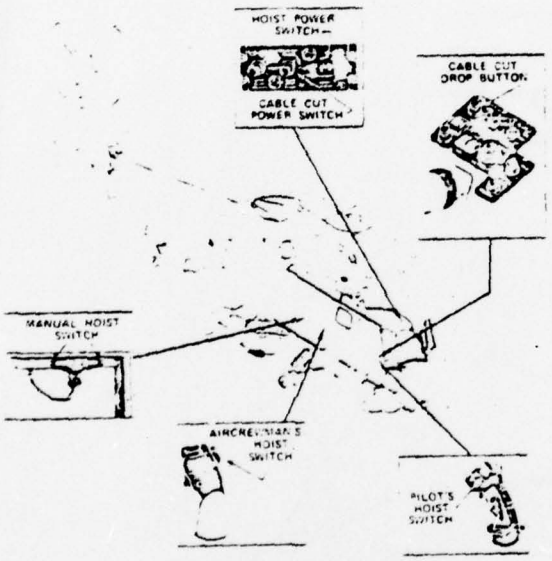
DO NOT WRITE IN THIS WORKBOOK

SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM

FEEDBACK

The location of the listed controls are indicated below.



SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM

PRACTICE

Match the Rescue Hoist System control with its function.

CONTROL	FUNCTION
_____1.	Fires cable cut cartridge when armed.
_____2.	Arms the cable cut feature.
_____3.	Permits rescue crewman to manually control up-down hoist operation.
_____4.	Permits rescue crewman to electrically control up-down hoist operation.
_____5.	Permits pilot to control up-down hoist operation.
_____6.	Arms system with hydraulic fluid.

CONTROL

A. Manually Operated Hoist Up-Down Switch
B. Hoist Operator's Hoist Up-Down Switch
C. Cable Cut/Sling Drop Power Switch
D. Pilot's Hoist Up-Down Switch
E. Hoist Power Switch
F. Cable Cut/Drop Button

DO NOT WRITE IN THIS WORKBOOK

SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM

FEEDBACK

ANSWER	CONTROL	FUNCTION
F	1. Cable Cut/Drop Button	Fires cable cut cartridge when armed.
C	2. Cable Cut/Sling Drop Power Switch	Arms the cable cut feature.
A	3. Manually Operated Hoist Up-Down Switch	Permits manual up-down hoist operations.
B	4. Hoist Operator's Hoist Up-Down Switch	Permits rescue crewman to control up-down hoist operations.
D	5. Pilot's Hoist Up-Down Switch	Permits pilot to control up-down hoist operations.
E	6. Hoist Power Switch	Arms systems with hydraulic fluid.

SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM

PRACTICE

State the operating parameters, safety features and power source of the Rescue Hoist System by filling in the blanks with the correct answer.

1. The hoist drum contains _____ feet of cable.

2. Electrical power for the hoist controls is _____

3. _____ prevents the cable from unwinding in the event of hydraulic failure.

4. The last _____ feet of cable are painted red.

5. The hoist operates at _____ fpm going down and at _____ fpm going up.

6. The hoist drum utilizes _____ power.

7. Automatic limit switches stop the hoist at both extremities of travel when _____ controlled.

DO NOT WRITE IN THIS WORKBOOK

SYSTEM FAMILIARIZATION WORKBOOK

RESCUE HOIST SYSTEM

FEEDBACK

The Rescue Hoist System parameters, safety features and power sources are listed below.

1. The hoist drum contains 100 feet of cable.
2. Electrical power for the hoist controls is 28v D.C.
3. Automatic brake prevents the cable from unwinding in the event of hydraulic failure.
4. The last 15 feet of cable are painted red.
5. The hoist operates at 100 fpm going down and at 100 fpm going up.
6. The hoist drum utilizes hydraulic power.
7. Automatic limit switches stop the hoist at both extremities of travel when electrically controlled.

Appendix D

REVISION SPECIFICATION SHEET

REVISION SPECIFICATION

SEGMENT TITLE/ISD NO. MEDIUM DATE

INSTRUCTIONAL REVIEWER TECHNICAL REVIEWER

INSTRUCTIONAL PROBLEMS:

_____Objective Inadequate
_____Objective & Generality do not Agree
_____Generality Inadequate
_____Generality & Help do not Agree
_____Help Inadequate
_____Examples/Practice Needed
_____Graphics Inadequate/Needed
_____ _____

TECHNICAL PROBLEMS -Change Needed Due To:

_____ Airframe Change
_____ Operating Change
_____ Technical Errors
_____ _____

COMMENTS - INSTRUCTIONAL

COMMENTS - TECHNICAL

Appendix E

PILOT SEGMENTS IDENTIFIED FOR REVISION BUT NOT REVISED

PILOT SEGMENTS IDENTIFIED FOR REVISION BUT NOT REVISED

Number and Title		Status
FI-1.1.1	Instrument Takeoff	Deletion Recommended[1]
F-1.1.3	VMC Recovery to Land	Deletion Recommended
F-2.2.6	Power to Hover	Specifications Completed[2]
F-2.2.5	Max Power From One Engine	Specifications Completed
F-2.2.1	Secured Engine Restart	Specifications Completed
F-3.3.5	Recovery w/ Loss of Tail Rotor Control	Specifications Completed
F-3.3.2	Determining Auto Rotation Type	Specifications Completed
F-5.2.5	Single Engine Water Takeoff	Specifications Completed
F-5.2.3	Internal Aircraft Fire Likelihood	Deletion Recommended
F-6.5.7	Max Wind for Starting/ Stopping Rotors	Held for NATOPS Changes
F-6.4.2	Inspection Areas	Specifications Completed
F-6.4.1	Work Areas 1-8	Specifications Completed
F-6.2.1	Yellow Sheet	Deletion Recommended
U-1.3.2	Pre-HIFR Checklist	Deleted by Navy ISD Division Officer
U-3.3.3	Wind Effects	Revision Effort Determined Unnecessary by Navy ISD Division Officer
S-1.3.8	Normal Shipboard Takeoff	Revision Effort Determined Unnecessary by Navy ISD Division Officer
S-1.3.7	Aviation Facilities Ship's Resume	Specifications Completed
S-1.3.4	Shipboard Landing Feasibility	Specifications Completed
S-1.2.4	TACAN Approach to a Ship	Revisions Completed by Navy ISD Personnel
S-1.2.1	Low Visual Approach	Specifications Completed
S-1.1.5	Ship's Response to Aircraft Malfunction	Specifications Completed
S-1.1.4	Landing w/ Extended AKT-22 Ant.	Deletion Recommended
S-3.1.2	Instrument takeoff From Ship	Deletion Recommended
F-2.7.2	Power Oscillation	Specifications Completed
F-2.7.1	Engine Flameout	Specifications Completed

[1]Deletion from syllabus recommended by the Project Senior SME
[2]Rough revision specifications were completed by Courseware IT and Navy SME

Appendix F

REVISED PILOT SEGMENTS

REVISED PILOT SEGMENTS

F-2.7.6	Loss of Nf Signal
F-5.3.2	Tail Wheel Lock Failure
F-5.4.1	Decaying Nr/Nf/F
F-6.2.3	Rustlick
F-6.5.2	Gross Weight
F-6.5.7	Max Wind for Starting/Stopping Rotors
U-1.3.4	Calculating HIFR Fuel
U-1.7.1	Submarine Transfer Procedure
S-1.2.3	UHF/ADF Approach
S-1.2.5	Precision Radar Approach to a Ship

Appendix G

REVISED AIRCREWMAN SEGMENTS

REVISED AIRCREWMAN SEGMENTS

10.1.2	Turnaround Yellow Sheet Entries
10.1.2	Turnaround Daily Inspection
10.2.2	Gravity Fueling
10.2.3	Pressure Fueling
10.2.5	Defueling
10.2.6	Oil System Servicing
10.2.7	Hydraulic System Servicing
11.2.1	Tiedown Requirements
20.1.1	Visual Contact Reporting
20.2.1	Before Landing Checklist
20.2.2	Engine Topping
20.2.5	Sensor Operator's Post Flight Checklist
20.3.10	Emergency Ground Secure
20.3.11	Manual Diverter Valve
20.5.3	Search and Rescue Equipment (Slidetape)
20.5.4	Cargo Hook Emergency Release Hook
20.6.5	NATOPS Manual
30.3.1	Jammed Hoist
31.1.1	Emergency HIFR Breakaway
33.2.4	Double Hookup
40.1.1	Kilo Code
40.1.5	Ordnance Inspection
50.2.4	ASQ-81(V) Altitude Compensation Procedures
51.2.1	MAD Rule
51.2.4	Smoke Release
51.3.1	Time on Top by Range Ring Method
60.2.5	Mod Ops Noise Level
60.3.1	Transmission of Passive and Active Sonar Data on the AKT-22
61.1.2	Determining Speed of a Contact
62.1.2	Percentages of Attenuation
91.1.10	Marine Location Markers MK-53 MOD 0
(no #)	Radar Self-Contained Approach

Appendix H

ORIGINAL WORKING COPY OF

TASK ANALYSIS OF THE LAMPS

AIR TACTICAL OFFICER'S DUTIES

TASK ANALYSIS
ASW

1. Mission Planning

1.1 Determine/Request Data Required

1.1.1 Request Intelligence Data

1.1.1.1 Request Contact Type
1.1.1.2 Request Contact History
1.1.1.3 Request Contact Acoustic Signature
1.1.1.4 Request Disposition of Other Hostile Forces
1.1.1.5 Request Datum Size, Age & Source
1.1.1.6 Request Disposition of Neutral Forces

1.1.2 Request ASWEPS

1.1.3 Request Operations Order/Pre-Exercise

1.1.3.1 Request EMCON Plan
1.1.3.2 Request Communication Plan
1.1.3.3 Request Task Force Organization (OTC/SAC/SAU Respy's.)
1.1.3.4 Request Disposition of Friendly Forces
1.1.3.5 Request Sonobuoy Allocation
1.1.3.6 Request Safety Information
1.1.3.7 Request Task Force Mission

1.1.4 Request Equipment Status

1.1.4.1 Request Equipment Status - Ship

1.1.4.2 Request Equipment Status - Aircraft

1.1.5 Request Current & Forecast Weather

1.1.6 Request Bottom Topography & Geography Maps

1.1.7 Request Wreck Log

1.1.8 Request Communication Security Devices

1.1.9 Request Data From Previous Flights

1. Mission Planning

1.2 Interpret Tactical Data

1.2.1 Interpret Environmental Data

1.2.1.1 Interpret ASWEPS Data

1.2.1.1.1 Int. Non Accoustic Data

1.2.1.1.1.1 Int. ASW Prediction Area Chart
1.2.1.1.1.2 Int. Date/Time Group
1.2.1.1.1.3 Int. Bottom Topography Map
1.2.1.1.1.4 Int. Nave Height/Sea State
1.2.1.1.1.5 Int. Alpha Index

1.2.1.1.2 Int. Accoustic Data

1.2.1.1.2.1 Int. BT Profile
1.2.1.1.2.2 Int. Temperature Gradient
1.2.1.1.2.3 Int. Layer Depth
1.2.1.1.2.4 Int. SOVEL Data
1.2.1.1.2.5 Int. DR/DX
1.2.1.1.2.6 Int. Propagation Loss Profile
1.2.1.1.2.7 Int. SSQ-47 Range Prediction

1.2.1.2 Interpret Existing & Forecast WX Briefing Data

1.2.1.2.1 Interpret Ceiling Data

1.2.1.2.2 Interpret Temp./Density Alt.

1.2.1.2.3 Interpret Wind

1.2.1.2.4 Interpret Visibility

1.2.1.2.5 Interpret Sea State

1.2.2 Interpert Intel Data

1.2.2.1 Interpret Intel. Data Friendly Forces

1.2.2.1.1 Interpret Effect of Identity of Friendly Forces on Mission

1.2.2.1.1.1 Interpret Intel. Data Friendly Forces to determine identity

1.2.2.1.2 Interpret Intel. Data on Friendly Force Disposition to Determine Effect on Mission

1.2.2.1.2.1 Interpret Intel. Data on Friendly Forces to Determine Disposition

1.2.2.2 Interpret Intel. Data Enemy Forces

1.2.2.2.1 Interpret Effect of Identity of Enemy Forces on Mission

1.2.2.2.1.1 Interpret Intel. Data Enemy Forces to determine Identity

1.2.2.2.2 Interpret Intel. Data on Enemy Forces Disposition to Determine Effect on Mission

1.2.2.2.2.1 Interpret Intel. Data on Enemy Forces to Determine Disposition

1.2.3 Interpret Mission Constraints Data

1.2.3.1 Interpret OP ORDER

1.2.3.1.1 Determine Task Force Mission

1.2.3.1.2 Interpret EMCON Plan

1.2.3.1.3 Interpret Comm. Plan/TFO/NETS (Lost Comm. Plan)

1.2.3.1.4 Interpret Sonobuoy Allocations

1.2.3.1.5 Interpret Attack Criteria

1.2.3.1.6 Interpret Safety Restrictions

1.2.3.2 Interpret Equipment Status Report

1.2.3.2.1 Int. Own Equipment Status From Maintenance

1.2.3.2.2 Int. Ships Equipment Status From Bridge

1. Mission Planning

1.3 Analyze Data to Determine Tactical Scenario

1.3.1 Given Probable Identity of Target, Determine Characteristics & Mission

1.3.1.1 Evaluate Submarine Type

1.3.1.1.1 Determine General Construction

1.3.1.1.1.1 Determine Main Propulsion

1.3.1.1.1.2 Determine Aux Machine

1.3.1.1.2 Determine Potential Detection Sources

1.3.1.1.2.1 Determine Accoustic Signature

1.3.1.1.2.2 Determine Magnetic Moments

1.3.1.1.2.3 Determine if Anechoic Coating

1.3.1.1.2.4 Determine Sonar Characteristic

1.3.1.1.2.5 Determine Radar Characteristic

1.3.1.1.2.6 Determine Visual Recognition Characteristic

1.3.1.1.3 Determine Target Sensor Capability

1.3.1.1.3.1 Determine Sonar Capability

1.3.1.1.3.1.1 Determine Sonar Capability (Active)

1.3.1.1.3.1.2 Determine Sonar Capability (Passive)

1.3.1.1.3.2 Determine Target Radar Capability

1.3.1.1.3.3 Determine Target ESM Capability

1.3.1.1.3.4 Determine Target Visual Capability

1.3.1.1.4 Determine Target Weapons Capability

1.3.1.1.4.1 Determine Target Weapons Capability, Torpedo

1.3.1.1.4.2 Determine Target Weapons Capability, Mines

1.3.1.1.4.3 Determine Target Weapons Capability, Missiles

1.3.1.1.4.3.1 Determine Target Weapons Capability, Cruise Missiles

1.3.1.1.4.3.2 Determine Target Weapons Capability, Ballistic Missiles

1.3.1.1.4.3.3 Determine Time And Operating Parameters Needed to Launch

1.3.1.1.5 Determine Target Operating Parameters

1.3.1.1.5.1 Determine Targets Depth(s) Limitations

1.3.1.1.5.2 Determine Targets Speed Limitations

1.3.1.1.5.3 Determine Targets Endurance Limitations

1.3.1.1.5.4 Determine Targets Mission Duration.

1.3.1.2 Determine Contact's Probable Mission

1.3.1.2.1 Match Submarine Type to Probable Missions

1.3.1.2.2 Determine/Evaluate Contacts Last Reported Location, and Environment in the Area

1.3.1.2.2.1 Determine Bottom Topography

1.3.1.2.2.2 Evaluate Area Geography

1.3.1.2.3 Evaluate Political Situation

1.3.1.2.4 Determine Ships/Installations in Area

1.3.1.2.5 Evaluate Intel. on Other Hostile Units in Area

1.3.1.2.5.1 Determine Source of Intel. on Hostile Units in Area

1.3.1.2.5.2 Determine Potential for Coordinating Operations with Other Hostiles in Area

1.3.2 Analyze Data to Determine Passive Capability

1.3.2.1 Determine Sources of Masking Sound

1.3.2.2 Determine Figure of Merit

1.3.2.3 Construct PLP

1.3.2.4 Determine MDR

1.3.2.5 Determine CZ Potential

1.3.2.6 Determine Passive S/B Depth Selection

1.3.2.6.1 Determine Submarines Best Depth

1.3.2.6.1.1 Determine Laver Depth

1.3.2.6.1.2 Determine Gradient

1.3.2.6.1.3 Determine Submarines Probable Mission Profile & Evasion Tactics

1.3.2.6.2 Evaluate Target-Receiver Geometry

1.3.2.7 Evaluate Data Link Capability and Range
1.3.2.7.1 Evaluate Equipment Coordinated Operations
1.3.2.7.2 Evaluate Maximum Range to Altitude
1.3.2.7.3 Evaluate Effect on Other Sensors
1.3.3 Analyze Data to Determine Active S/B Capability

1.3.3.1 Determine PRD

1.3.3.2 Determine Active S/B Depth Selection

1.3.3.2.1 Determine Submarines Best Depths

1.3.3.2.1.1 Determine Layer Depth

1.3.3.2.1.2 Determine Submarines Probable Mission & Evasion Tactics

1.3.3.2.2 Evaluate Target Receiver Geometry

1.3.3.3 Evaluate Data Link Capability and Range

1.3.4 Evaluate Non-Accoustic Capability

1.3.4.1 Evaluate MAD Capability

1.3.4.1.1 Evaluate Equipment Status

1.3.4.1.2 Evaluate Alpha Index

1.3.4.1.3 Evaluate EMCON Restrictions

1.3.4.1.4 Evaluate MAD Parameters

1.3.4.1.4.1 Determine Slant Range

1.3.4.1.4.2 Determine Sweep Width

1.3.4.1.5 Evaluate Effect of Other Sensors on Use of MAD

1.3.4.1.6 Evaluate Target's Tactics to Avoit/Break Contacts

1.3.4.2 Evaluate Radar Capability

1.3.4.2.1 Evaluate Equipment Status

1.3.4.2.2 Evaluate Radar Ducting Potential

1.3.4.2.3 Evaluate EMCON Restrictions

1.3.4.2.4 Determine Search Alt- & Radar Control Parameters

1.3.4.2.4.1 Evaluate Target Size

1.3.4.2.4.2 Evaluate Sea State

1.3.4.2.4.3 Evaluate Counter Detection Range

1.3.4.2.4.4 Evaluate Effect of Other Sensors on Radar Use

1.3.4.2.5 Evaluate Target's Tactics to Avoid/Break Contact

1.3.4.3 Evaluate ESM Capability

1.3.4.3.1 Evaluate Equipment Status

1.3.4.3.2 Evaluate Equipment Capability Against Threats

1.3.4.3.3 Evaluate Effect of Other Sensors on ESM Use

1.3.4.3.4 Evaluate Effect of Friendly Forces on ESM Use

1.3.4.4 Evaluate Visual Search Capability

1.3.4.4.1 Determine Visual Search Range

1.3.4.4.1.1 Determine Prevailing Ceiling & Visibility

1.3.4.4.1.2 Determine Target Size

1.3.4.4.1.3 Determine Sea State

1.3.4.4.2 Determine Available Visual Aids

1.3.4.4.3 Evaluate Targets Tactics to Avoid/Break Contact

1. Mission Planning

1.4 Given a Mission Assignment, Make Initital Determination of Tactics

1.4.1 Given SEARCH Mission, Make Initital Det. of Tactics

1.4.1.1 Determine DATUM Size, Source & Time Late

1.4.1.2 Determine Need for Covertness

1.4.1.2.1 Evaluate Sub's Mission & Evasion Tactics

1.4.1.2.2 Update Information on TF Mission & Sensor Restrictions

1.4.1.2.3 Evaluate Equipment Status & Sensor Capability

1.4.1.2.4 Evaluate Need & Capability for Freindly Assistance (SSN Direct Support/LAVA/Weapons/ Dual LAMPS/S-3/P-3/H-3)

1.4.1.3 Deterime Area of Probability

1.4.1.3.1 Determine FOC

1.4.1.3.2 Determine Threat Bearing

1.4.1.3.3 Determine L.L. of A/TDZ

1.4.1.3.4 Determine Effects of Bottom Topography & Area Geography

1.4.1.3.5 Determine Effects of Friendly Forces

1.4.1.3.6 Determine Effects of Hostile Forces

1.4.1.3.7 Determine Effects of Sources of Masking

1.4.1.4 Given EMCON, Make Initial Sensor Selection

1.4.1.5 Make Pattern Selection Using Lamps Matrix Table

1.4.1.5.1 Match Tac. Data with Criteria for Pattern Use

1.4.1.5.2 Determine How to Lay Pattern & Time Involved

1.4.1.5.3 Determine Potential for Follow-On

1.4.1.6 Determine If Attack Criteria Can be Met

1.4.2 Given a Localization Mission, Make Initial Determination of Tactics

1.4.2.1 Determine Datum Size, Source & Time Late

1.4.2.2 Determine Need for Covertness

1.4.2.2.1 Evaluate Sub's Mission & Evasion Tactics

1.4.2.2.2 Update Information on TF Mission & Sensor Restrictions

1.4.2.2.3 Evaluate Equipment Status & Sensor Capability

1.4.2.2.4 Evaluate Need & Capability for Friendly Assistance (Weapons Systems/LAVA/SSNDS/ Dual LAMPS/S-3/P-3/H-3)

1.4.2.3 Determine AOP

1.4.2.3.1 Evaluate Information From Existing Sensors

1.4.2.3.2 Determine FOC

1.4.2.3.3 Determine Threat Bearing

1.4.2.3.4 Determine LLA & TDZ

1.4.2.3.5 Determine Effect of Bottom Topography & Area Geography

1.4.2.3.6 Determine Effect of Friendly Forces

1.4.2.3.7 Determine Effect of Hostile Forces

1.4.2.3.8 Determine Sources of Masking Sound

1.4.2.4 Evaluate Status of Existing Sensors

1.4.2.5 Make Own Initial Sensor Selection

1.4.2.6 Make Pattern Selection

1.4.2.6.1 Match Tactical Data with Criteria for Pattern Use

1.4.2.6.2 Determine How to Lay Pattern and Time Involved

1.4.2.6.3 Determine Potential for Follow-On Tactics

1.4.2.7 Determine if Attack Criteria Can be Met

1.4.3 Given a Tracking Mission, Make Initial Determination of Tactics

1.4.3.1 Evaluate Datum Source, Size & Time Late

1.4.3.2 Evaluate Information From & Status of Existing Sensors

1.4.3.3 Determine Need for Covertness

1.4.3.3.1 Evaluate Sub's Mission & Evasion Tactics

1.4.3.3.2 Update Information on TF Mission and Sensor Restrictions

1.4.3.3.3 Evaluate Equipment Status & Sensor Capability

1.4.3.3.4 Evaluate Need & Capability for Friendly Assistance (Weapons/LAVA/SSNDS/Dual LAMPS/ H-3/S-3/P-3)

1.4.3.4 Make Sensor Selection

1.4.3.5 Make Pattern Selection

1.4.3.5.1 Match Tac Data with Criteria for Pattern Use

1.4.3.5.2 Determine How to Lay Pattern & Time Involved

1.4.3.5.3 Determine Potential for Follow-On Tactics

1.4.3.6 Determine if Attack Criteria Can be Met

1.4.4 Given an ATTACK Mission, Make Weapon Parameters Selection

1.4.4.1 Determine Source, size, and time late of fix

1.4.4.2 Determine Controlling Authority

1.4.4.3 Evaluate Methods of Making Attack

1.4.4.3.1 Coordinated Attacks

1.4.4.3.2 Independent Attacks

1.4.4.4 Determine Requirements for Evaluating Attack

1. Mission Planning

1.5 Develop Data PKGS for Various Involved Parties

1.5.1 Determine Who Needs Data Package

1.5.1.1 Determine Other Units Involved

1.5.1.2 Evaluate Capability to Assist of Other Units Involved

1.5.2 Develop Data Package for DET (Maintenance & Flt. Crew)

1.5.3 Develop Data Package for BRIDGE

1.5.4 Develop Data Package CIC

1.5.5 Develop Data Package for OTC

1.5.6 Develop Data Package for Other Involved Units

1.6 Determine Navigation Requirements to Lay Initial Pattern (Operational Radius & MK-6)

1.7 Evaluate Planning Based on Real-Time Information and Revise Plan as Necessary.

1.8 Disseminate Data Packages

2. Conduct Brief

2.1 Conduct Safety of Flight Brief IAW NATOPS

2.2 Conduct Mission Brief

2.2.1 Describe Tactical Scenario & Force Dispositions

2.2.2 Describe Sensor-Employment Plan

2.2.2.1 Describe Equipment Configuration Requirements

2.2.2.2 Describe Equipment-Related Required Communications

2.2.2.3 Describe Equipment Pre-Use Set-Up Requirements

2.2.2.4 Describe EMCON Restrictions

2.2.3 Describe Target Operating Parameters

2.2.4 Describe Communications Plan

2.2.4.1 Describe Frequencies

2.2.4.2 Describe Call Signs

2.2.4.3 Describe Nets

2.2.5 Identify Aids to be Used

2.2.6 Describe Environmental Conditions

2.2.7 Describe Crew Coordination Plan

2.2.7.1 Describe Ordnance Dispensing Plan

2.2.7.2 Describe SENSO Log Requirements

2.2.7.3 Describe ATO Log Requirements

2.2.7.4 Describe Crew Responsibilities During Attack

2.2.7.5 Describe Crew Coordination while Monitoring Sensors

2.2.8 Describe Visual Search Plan

5. Enroute

5.1 Perform Pre-Use Equipment Set-Up Checks

5.2 Make Equipment Status Report

5.3 Navigate to Station Area

5.4 Monitor Existing Sensors

5.5 Update/Revise Mission Plan

6. On-Station

6.1 Notify Controlling Authority of Arrival on Station

6.2 Lay Initial Pattern

6.2.1 Notify Controlling Authroity of Sonobuoy Drop

6.2.2 Monitor Information From Sensors

6.2.3 Fly Pattern and Activate Sensors

6.3 Monitor Sensors Until Contact is Generated

6.4 Determine Validity of Contact & Verify Type

6.4.1 Determine Classification of Contact

6.5 Notify Controlling Authority of Contact

6.5.1 Encrypt/Decrypt Messages and Authenticate Radio Comms.

6.6 Determine Follow-On Tactic

6.6.1 Determine Sensor in Contact

6.6.2 Determine AOP

6.6.2.1 Evaluate Passive Sonobuoy Contact

6.6.2.1.1 Evaluate Passive Sonobuoy Contact Using CLF Method

6.6.2.1.2 Evaluate Passive Sonobuoy Contact Using HLF Method

6.6.2.1.3 Evaluate Passive Sonobuoy Contact Using CPA/DSF Method

6.6.2.1.4 Evaluate Passive Sonobuoy Contact Using Areas of low Probability Based on No Buoy Contact

6.6.2.1.5 Compare Passive Sonobuoy Data with Data from Other Sensors

6.6.2.2 Evaluate Active Sonobuoy Contact

6.6.2.2.1 Evaluate Active Sonobuoy Contact by Plotting Sonobuoy Ranges

6.6.2.2.2 Evaluate Active Sonobuoy Contact Using Areas of low Probability Based on No Buoy Contact

6.6.2.2.3 Compare Active Sonobuoy Data With Data From Other Sensors

6.6.2.3 Evaluate MAD Contact

6.6.2.3.1 Evaluate MAD Contact Validity

6.6.2.3.2 Plot MAD Contact

6.6.2.3.3 Compare MAD Data With Data From Other Sensors

6.6.2.4 Evaluate Radar Contact

6.6.2.4.1 Evaluate Radar Contact Validity

6.6.2.4.2 Plot Radar Contact

6.6.2.4.3 Compare Radar Contact With Other Sensor Data

6.6.2.5 Evaluate ESM Contact

6.6.2.5.1 Evaluate ESM Contact Validity

6.6.2.5.2 Plot ESM LOB

6.6.2.5.3 Compare With Data From Other Sensors

6.6.2.5.4 Plot Additional ESM LOB's

6.6.2.6 Evaluate Visual Contact

6.6.2.6.1 Evaluate Visual Contact Validity

6.6.2.6.2 Plot Visual Contact

6.6.2.6.3 Compare Visual Contact with Data From Sensors

6.6.2.7 Notify Controlling Authority of AOP

6.6.3 Revise Probable TGT Track With Changes in Tactical Scenario

6.6.4 Determine & Plot Fix Ambiguity and Size

6.6.5 Determine Need for Covertness

6.6.5.1 Evaluate Aircraft Mission & Restrictions

6.6.5.2 Evaluate Submarines Probable Mission

6.6.6 Determine Sensors to be Used For Follow-On Tactic

6.6.7 Determine Placement of Follow-On Sensors

6.7 Carry Out Follow-On Tactic

6.7.1 Plot Initial Pattern

6.7.2 Plot Desire Position for Follow-On Sensor Use

6.7.3 Determine Navigation Required from Known Position in Initial Pattern

6.7.3.1 Use PT-429 to Determine Navigation Requirements

6.7.4 Position Aircraft at Known Position

6.7.5 Fly Aircraft to Follow-On Sensor Placement Position

6.7.6 Employ Follow-On Sensor

6.7.7 Notify Controlling Authority

6.8 Determine Remaining Time Available on Station

6.9 Complete Aircraft Mission

6.9.1 Track or Attack Contact

6.9.1.1 Determine and Employ Follow-On Tactics of Tracking

6.9.1.2 When Attack Criteria Are Met, Attack IAW TACAID
6.9.1.2.1 Specify Attack Criteria
6.9.1.2.2 Specify Attack Procedure from any Sensor

6.9.2 Determine Navigation Required to Return to Base

6.9.3 If Necessary Make Swap Report

7. Return

7.1 Fly Aircraft to Departure Point

7.2 Navigate to Base

7.2.1 Navigate to Base Using Little Joe

7.3 Make Off-Station Report

7.4 Advise Controlling Authority/OTC of Mission Status

7.5 Collect/Collate Reconstruction Data

TASK ANALYSIS

ASMD

1. Mission Planning

1.1 Determine/Request Data Required

1.1.1 Request Intelligence Data

1.1.1.1 Request Contact Type

1.1.1.2 Request Contact History

1.1.1.3 Request Contact Acoustic Signature

1.1.1.4 Request Disposition of Other Hostile Forces

1.1.1.5 Request Datum Size, Age & Source

1.1.1.6 Request Disposition of Neutral Forces

1.1.1.7 Request Contact Emitter Characteristics and Associated Weapons Systems

1.1.2 Request Environmental Data

1.1.2.1 Request Current & Forecast Weather

1.1.2.2 Request Radar Ducting & Altitude from Inversion Forecast

1.1.2.3 Request Sea State

1.1.3 Request Operations Order/Pre-Exercise Message

1.1.3.1 Request EMCON Plan

1.1.3.2 Request Communication Plan

1.1.3.3 Request Task Force Organization

ASMD

1.1.3.4 Request Disposition of Friendly Forces

1.1.3.5 Request Sonobuoy Allocation

1.1.3.6 Request Safety Information

1.1.3.7 Request Task Force Mission

1.1.4 Request Equipment Status

1.1.4.1 Request Equipment Status - Ship

1.1.4.2 Request Equipment Status - Aircraft

1.1.5 Request Area Geography Maps

1.1.6 Request Communication Security Devices

1.1.7 Request Data From Previous Flights

ASMD

1. Mission Planning

1.2 Interpret Tactical Data

1.2.1 Interpret Environmental Data

1.2.1.1 Interpret Existing & Forecast Weather Briefing Data

1.2.1.1.1 Interpret Ceiling Data

1.2.1.1.2 Interpret Temp./Density Alt./Temp. Gradient

1.2.1.1.3 Interpret Wind

1.2.1.1.4 Interpret Visibility

1.2.1.1.5 Interpret Sea State

1.2.1.2 Interpret Radar Ducting & Altitude from Inversion Forecast

1.2.1.2.1 Define Conditions for & Types of Radar Ducting

1.2.1.2.2 Determine Optimum Altitude to use Radar Ducting

1.2.2 Interpret Intelligence Data

1.2.2.1 Interpret Intelligence Data Friendly Forces

1.2.2.1.1 Interpret Effect of Identity of Friendly Forces, on Mission

1.2.2.1.1.1 Interpret Intel. Data Friendly Forces to Determine Identity

1.2.2.1.2 Interpret Intel. Data on Friendly Force Disposition to Determine Effect on Mission

1.2.2.1.2.1 Interpret Intel. Data on Friendly Forces to Determine Disposition

1.2.2.2 Interpret Intel. Data Enemy Forces

1.2.2.2.1 Interpret Effect of Identity of Enemy Forces on Mission

1.2.2.2.1.1 Interpret Intel. Data Enemy Forces to Determine Identity

1.2.2.2.2 Interpret Intel. Data on Enemy Forces Disposition to Determine Effect on Mission

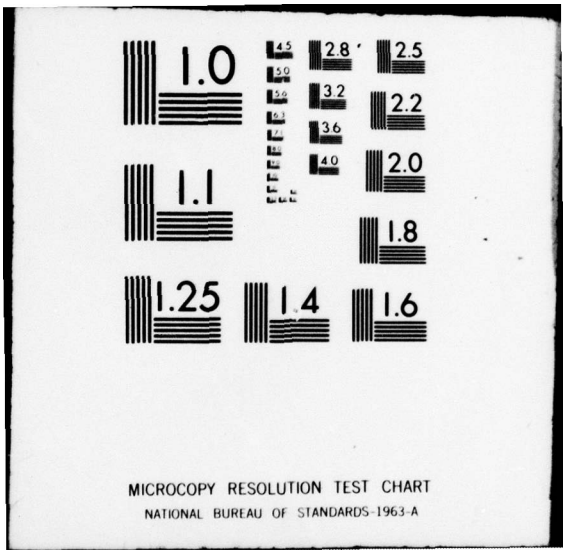
1.2.2.2.2.1 Interpret Intel. Data on Enemy Forces to Determine Disposition

AD-A065 925 COURSEWARE INC SAN DIEGO CALIF F/G 5/9
REVISING THE SH-2F (LAMPS MKI) INSTRUCTIONAL SYSTEM WITHIN THE --ETC(U)
JAN 79 S HEAROLD, J BRESEE, D BERGMAN N61339-76-C-0055
UNCLASSIFIED NAVTRAEQUIPC-76-C-0055-2 NL

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NATIONAL BUREAU OF STANDARDS-1963-A

ASMD

1.2.3 Interpret Mission Constraints Data

1.2.3.1 Interpret Operations Order

1.2.3.1.1 Determine Task Force Mission

1.2.3.1.2 Interpret EMCON Plan

1.2.3.1.3 Interpret Communication Plan/TFO/NETS

1.2.3.1.4 Interpret Sonobuoy Allocations

1.2.3.1.5 Interpret 3 PT Parameters

1.2.3.1.6 Interpret Safety Restrictions

1.2.3.1.7 Confirm Areas of Responsibility

1.2.3.2 Interpret Equipment Status Report

1.2.3.2.1 Interpret Own Equipment Status From Maintenance

1.2.3.2.2 Interpret Ships Equipment Status From Bridge

ASMD

1. Mission Planning

1.3 Analyze Data to Determine Tactical Scenario

1.3.1 Given Probable Identity of Target, Determine Characteristics & Mission

1.3.1.1 Evaluate Target Type

1.3.1.1.1 Determine Potential Detection Sources

1.3.1.1.1.1 Determine Acoustic Signature

1.3.1.1.1.2 Determine Sonar Characteristics

1.3.1.1.1.3 Determine Radar Characteristics

1.3.1.1.1.4 Determine Visual Recognition Characteristics

1.3.1.1.2 Determine Target Sensor Capability

1.3.1.1.2.1 Determine Sonar Capability

1.3.1.1.2.1.1 Determine Sonar Capability (Active)

1.3.1.1.2.1.2 Determine Sonar Capability (Passive)

1.3.1.1.2.2 Determine Target Radar Capability

1.3.1.1.2.3 Determine Target ESM Capability

1.3.1.1.2.4 Determine Target Visual Capability

1.3.1.1.3 Determine Target Weapons Capability

ASMD

1.3.1.1.3.1 Determine Target Weapons Capability, Torpedo

1.3.1.1.3.2 Determine Target Weapons Capability, Mines

1.3.1.1.3.3 Determine Target Weapons Capability, Missiles

1.3.1.1.3.3.1 Determine Target Weapons Capability, Cruise Missiles

1.3.1.1.3.3.2 Determine Target Weapons Capability, Ballistic Missiles

1.3.1.1.3.3.3 Determine Target Weapons Capability, Surface to Air Missiles

1.3.1.1.3.3.4 Determine Time and Operating Parameters Needed to Launch

1.3.1.1.3.4 Determine Target Weapons Capability, Guns

1.3.1.1.3.4.1 Determine Target Weapons Capability, Surface to Surface Guns

1.3.1.1.3.4.2 Determine Target Weapons Capability, Surface to Air Guns

1.3.1.1.4 Determine Target Operating Parameters

1.3.1.1.4.1 Determine Targets Depth(s) Limitations

1.3.1.1.4.2 Determine Targets Speed Limitations

1.3.1.1.4.3 Determine Targets Endurance Limitations

1.3.1.1.4.4 Determine Targets Mission Duration

1.3.1.2 Determine Contact's Probable Mission (see 1.1.-.1.2.1 - old)

1.3.1.2.1 Match Target Type to Probable Missions

1.3.1.2.2 Determine/Evaluate Contact's Last Reported Location, and Environment in the Area and Area Geography

ASMD

1.3.1.2.3 Evaluate Political Situation

1.3.1.2.4 Determine Friendly Ships/Installations in Area

1.3.1.2.5 Evaluate Intelligence on Other Hostile Ships/ Installations in Area

1.3.1.2.5.1 Determine Source of Intelligence on Hostile Units in Area

1.3.1.2.5.2 Determine Potential for Coordinating Operations with Other Hostiles in Area

1.3.2 Analyze Data to Determine Passive Capability, if possible

1.3.2.1 Determine Figure of Merit

1.3.2.2 Construct PLP

1.3.2.3 Determine MDR

1.3.2.4 Determine CZ Potential

1.3.2.5 Determine Passive Sonobuoy Depth Selection

1.3.2.5.1 Determine Submarines Best Depth

1.3.2.5.1.1 Determine Layer Depth

1.3.2.5.1.2 Determine Gradient

1.3.2.5.1.3 Determine Target Probable Mission Profile & Evasion Tactics

ASMD

1.3.2.6 Evaluate Data Link Capability and Range

1.3.3 Evaluate Non-Acoustic Capability

1.3.3.1 Evaluate Radar Capability

1.3.3.1.1 Evaluate Equipment Status

1.3.3.1.2 Evaluate Radar Ducting Probability & Altitudes

1.3.3.1.3 Evaluate EMCON Restrictions

1.3.3.1.4 Determine Search Alt. & Radar Control Parameters

1.3.3.1.4.1 Evaluate Target Size

1.3.3.1.4.2 Evaluate Sea State

1.3.3.1.4.3 Evaluate Counter Detection Range

1.3.3.1.4.4 Evaluate Effect of Other Sensors on Radar Use

1.3.3.1.5 Evaluate Target's Tactics to Avoid/Break Contact

1.3.3.2 Evaluate ESM Capability

1.3.3.2.1 Evaluate Equipment Status

1.3.3.2.2 Evaluate Equipment Capability Against Threats

1.3.3.2.3 Evaluate Effect of Other Sensors on ESM Use

1.3.3.2.4 Evaluate Effect of Friendly Forces on ESM Use

1.3.3.3 Evaluate Visual SEarch Capability

1.3.3.3.1 Determine Visual Search Range

ASMD

1.3.3.3.1.1 Determine Prevailing Ceiling & Visibility

1.3.3.3.1.2 Determine Target Size

1.3.3.3.1.3 Determine Sea State

1.3.3.3.2 Determine Available Visual Aids

1.3.3.3.3 Evaluate Targets Tactics to Avoid/Break Contact

ASMD

1. Mission Planning

1.4 Given an ASMD Mission Assignment, Make Initial Determination of Tactics

1.4.1 Given a Surface Search Mission, Make Initial Determination of Tactics

1.4.1.1 Determine Parameters of Search Sector

1.4.1.1.1 Evaluate Number & Type of Supporting Units Available

1.4.1.1.2 Evaluate Number & Type of Probable Contacts

1.4.1.1.2.1 Evaluate Number & Type of Probable Hostile Contacts

1.4.1.1.2.1.1 Evaluate Visual Counter Detection Capability of Contacts

1.4.1.1.2.1.2 Evaluate Radar Counter Detection Capability of Contacts

1.4.1.1.2.1.3 Evaluate ESM Counter Detection Capability of Contacts

1.4.1.1.2.1.4 Evaluate Sonar Counter Detection Capability of Contacts

1.4.1.1.2.2 Evaluate Number & Type of Probable Neutral Contacts

1.4.1.1.3 Evaluate Limitations on Equipment Use

1.4.1.1.3.1 Evaluate Environmental Limitations on Equipment Use

ASMD

1.4.1.1.3.2 Evaluate Equipment Design Limitations on Equipment Use

1.4.1.1.3.3 Evaluate Operational Limitations on Equipment Use

1.4.1.1.4 Evaluate Requirements of Task Force Mission

~~1.4.1.1.5 Confirm Areas of Respon-ibilit~~

1.4.1.2 Evaluate Need for Covertness

1.4.1.3 Determine Initial Sensor Utilization

1.4.1.3.1 Determine Initial Radar Utilization

1.4.1.3.2 Determine Initial ESM Utilization

1.4.1.3.3 Determine Initial Visual Utilization

1.4.1.3.4 Determine Initial Sonobuoy Utilization

1.4.1.3.5 Determine Initial Utilization of Sensors by Other Units

1.4.1.4 Determine Initial Flight Profile

1.4.1.5 Determine Initial Navigation Required

1.4.1.6 Determine Initital Communication Required

1.4.1.7 Determine ~~Initial~~ Point at Which It Becomes a Targeting Mission

ASMD

1.4.2 Given a Surface Targeting Mission, Make Initial Determination of Tactics

1.4.2.1 Determine Threat Area

1.4.2.1.1 Determine Source of Contact

1.4.2.1.2 Determine Bearing Error

1.4.2.1.3 Determine Range Estimate

1.4.2.2 Evaluate Suspected Contacts

1.4.2.2.1 Evaluate Suspected Hostile Contacts

1.4.2.2.1.1 Evaluate Suspected Hostile Contacts Counter Detection Capability

1.4.2.2.1.1.1 Evaluate Suspected Hostile Contacts Counter Detection Capability - Radar

1.4.2.2.1.1.2 Evaluate Suspected Hostile Contacts Counter Detection Capability - ESM

1.4.2.2.1.1.3 Evaluate Suspected Hostile Contacts Counter Detection Capability - Visual

1.4.2.2.1.1.4 Evaluate Suspected Hostile Contacts Counter Detection Capability - Sonar

1.4.2.2.1.2 Evaluate Suspected Hostile Contacts Weapons Capability

1.4.2.2.1.2.1 Evaluate Suspected Hostile Contacts Weapons Capability - Missiles

1.4.2.2.1.2.2 Evaluate Suspected Hostile Contacts Weapons Capability - Guns

ASMD

1.4.2.2.2 Evaluate Suspected Contact's - Neutral & Friendly

1.4.2.2.2.1 Evaluate Suspected Contact's Neutral & Friendly Interferance Potential

1.4.2.2.2.2 Evaluate Suspected Contact's Neutral & Friendly Location in Area

1.4.2.3 Evaluate Friendly Forces Weapons Capability in Light of Threat Capability (Harpoon)

1.4.2.3.1 Evaluate Shooter(s)-to-Target Geometry

1.4.2.3.2 Evaluate Navigational Targeting Accuracy

1.4.2.4 Evaluate Need for Covertness

1.4.2.5 Determine Initial Sensor Utilization

1.4.2.5.1 Determine Initial Sensor Utilization - Radar

1.4.2.5.2 Determine Initial Sensor Utilization - ESM

1.4.2.5.3 Determine Initial Sensor Utilization - Visual

1.4.2.5.4 Determine Initial Sensor Utilization - Sonobuoy

1.4.2.5.5 Determine Initial Sensor Utilization - Other Units

1.4.2.6 Determine Initial Flight Profile

1.4.2.7 Determine Initial Navigation Requirements

1.4.2.8 Determine Initial Communications Requirements

ASMD

1. Mission Planning

1.5 Develop Data PKGS for Various Involved Parties

1.5.1 Determine Who Needs Data Package

1.5.1.1 Determine Other Units Involved

1.5.1.2 Evaluate Capability to Assist of Other Units Involved

1.5.2 Develop Data Package for DET (Maintenance of Flt. Crew)

1.5.3 Develop Data Package for BRIDGE

1.5.4 Develop Data Package for CIC

1.5.5 Develop Data Package for OTC

1.5.6 Develop Data Package for Other Involved Units

1.6 Determine Navigation Requirements to Lay Initial Pattern

1.7 Evaluate Planning Based on Real-Time Information and Revise Plan as Necessary

1.8 Disseminate Data Packages

ASMD

2. Conduct Brief

2.1 Conduct Safety of Flight Brief IAW NATOPS

2.2 Conduct Mission Brief

2.2.1 Describe Tactical Scenario & Force Dispositions

2.2.2 Describe Sensor-Employment Plan

2.2.2.1 Describe Equipment Configuration Requirements

2.2.2.2 Describe Equipment-Related Required Communications

2.2.2.3 Describe Equipment Pre-Use Set-Up Requirements

2.2.2.4 Describe EMCON Restrictions

2.2.3 Describe Target Operating Parameters

2.2.4 Describe Communications Plan

2.2.4.1 Describe Frequencies

2.2.4.2 Describe Call Signs

2.2.4.3 Describe Nets

2.2.5 Identify Navigation Aids to be Used

2.2.6 Describe Environmental Conditions

2.2.7 Describe Crew Coordination Plan

ASMD

2.2.7.1 Describe Ordnance Dispensing Plan

2.2.7.2 Describe SENSO Log Requirements

2.2.7.3 Describe ATO Log Requirements

2.2.7.4 Describe Crew Responsibilities During Attack

2.2.8 Describe Visual Search Plan

ASMD

5. Enroute

5.1 Perform Pre-Use Equipment Set-Up Checks

5.2 Make Equipment Status Report (If EMCON Allows)

5.3 Navigate to Station Area

5.4 Monitor Existing Sensors

5.5 Update/Revise Mission Plan

ASMD

6. On-Station

6.1 Notify Controlling Authority of Arrival on Station

6.2 Establish Initial Pattern

6.2.1 Notify Controlling Authority of Sonobuoy Drop, if necessary

6.2.2 Monitor Information From Sensors

6.2.3 Fly Pattern and Activate Sensors

6.3 Monitor Sensors Until Contact is Generated

6.4 Determine Validity of Contact & Verify Type

6.5 Notify Controlling Authority of Contact

6.6 Determine Follow-On Tactic

6.6.1 Determine Sensor in Contact

6.6.2 Determine AOP

6.6.2.1 Evaluate Passive Sonobuoy Contact, With Additional Sonobuoys if Necessary

6.6.2.1.1 Evaluate Passive Sonobuoy Contact Using CLF Method

6.6.2.1.2 Evaluate Passive Sonobuoy Contact Using MLF Method

6.6.2.1.3 Evaluate Passive Sonobuoy Contact Using CPA/DSF Method

ASMD

6.6.2.1.4 Evaluate Passive Sonobuoy Contact Using Areas of Low Problem Based on No Buoy Contact

6.6.2.1.5 Compare Passive Sonobuoy Data with Data from Other Sensors

6.6.2.2 Evaluate Radar Contact

6.6.2.2.1 Evaluate Radar Contact Validity

6.6.2.2.2 Plot Radar Contact

6.6.2.2.3 Compare Radar Contact With Other Sensor Data

6.6.2.2.4 Plot Additional Radar Contacts

6.6.2.3 Evaluate ESM Contact

6.6.2.3.1 Evaluate ESM Contact Validity

6.6.2.3.2 Plot ESM LOB

6.6.2.3.3 Compare With Data From Other Sensors

6.6.2.3.4 Plot Additional ESM LOB's

6.6.2.4 Evaluate Visual Contact

6.6.2.4.1 Evaluate Visual Contact Validity

6.6.2.4.2 Plot Visual Contact

6.6.2.4.3 Compare Visual Contact With Data From Sensors

6.6.2.5 Notify Controlling Authority of AOP

6.6.3 Revise Probable Target Track With Changes in Tactical Scenario

ASMD

6.6.4 Determine & Plot Fix Ambiguity and Size

6.6.5 Determine Need for Covertness

6.6.5.1 Evaluate Aircraft Mission & Restrictions

6.6.5.2 Evaluate Contacts Probable Mission

6.6.6 Determine Sensors to be Used For Follow-On Tactic

6.6.7 Determine Utilization of Follow-On Sensors

6.7 Carry Out Follow-On Tactic

6.7.1 Plot Initial Contacts

6.7.2 Plot Desired Position for Follow-On Sensor Use

6.7.3 Determine Navigation Required from Known Position in Initial Pattern

6.7.4 Position Aircraft at Known Position

6.7.5 Fly Aircraft to Follow-On Sensor Employment Position

6.7.6 Employ Follow-On Sensor

6.7.7 Notify Controlling Authority

6.8 If Target Attacks, Employ Counter Measures (Chaff. RBOC)

6.9 Determine Remaining Time Available on Station

6.10 Complete Aircraft Mission

ASMD

6.10.1 Track or Attack Contact

6.10.1.1 Determine and Employ Follow-On Tactics of Tracking

6.10.1.2 When Attack Criteria Are Met, Direct Attack And Clear Firing Bearing

6.10.2 Determine Navigation Required to Return to Base

ASMD

7. Return

7.1 Fly Aircraft to Departure Point

7.2 Navigate to Base

7.3 Make Off-Station Report

7.4 Advise Controlling Authority/OTC of Mission Status

7.5 Collect/Collate Reconstruction Data

Appendix I

ORIGINAL WORKING COPY OF

LAMPS TACTICS OBJECTIVES HIERARCHY

27 April, '78

NEW OBJECTIVE LIST
(ASW)

1. Given all relevant/necessary data, plan an ASW mission

1.1 Identify data required to plan a mission.

1.1.1 Identify intelligence data required to plan a mission.

1.1.2 Identify environmental data required to plan a mission.

1.1.3 Identify data from the OP ORDER required to plan a mission.

1.1.4 Identify aircraft and ship equipment status reports that may effect mission planning.

ASW
NEW OBJECTIVE LIST

1.2 Given an ASW mission assignment and all available tactical data, interpret tactical data

1.2.1 Given an ASW mission assignment and all available environmental data, interpret environmental data

1.2.1.1 Given an ASW mission and ASWEPS data message, interpret all information in ASWEPS message

1.2.1.1.1 Given an ASW mission and ASWEPS data message, interpret all non-accoustic data in mission

1.2.1.1.1.1 Given ASW area prediction chart, plot own position, state area for which ASRAPS data is required, and state whether or not current ASWEPS message covers needed area

1.2.1.1.1.2 Given ASRAPS message, state the effective period

1.2.1.1.1.4 Given an ASRAPS message and a Tacaid, state wave height and corresponding sea state

1.2.1.1.1.5 Given ASRAPS message, identify ALPHA INDEX and periods covered

1.2.1.1.2 Given an ASW mission and ASWEPS data message, interpret accoustic data

1.2.1.1.2.1 Given ASRAPS message, state surface temperature and layer depth

1.2.1.1.2.2 Given ASRAPS message, state temperature gradient

1.2.1.1.2.4 Given active ASRAPS message, state sonic layer depth and depth of deep sound channel & pertinant

1.2.1.1.2.5 Given passive ASRAPS message, state depth required and depth excess

1.2.1.1.2.6 Given passive ASRAPS message, plot all propagation loss profiles

1.2.1.1.2.7 Given active ASRAPS message, state all predicted ranges of the day

1.2.2 Given ASW mission and intelligence data, identify all mission-related information

1.2.2.1 Given Intelligence data, friendly forces, interpret that data

1.2.2.1.1 Given identity of friendly forces, state effect on mission (who involved and what weapons and sensors carried)

1.2.2.1.1.1 Given intelligence data, state identity of friendly forces

1.2.2.1.2 Given disposition of friendly forces, state effect on mission (where with respect to capability for assistance)

1.2.2.1.2.1 Given intelligence data, state disposition of friendly forces

1.2.2.2 Given intelligence data, enemy forces, interpret that data

1.2.2.2.1 Given identity of enemy forces, state effect on mission (who involved and what weapons and sensors carried)

1.2.2.2.1.1 Given intelligence data, state disposition of enemy forces

1.2.2.2.2 Given disposition of enemy forces, state effect on mission (where with respect to capability for assistance)

1.2.2.2.2.1 Given intelligence data, state disposition of enemy forces

1.2.3 Given mission constraints data, state effect of contraints on mission

1.2.3.1 Given an OP ORDER, identify all mission constraints

1.2.3.1.1 Given OP ORDER and Task Force mission, state their effect on aircraft mission

1.2.3.1.2 Given an EMCON plan, state restriction on aircraft electronic emissions

1.2.3.1.2.1 State format, components and responsibilities for establishing an EMCON plan

1.2.3.1.2.2 Determine the effect of the EMCON plan on the mission

1.2.3.1.2.2.1 State the effect of loss of any combination of emitters on aircraft mission

1.2.3.1.2.2.1.1 State the effect of loss of each emitter on aircraft mission

1.2.3.1.2.2.1.1.1 State MAD emission characteristics

1.2.3.1.2.2.1.1.1.1 State MAD emission frequency and power

1.2.3.1.2.2.1.1.1.2 State MAD operating parameters

1.2.3.1.2.2.1.1.2 State LN-66 Radar emission characteristics

1.2.3.1.2.2.1.1.2.1 State LN-66 Radar Frequency and Power

1.2.3.1.2.2.1.1.2.2 State LN-66 operating parameters

1.2.3.1.2.2.1.1.3 State Sonobuoy receiving and processing system emission characteristics

1.2.3.1.2.2.1.1.3.1 State Sonobuoy receiving & processing frequency & power

1.2.3.1.2.2.1.1.3.2 State Sonobuoy receiving & processing operating parameters

1.2.3.1.2.2.1.1.4 State all other aircraft NAV COM electronic emission characteristics (ARC-159/APX-72/APN-181/APN-172)

1.2.3.1.3 Given communications plan, identify frequencies (primary and secondary) nets to be used, and task force communication plan

1.2.3.1.4 (1.1.1.2 - Lost Comm. Plan)

1.2.3.1.5 Given OP ORDER, state restrictions on sonobuoy usage

1.2.3.1.6 Given an OP ORDER, state the requirements which must be met to drop a weapon

1.2.3.1.7 Given an OP ORDER, state safety restrictions applying to each unit type in task force

1.2.3.2 Given equipment status report, identify all equipment, ship's or aircraft, which effect mission performance

1.3 Given an ASW mission and all supporting data, determine tactical scenario

1.3.1 Given probable identity of target, determine probable characteristics and mission

1.3.1.1 Given probable class of submarine, state its mission characteristics

1.3.1.1.1 Given probable submarine identity, state main propulsion and aux machinery

1.3.1.1.1.1 State main propulsion machinery on board diesel and nuclear submarines by class

1.3.1.1.1.2 State auxiliary machinery on board diesel and nuclear submarines by class

1.3.1.1.2 Given submarine contact, state the potential detection sources usable for identifying and evaluating submarine

1.3.1.1.2.1 Given submarine propulsion method, state publication where accoustic signature is located

1.3.1.1.2.2 State relationship between magnetic detectability and tonnage

1.3.1.1.2.3 Given submarine contact data, state likelihood and effect of anechoic coating

1.3.1.1.2.3.1 Given submarine class, state likelihood of anechoic coating

1.3.1.1.2.3.2 State types and effects of anechoic coatings

1.3.1.1.2.4 Given submarine class & mission, state likelihood of detection from submarine's own use of sonar & radar

1.3.1.1.2.5 Given submarine class, state primary visual recognition features

1.3.1.1.2.5.1 State primary recognition features for all submarines

1.3.1.1.3 Given a class of submarine, state sensors on board employed to detect air, surface, and sub-surface contact

1.3.1.1.3.1 Given class of submarine, state sonar capability

1.3.1.1.3.1.1 Given class of submarine, state sonar capability, active

1.3.1.1.3.1.1.1 State the general operating uses of submarine active sonar

1.3.1.1.3.1.1.2 Given a class of submarine, state its active sonar capability

1.3.1.1.3.1.2 Given class of submarine, state sonar capability, passive

1.3.1.1.3.1.2.1 State the general operating uses of submarine passive sonar

1.3.1.1.3.1.2.2 Given a class of submarine, state its passive sonar capability

1.3.1.1.3.2 Given class of submarine, state radar capability

1.3.1.1.3.2.1 State general operating use of submarine radars

1.3.1.1.3.2.2 Given class of submarine, state radar capability

1.3.1.1.3.3 Given class of submarine, state ESM capability

1.3.1.1.3.3.1 State general operating use of submarine ESM

1.3.1.1.3.3.2 Given class of submarine, state ESM capability

1.3.1.1.3.4 Given class of submarine, state visual capability

1.3.1.1.3.4.1 State general operating use of submarine visual

1.3.1.1.3.4.2 Given class of submarine, state visual capability

1.3.1.1.4 Given class of submarine, state number and type of anti-surface/anti-submarine weapons carrier

1.3.1.1.4.1 Given class of submarine, state number and type of torpedo carried (ref. characteristics to NWIP 12-5)

1.3.1.1.4.2 Given class of submarine, state number and type of mines carried (ref. characteristics to NWIP 12-5)

1.3.1.1.4.3 Given class of submarine, state number and type of missiles carried (ref. characteristics to NWIP 12-5)

1.3.1.1.4.3.1 Given class of submarine, state number and type cruise missiles carried

1.3.1.1.4.3.2 Given class of submarine, state number and type of ballistic missiles carried

1.3.1.1.4.3.3 Given submarine class, state time and operating parameters needed to launch missiles or torpedoes

1.3.1.1.5 Given a submarines probable class and mission, describe the parameters within which it will probably operate

1.3.1.1.5.1 Given a submarines probable class and mission, describe the depth limitations within which it will probably operate

1.3.1.1.5.2 Given a submarines probable class and mission, describe the speed limitations within which it will probably operate

1.3.1.1.5.3 Given a submarines probably class and mission, describe the endurance within which it will probably operate

1.3.1.1.5.4 Given probable class and mission, describe targets, probable mission duration

1.3.1.2.2 Given a submarines contact and probable type, state effect of area location and environment on probable mission

1.3.1.2.2.1 Given contact and probable type, state effect of bottom topography on probable mission

1.3.1.2.2.1.1 Given a ballistic missile attack mission, state the effect of bottom topography on submarine actions

1.3.1.2.2.1.2 Givan a guided missile attack mission, state the effect of bottom topography on submarine actions

1.3.1.2.2.1.3 Given a torpedo attack mission, state the effect of bottom topography on submarine actions

1.3.1.2.2.2 Given contact and probable type, state effect of area geography on probable mission.

1.3.1.2.2.2.1 Given a ballistic missile attack mission state effect of area geography on submarine actions

1.3.1.2.2.2.2 Given a guided missile attack mission, state effect of area geography on submarine actions

1.3.1.2.2.2.3 Given a torpedo attack mission, state effect of area geography on submarine actions

1.3.1.2.3 Given probable class, state effect of current political situation on a submarines mission

1.3.1.2.4 Given submarines probable class and friendly ships/installations in area, state their effect on submarine's probable mission

1.3.1.2.5 State the effect disposition of enemy forces which can aid in identification and mission classification of a submarine

1.3.1.2.5.1 Given source of intelligence data on enemy forces disposition, state its relative reliability

1.3.1.2.5.2 Given intelligence on other hostile units in area, state their potential for coordinating Ops.

1.3.1.2.5.2.1 State Soviet methods of tactical communications (NON RT) during coordinated OPS

1.3.1.2.5.2.2 State units whose presence and comm. capabilities may imply the presence of specific submarine types

1.3.2 Given environmental and contact data, describe passive sonobuoy capability

1.3.2.1 See 1.1.6.1.2.2.3.1.1.7.1 (Masking)

1.3.2.2 Given ASWEPS, contact, and masking data, calculate figure of merit within 3 dB.

1.3.2.2.1 Given contact data and accoustic data publications, look up source level

1.3.2.2.2 Given ASWEPS message, identify ambient noise in corresponding frequency spectra for associated contact data

1.3.2.3 Given passive ASRAPS message, construct propagation loss profiles for all target-receiver geometrics and for frequencies of 50, 300, 850, and 1700 hz.

1.3.2.4 Given figure of merit, propagation loss profile, and masking data, determine MDR

1.3.2.5 Given figure of merit, propagation loss profile, and DR/DX, state potential for CZ interference

1.3.2.6 Given contact and environmental data, state optimum sonobuoy depth

1.3.2.6.1 Given sonic layer depth, calculate submarine's best depth

1.3.2.6.1.1 Given ASRAPS data, identify sonic layer depth

1.3.2.6.1.2 Given ASRAPS data, identify thermal gradient

1.3.2.6.1.3 Given submarine's probable mission profile, state probable use of layer and gradient to evade passive sonobuoy detection

1.3.2.6.2 Given environmental and contact data, state effect of all target-receiver geometrics on MDR

1.3.2.7 Given mission profile, state data link feasibility

1.3.2.7.1 Given a coordinated operations scenario, state units capable of receiving MCJR

1.3.2.7.2 Given a range, state the minimum altitude needed for data link

1.3.2.7.3 Given a mission plan, state the maximum range at which data link operation will not interfere with the use of other sensors

1.3.3 Given mission profile and environmental data, state active sonobuoy capability

1.3.3.1 Given active ASRAPS message, select optimum PRD

1.3.3.2 Given active ASRAPS message and contact data, state optimum active sonobuoy depth

1.3.3.2.1 Given sonic layer depth, calculate submarine's best depth

1.3.3.2.1.1 Given ASRAPS data, identify sonic layer depth

1.3.3.2.1.2 Given ASRAPS data, identify thermal gradient

1.3.3.2.1.3 Given intelligence data, state submarine's probable mission profile and passive evasion tactics

1.3.3.2.2 Given environmental and contact data, state effect of all target-receiver geometrics on MDR

1.3.3.3 Given mission profile, state data link feasibility

1.3.3.3.1 Given a coordinated operations scenario, state units capable of receiving MCDR

1.3.3.3.2 Given a range, state the minimum altitude needed for data link

1.3.3.3.3 Given a mission plan, state the maximum range at which data link operation will not interfere with the use of other sensors

1.3.4 Given equipment status and environmental

1.3.4.1 Given equipment status, operational and environmental parameters, state MAD capability

1.3.4.1.1 Given equipment status report, state MAD capability

1.3.4.1.2 Given ASRAPS data, state general MAD forecast

1.3.4.1.3 Given EMCON plan, state restrictions placed on MAD use

1.3.4.1.4 Given MAD parameters, state probable MAD effectiveness

1.3.4.1.4.1 Given contact type and tacaid, state slant range

1.3.4.1.4.2 Given contact type and tacaid, state sweep width

1.3.4.1.5 Given mission profile, identify any sensors which conflict with MAD use, state how they conflict, and the degree to which they conflict

1.3.4.1.6 State sub-tactics for evading MAD detection

1.3.4.2 Given equipment status, operational and environmental parameters, state radar capability

1.3.4.2.1 Given equipment status report, state radar capability

1.3.4.2.2 Given atmospheric conditions and intelligence report, state probability of radar ducting

1.3.4.2.2.1 State the types of radar ducting

1.3.4.2.2.2 State the environmental conditions conducive to radar ducting

1.3.4.2.3 Given EMCON plan, state restrictions placed on radar use

1.3.4.2.4 Given mission plan and environmental data, state search altitude and radar control parameters

1.3.4.2.4.1 Given a target size, compute maximum detection range

1.3.4.2.4.2 Given sea state, state effect on detection range and search altitude

1.3.4.2.4.3 Given mission profile, state probable counter detection range

1.3.4.2.4.4 Given a mission profile, identify any sensors which conflict with radar use, state how they conflict, and the degree to which they conflict

1.3.4.2.5 State submarines tactics for evading radar contact

1.3.4.3 Given equipment status, operational and environmental parameters, state ESM capability

1.3.4.3.1 Given equipment status report, state ESM capability

1.3.4.3.2 Given mission profile and intelligence data, state capability of equipment to detect threat

1.3.4.3.3 Given mission profile, identify any sensors which conflict with ESM use. State how they conflict, and the degree to which they conflict

1.3.4.3.4 Given a mission profile, identify equipment used which will generate false ESM contacts

1.3.4.4 Given contact and environmental data, calculate visual search capability

1.3.4.4.1 Given environmental data and target size, calculate visual search range

1.3.4.4.1.1 Given weather data, state prevailing ceiling and visibility

1.3.4.4.1.2 Given intelligence data state probable target size(s)

1.3.4.4.2

1.3.4.4.3 State targets tactics to avoid visual contact

1.4 Given a mission assignment and all relevant data, make initial determination of tactics

1.4.1 Given a search mission and all relevant data, make initial determination of tactics

1.4.1.2 Given submarine's probable mission, own task forces mission, and aircraft mission profile, state degree of covertness required

1.4.1.2.1 Given overall tactical scenario, state submarine's probable evasion tactics

1.4.1.2.2 State the risk of detection associated with each rf-emitting item of equipment

1.4.1.2.3 Given tactical scenario, identify those friendly units able to assist in LAMPS mission, and state the type of assistance offered by each

1.4.1.2.3.1 State U.S. surface forces, ASW capabilities

1.4.1.2.3.1.1 State U.S. surface forces ASW sensors

1.4.1.2.3.1.2 State U.S. surface forces ASW weapons

1.4.1.2.3.1.3 State U.S. surface forces accoustic processors

1.4.1.2.3.2 State U.S. submarine forces direct support capabilities

1.4.1.2.3.2.1 State U.S. submarine forces direct support sensors

1.4.1.2.3.2.2 State U.S. submarine forces direct support weapons

1.4.1.2.3.2.3 State U.S. submarine forces direct support operating & communications procedures

1.4.1.2.3.3 State U.S. aviation ASW capabilities

1.4.2.1.3.3.1 State U.S. aviation ASW capabilities S-3

1.4.2.1.3.3.2 State U.S. aviation ASW capabilities P-3

1.4.2.1.3.3.3 State U.S. aviation ASW capabilities H-3

1.4.1.2.3.4 State U.S. Multi-Aircraft ASW capabilities

1.4.2.1.3.4.1 State Dual LAMPS tactics

1.4.2.1.3.4.2 State tactics for LAMPS with other U.S. aircraft

1.4.1.3 Given a datum and related necessary tactical information, determine area of probability

1.4.1.3.1 Given probable identity of contact, time late, and datum, construct FOC

1.4.1.3.2 Given datum and disposition of forces, construct threat bearing

1.4.1.3.3 Given probable identity of contact, and disposition of forces, construct limiting lines of approach and torpedo danger zone

1.4.1.3.4 Given task force mission, probable contact mission, bottom topography and area geography maps, determine their effect of AOP

1.4.1.3.5 Given task force mission and organization probable identity and mission of contact, state effects of friendly forces on area of probability

1.4.1.3.6 Given task force mission and organization probable identity and mission of contact, state effects of hostile forces on area of probability

1.4.1.3.7 Given tactical scenario, determine all sources of masking sound the contact should use to disguise his movements

1.4.1.4 Given EMCON restrictions, make initial sensor selection

1.4.1.5 Given LAMPS matrix table and initial sensor selection, make initial pattern selection

1.4.1.5.1 Given tactical scenario, AOP, tacaid, and a pattern, determine if the pattern meets criteria for initial tactic use

1.4.1.5.2 Given a pattern, estimate route and time required to lay

1.4.1.5.3 Given a pattern, determine potential for follow-on

1.4.1.6 Given a tactical scenario for a search mission and a tacaid, determine if a-tack criteria can be met

1.4.2 Given a localization mission profile and all related data, make initial determination of tactics

1.4.2.2 Given submarine's probable mission, own task force's mission, and aircraft mission profile, state degree of covertness required

1.4.2.2.1 Given overall tactical scenario, state submarine's probable evasion tactics

1.4.2.2.2 Determine need for covertness (same as 1.4.1.2)

1.4.2.2.3 State the rest of detection associated with each rf-emitting item of equipment

1.4.2.2.4 Given tactical scenario, identify those friendly units able to assist in LAMPS mission, and state the type of assistance offered by each

1.4.2.3 Given a datum and related necessary tactical information, determine area of probability

1.4.2.3.1 Given probable identity of contact, time late, and datum, construct FDC

1.4.2.3.2 Given datum and disposition of forces, construct threat bearing

1.4.2.3.3 Given probable identity of contact, and disposition of forces, construct limiting lines of approach and torpedo danger zone

1.4.2.3.4 Given task force mission, probable contact mission, bottom topography and area geography maps, determine their effect on AOP

1.4.2.3.5 Given task force mission and organization probable identity and mission of contact, state effects of friendly forces on area of probability

1.4.2.4 Given number, type & lifespan of existing sensors on station, and own mission profile, determine usefulness of those sensors to own aircraft mission

1.4.2.5 Given EMCON restrictions, make initial sensor selection

1.4.2.6 Given LAMPS matrix table and initial sensor selection, make initial pattern selection

1.4.2.7 Given a tactical scenario for a search mission and a tacaid, determine if attack criteria can be met

1.4.3 Given a tracking mission and all relevant data, make initial determination of tactics

1.4.3.2 Given number, type & lifespan of existing sensors on station, and own mission profile, determine usefulness of those sensors to own aircraft mission

1.4.3.3 Given submarine's probable mission, own task force's mission, and aircraft mission profile state degree of covertness required

1.4.3.3.1 Given overall tactical scenario, state submarine's probable evasion tactics

1.4.3.3.2 State the risk of detection associated with each rf-emitting item of equipment

1.4.3.3.3 Given tactical scenario, identify those friendly units able to assist in LAMPS mission, and state the type of assistance offered by each

1.4.3.4 Given EMCON restrictions, make initial sensor selection

1.4.3.5 Given LAMPS matrix table and initial sensor selection, make initial pattern selection

1.4.3.5.1 Given tactical scenario AOP, tacaid, and a pattern, determine if the pattern meets criteria for initial tactic use

1.4.3.5.2 Given a pattern, estimate route and time required to lay

1.4.3.5.3 Given a pattern, determine potential for follow-on

1.4.3.6 Given a tactical scenario for a search mission and a tacaid, determine if attack criteria can be met

1.4.4 Given an attack mission and all relevant data, make weapons parameters selection

1.4.4.1 Given datum source and time of last fix, state approximate size, and calculate time late

1.4.4.3 Given tactical scenario, determine attack procedure

1.4.4.3.1 Given tact scenario, state methods and criteria for coordinated attacks

1.4.4.3.2 Given tactical scenario, state methods and criteria for independant attack

1.4.4.4 State preparations that must be made to evaluate the success of an attack

1.5 Given a mission plan, develop the data packages for the various involved parties

1.5.1 Given a mission plan and task force organization, determine which parties require data packages

1.5.1.1 Given task force organization, determine the units involved in aircraft's mission

1.5.1.2 Given tactical scenario, identify those friendly units able to assist in LAMPS mission, and state the type of assistance offered by each

1.5.2 Given mission plan, determine information required by the air detachment

1.5.3 Given mission plan, determine information required by the bridge

1.5.4 Given mission plan, determine information required by the CIC

1.5.5 Given mission plan, determine information required by OTC

1.5.6 Given mission plan, determine information required by other involved units

1.6 Given initial pattern selection, tactical scenario, EMCON plan, and a PT-429/MK-6, calculate navigation requirements

1.6.1 Given initial pattern selection and tactical scenario and a NATOPS manual, calculate the operating radius

1.6.2 Given initial pattern selection, tactical scenario, and a MK-6, perform required navigation

1.6.2.1 Given a MK-6 plotting board and tactical scenario, perform no wind plot

1.6.2.2 Given a MK-6 plotting board and tactical scenario, perform radius of action plot

1.6.2.3 Given a MK-6 plotting board and tactical scenario, perform relative motion plot

1.6.2.4 Given a MK-6 plotting board and tactical scenario, perform geographic plot

1.6.2.5 Given a MK-6 plotting board and tactical scenario, plot the wind triangle

1.6.2.6 Given a MK-6 plotting board, describe its features and functions

1.7 Given a mission plan updated real-time information, evaluate/ revise initial mission plan and data packages

1.8 Given data packages for the various involved units, disseminate the data

2.2 Given a mission plan, conduct a mission brief, deliveating all crew respy's.

5.0 Given a mission plan and an SH-2F in flight, perform all enroute tasks

5.1 Given a mission plan and an SH-2F in flight, set up equipment and perform checks needed

5.1.1 Given a mission plan and an SH-2F in flight, set up MAD and perform checks needed

5.1.2 Given a mission plan and an SH-2F in flight, set up radar and perform checks needed

5.1.3 Given a mission plan and an SH-2F in flight, set up PT-429 and perform needed checks

5.1.4 Given a mission plan and an SH-2F in flight, set up LR-54 and perform needed checks

5.1.5 Given a mission plan and an SH-2F in flight, set up ordnance panel and perform needed checks

5.2 Given all equipment checks data and an SH-2F in flight, identify degraded systems and make kilo report

5.3 Given a mission plan and an SH-2f in flight, navigate from ship to station

5.4 Given a mission plan and an SH-2F enroute from ship to station, collect all available data from sensors on station

5.5 Given a mission plan and an SH-2F enroute from ship to station, and a current tactical scenario, determine and make revisions to mission plan that are needed

6.1 (1.1.7.1.4.4 - On Station Report)

6.2 Given aircraft in flight, initial pattern selection, and required navigational data, lay sonobuoy pattern, transmit, sonobuoy drop report, fly pattern and activate sensors, and monitor sensors

6.3 (Monitor existing sensors)

6.4 Given a contact verify validity and type with available sensors

6.4.1 (1.1.7) Classification

6.5 State the information needed to perform an ASW contact report
6.5.1 State the procedures to encrypt/decrypt radio messages
6.5.2 State the procedures to authenticate radio messages

6.6 Given a contact situation, determine follow-on tactic

6.6.1 None Necessary (Determine sensor in contact)

6.6.2 Give a sensor in contact. Determine AOP

6.6.2.1 Given passive sonobuoy contact, determine AOP

6.6.2.1.1 Given contact on passive sonobuoys, determine AOP using CLF method

6.6.2.1.2 Given contact on passive sonobuoys, determine AOP using HLF method

6.6.2.1.3 Given contact on passive sonobuoys, determine AOP using CPA/DSF method

6.6.2.1.4 Given contact on passive sonobuoys, determine AOP using no contact method

6.6.2.1.5 Given contact on passive sonobuoys, determine AOP by comparing data with other sensors

6.6.2.2 Given active sonobuoy contact, determine AOP

6.6.2.2.1 Given active sonobuoy contact, determine AOP by plotting sonobuoy ranges

6.6.2.2.2 Given active sonobuoy contact, determine AOP by plotting areas of low probability on no contact sonobuoys

6.6.2.2.3 Given active sonobuoy contact, determine AOP by comparing data with that from other sensors

6.6.2.3 Given MAD contact, determine AOP

6.6.2.3.1 Given MAD contact, evaluate contact validity

6.6.2.3.2 Given MAD contact, plot AOP by plotting MAD contact

6.6.2.3.3 Given MAD contact, determine AOB by comparing with data from other sensors

6.6.2.4 Given radar contact, determine AOP

6.6.2.4.1 Given radar contact, evaluate contact validity

6.6.2.4.2 Given radar contact, plot AOP

6.6.2.4.3 Given radar contact, determine AOP by comparing with data from other sensors

6.6.2.5 Given ESM contact, determine AOP

6.6.2.5.1 Given ESM contact, determine validity

6.6.2.5.2 Given ESM contact, plot ESM LOB

6.6.2.5.3 Given ESM contact, compare with data from other sensors

6.6.2.5.4 Given ESM contact, plot additional ESM LOB's

6.6.2.6 Given Visual contact, determine AOP

6.6.2.6.1 Given visual contact, determine contact validity

6.6.2.6.2 Given visual contact, plot AOP

6.6.2.6.3 Given visual contact, compare with data from other sensors

6.6.2.7 Given a contact on any sensor, make an amplifying report of AOP to controlling authority

6.6.3 Given any changes in task force mission or operating parameters, make appropriate changes in mission plan and projected target track

6.6.4 Given contact on more than one sensor, determine and plot fix ambiguity and size

6.6.5 No training needed (Need for covertness)

6.6.6 Given an AOP and a determined need for covertness and aircraft loadout, determine sensors to be used for follow-on tactic (S/B Mgmt.)

6.6.7 Given an AOP and a tacaid, determine optimum placement of follow-on sensor

6.7 Given a selected follow-on tactic, employ it

6.7.1 Do not train (Plot initial pattern)

6.7.2 Given a selected follow-on tactic and a plot of initial pattern plot position for follow-on sensor employment

6.7.3 Given a follow-on tactic, determine navigation requirement from a known position in initial pattern, using MK-6 or PT-429

6.7.4 Given the navigation for a follow-on tactic, fly aircraft to known geographical position (OTPI)

6.7.5 Given the navigation for a follow-on tactic, fly the aircraft to position for the follow-on sensor placement

6.7.6 Do not train (Employ follow-on sensor)

6.7.7 Do not train (notify controlling authority)

6.8 Do not train (Deter-ine remaining on-station time)

6.9 Given available sensor data complete aircraft mission

6.9.1 Given available sensor data, track or attack contact, as directed

6.9.1.1 do not train (Employ follow-on tactics)

6.9.1.2 Ref. 1.1.8.2 (old)
Given available sensor data meeting attack criteria deliver conventional weapons attack within weapons parameters

6.9.1.2.1 Given available sensor data, determine if attack criteria, IAW TACAID, has been met

6.9.1.2.2 Given the sensor in contact state optimum weapons delivery procedure

6.9.2 Given tactical scenario and completed aircraft mission, determine navigation required to return to base

6.9.3 (1.1.7.1.4.6 - Swap Report)

7.0 Given exparation of on-station time, return to base

7.3 Given tactical scenario and expired on-station time, make off-station report

7.4 Do not train (Comm. mission status)

7.5 Given a tactical scenario and completed mission, collect and collate reconstruction data

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NEW OBJECTIVE LIST
(ASMD)

1. Given all relevant/necessary data, plan an ASMD mission.

1.1 Identify data required to plan a mission.

1.1.1 Identify intelligence data required to plan a mission.

1.1.2 Identify environmental data required to plan a mission.

1.1.3 Identify data from the OP ORDER required to plan a mission.

1.1.4 Identify aircraft and ship equipment status reports that may effect mission planning.

ASMD NEW OBJECTIVE LIST

1. Mission Planning

1.2 Given an ASMD mission assignment and all available tactical data, interpret tactical data

1.2.1 Given an ASMD mission assignment and all available environmental data, interpret environmental data

1.2.1.2 Given forecast weather inversion layer, determine availability and use radar ducting layer

1.2.1.2.1 Given forecast weather inversion, determine conditions for and types of radar ducting

1.2.1.2.2 Given forecast weather inversion, determine altitude to use radar ducting

1.2.2 Given ASMD mission and intelligence data, identify all mission-related information

1.2.2.1 Given intelligence data, friendly forces, interpret that data

1.2.2.1.1 Given identity of friendly forces, state effect on mission

1.2.2.1.2 Given disposition of friendly forces, state effect on mission

1.2.2.2 Given intelligence data, enemy forces, interpret that data

1.2.2.2.1 Given identity of enemy forces, state effect on mission

1.2.2.2.2 Given disposition of enemy forces, state effect on mission

1.2.3 Given mission constraints data, state effect of contraints on mission

1.2.3.1 Given an OP ORDER, identify all mission constraints

1.2.3.1.1 Given OP ORDER and Task Force mission, state their effect on aricraft mission

1.2.3.1.2 Given an EMCON plan, state restriction on aircraft electronic emissions

1.2.3.1.3 Given communications plan, identify frequencies (primary and secondary) nets to be used, and task force communication plan

Supported by 1.1.1.2 - old hierarchy

1.2.3.1.4 Given OP ORDER, state restrictions on sonobuoy usage

1.2.3.1.5 Given an OP ORDER, state the parameters for a 3-PT mission

1.2.3.1.6 Given an OP ORDER, state safety restrictions applying to each unit type in task force

1.2.3.1.7 Given an OP ORDER/Pre-exercise, draw assigned search sectors

1.2.3.2 Given equipment status report, identify all equipment, ship's or aircraft, which effect mission performance

1.3 Given an ASMD mission and all supporting data, determine tactical scenario

1.3.1 Given probable identity of target, determine probable characteristics and mission

1.3.1.1 Given probable type of contact, state its mission characteristics

1.3.1.1.1 Given a contact, state the potential detection sources usable for identifying and evaluating

1.3.1.1.1.1 ~~See 1.1.6.1.2.2.5.1.1.7.2.5~~

~~Supported by~~

Given submarine propulsion method, state publication where accoustic signature is located

1.3.1.1.1.2 Given target type and mission, state likelihood of detection of target's own use of sonar

1.3.1.1.1.3 Given target type and mission, state likelihood of detection of target's own use of radar

1.3.1.1.1.4 Given target type, state primary visual recognition features

1.3.1.1.2 Given a type of target, state sensors on board employed to detect air, surface, and sub-surface contacts

1.3.1.1.2.2 Given type of target, state radar capability

1.3.1.1.2.2.1 State the general operating use of Soviet surface radars

1.3.1.1.2.2.2 Given target class, state radar capability

1.3.1.1.2.3 Given type of target, state ESM capability

1.3.1.1.2.3.1 State the general operating use of Soviet ESM equipment

1.3.1.1.2.3.2 Given target class, state ESM capability

1.3.1.1.2.4 Given type of target, state visual capability

1.3.1.1.3 Given type of target, state number and type of weapons carried

1.3.1.1.3.1 Given type of target, state number and type of torpedoes carried

1.3.1.1.3.2 Given type of target, state number and type of mines carried

1.3.1.1.3.3 Given type of target, state number and type of missiles carried

1.3.1.1.3.3.1 Given type of target, state number and type cruise missiles carried

1.3.1.1.3.3.2 Given type of target, state number and type of ballistic missiles carried

1.3.1.1.3.3.3 Given type of target, state number and type of surface-to-air missiles carried

1.3.1.1.3.3.4 Given type of target, state time and operating parameters needed to launch missiles

1.3.1.1.3.4 Given type of target, state number and type of guns

1.3.1.1.3.4.1 Given type of target, state number and type of surface to surface guns

1.3.1.1.3.4.2 Given type of target, state number and type of surface to air guns

1.3.1.1.4 Given a type of target and mission, describe the parameters within which it will probably operate

1.3.1.1.4.1 Given a submarines probable class and mission, describe the depth limitations within which it will probably operate

1.3.1.1.4.2 Given a type of target and mission, describe the speed limitations within which it will probably operate

1.3.1.1.4.3 Given a type of target and mission, describe the endurance within which it will probably operate

1.3.1.1.4.4 Given type of target and mission, describe targets probable mission duration

1.3.1.2.1 State major classes of USSR surface combatants, their missions and operating areas

1.3.1.2.1.1 State major classes of USSR surface combatants and their weapons

1.3.1.2.1.2 State Soviet order of battle

1.3.1.2.1.3 Given a mission, identify probable SOVIET surface combatant

1.4 Given an ASMD mission assignment and all relevant data, make initial determination of tactics

1.4.1 Given a surface search mission, make initial determination of tactics

1.4.1.1 Given a surface search mission, probable threat, and sector, determine parameters of search sector

1.4.1.1.1 Given tactical scenario, determine units available for mission support

1.4.1.1.1.1 State U.S. forces ESM capabilities

1.4.1.1.1.2 State U.S. forces radar capabilities

1.4.1.1.1.3 State U.S. forces sonar capabilities

1.4.1.1.2 Given tactical scenario, determine number and type of probable contacts

1.4.1.1.2.1 Given tactical scenario, determine number and type of probable hostile contacts

1.4.1.1.2.2 Given tactical scenario, determine number and type of probable neutral contacts

1.4.1.1.3 Given tactical scenario, determine limitations on equipment use

1.4.1.1.3.1 Given tactical scenario, determine environmental limitations on equipment use

1.4.1.1.3.2 Given tactical scenario, determine equipment design limitations on equipment use

1.4.1.1.3.3 Given tactical scenario, determine operational limitations on equipment use

1.4.1.1.4 Given tactical scenario, determine effect of task force mission on parameters of search sector

1.4.1.2 Given target operating parameters and the EMCON plan, state need for covertness

1.4.1.3 Given tactical scenario, determine initial sensor and its mode

1.4.1.3.1 Given tactical scenario, determine feasibility of radar use

1.4.1.3.2 Given tactical scenario, determine feasibility of ESM use

1.4.1.3.3 Given tactical scenario, determine feasibility of visual use

1.4.1.3.4 Given tactical scenario, determine feasibility of sonobuoy use

1.4.1.3.5 Given tactical scenario, determine feasibility of utilization of sensors of other units

1.4.1.4 Given tactical scenario and search mission, determine initial flight profile

1.4.1.6 Given tactical scenario and search mission, determine initial communications required

1.4.1.7 Given tactical scenario and surface search, determine point at which the mission changes to targeting

1.4.2 Given a surface targeting mission, make initial determination of tactics

1.4.2.1 Given tactical scenario, determine high probability threat area

1.4.2.1.1 Given tactical scenario, identify source of contact

1.4.2.1.2 Given source of contact, determine bearing error

1.4.2.1.3 Given source of contact, determine range estimate

1.4.2.2 Given tactical scenario, evaluate suspected contacts

1.4.2.2.1 Given a hostile contact, determine threat

1.4.2.2.1.1 Given a hostile contact, determine counter detection capability

1.4.2.2.1.1.1 Given a hostile contact, determine counter detection capability, radar

1.4.2.2.1.1.2 Given a hostile contact, determine counter detection capability, ESM

1.4.2.2.1.1.3 Given a hostile contact, determine counter detection capability, Visual

1.4.2.2.1.1.4 Given a hostile contact, determine counter detection capability, Sonar

1.4.2.2.1.2 Given a hostile contact, determine anti-air weapons capability

1.4.2.2.1.2.1 Given a hostile contact, determine anti-air weapons capability, Missiles

1.4.2.2.1.2.2 Given a hostile contact, determine anti-air weapons capability, Guns

1.4.2.2.2 Given a tactical scenario, evaluate suspected contacts - neutral and friendly

1.4.2.2.2.1 Given a tactical scenario, determine suspected contacts - neutral & friendly, interference potential

1.4.2.2.2.2 Given a tactical scenario, determine suspected contacts - neutral & friendly, location in area

1.4.2.3 Given a tactical scenario, determine friendly forces attack capability

1.4.2.3.1 Given a tactical scenario, determine positions of friendly attacking units in relation to target

1.4.2.3.2 Given a tactical scenario, determine navigational targeting accuracy needs

6.8 Given target commencing attack, employ counter measures

6.8.1 State evasion measures against radar tracking

6.8.2 State evasion measures against AA missiles

6.8.3 State evasion measures against AA guns

6.8.4 State employment procedures for Chaff

6.8.5 State employment situations for Chaff

6.8.6 State employment situations for RBOC

6.10.1.2 Given an attack situation, meet attack criteria, direct attack and clear firing bearing

Appendix J

TACTICS UNITS, LESSONS, SEGMENTS, AND SEGMENT OBJECTIVES

TACTICS OBJECTIVES

INTRODUCTION

Introduction to LAMPS

1. List and describe the LAMPS missions.

2. Describe the general responsibilities of each LAMPS crew member.

3. List the SH-2F mission endurance limits.

4. List and describe the major LAMPS MK-1 Sensor Systems.

5. Given a basic Brevity Code Word, state its definition; or given a definition, state the corresponding Brevity Code Word.

Introduction to ASW Publications

1. List the title and state the purpose and classification of the eight standard tactical reference publications used by the LAMPS community.

2. Given a copy of the TACAID (NWP-55-2-2) and a request for specific information, locate the appropriate section and page(s) in the publication.

Contact Classification

1. List and define the four contact classifications.

2. Given descriptions of sensor data and contact behavior, classify the contact.

3. Describe the general principles for classifying and reporting contacts.

Introduction to the MK-46 Torpedo

1. Given a Brevity Code Word/term associated with the MK-46 torpedo, state its definition; or, given the definition, state the Brevity Code Word.

2. State the values of the operating parameters/characteristics for the MK-46 MOD 1 torpedo.

3. State the rules for the tactical employment of the MK-46 torpedo.

The Submarine as Adversary

1. Describe the propulsion system of a diesel-electric or nuclear submarine.

2. List and describe the operating characteristics of both nuclear and diesel submarines.

3. List and describe the major submarine sensors.

4. List and describe the major submarine weapons.

5. List and describe the major factors affecting a diesel or nuclear submarine during a mission.

6. State the major factors affecting the nuclear or diesel submarine's fire control solution.

7. State the course of action, by sensor, the submarine takes to evade ASW units, both before and after detection.

The MK-6 Plotting Board

The lesson on the MK-6 Plotting Board to be developed by the ISD team of HS-10 will be used here.

Oceanography

The lesson on Oceanography developed by VS-41 will be used here.

Underwater Sound Propagation

1. Define the term decibel and explain its use in ASW.

2. Given the Active and Passive Figure of Merit (FOM) equations, define each term.

PT-429

1. State the procedure for the normal operation of the PT-429 (Tactical Display Plotting Board).

2. State the procedure to navigate from point to point using the PT-429 plotting board.

3. Use the Three Minute Rule to determine a contact's speed.

MAGNETIC ANOMALY DETECTION

MAD Theory and Operation Parameters

1. Describe the theory of Magnetic Anomaly Detection (MAD) and list the seven factors affecting MAD readings.

2. Define ALPHA Index and its relationship to MAD detection capability.

3. Define Slant Range.

4. Given contact type, Average Noise Level ($\sqrt{}$), aircraft altitude, and a TACAID, determine the maximum detection Slant Range.

5. Define Sweep Width.

6. Given contact type, Average Noise Level ($\sqrt{}$), aircraft altitude, and a TACAID, determine Sweep Width.

MAD Patterns

1. State the definition of MAD associated terms/codes.

2. List and state the function of each of the three groups of MAD patterns.

3. State the criteria and procedures for employment of the Localization-type MAD patterns.

4. State the criteria and procedures for employment of the Tracking-type MAD patterns.

5. State the criteria and procedures for employment of the Search-type MAD patterns.

ACTIVE SONOBUOY TACTICS

Active Sonobuoy Theory

1. Given an active tactics Brevity Code Word, state its definition; or, given the definition, state the Brevity Code Word.

2. State the characteristics of the SSQ-47B sonobuoy.

3. List the advantages and disadvantages of the SSQ-47B sonobuoy.

Active Sonobuoy Patterns

1. Given a Brevity Code Word or term associated with active sonobuoy patterns, state its definition; or, given a definition, state the Brevity Code Word.

2. Describe the A-1 pattern, including:

   a. Its purpose,
   b. The number of sonobuoys required,
   c. Its pattern geometry, and
   d. The circumstances under which it is used.

3. State the radius of the A-1 pattern:

   a. When sonar conditions are known or predicted and
   b. When sonar conditions are not known or predicted.

4. Describe the A-2 pattern, including:

   a. Its purpose,
   b. The number of sonobuoys required,
   c. Its pattern geometry, and
   d. The circumstances under which it is used.

5. State the radius of the A-2 pattern:

   a. When sonar conditions are known or predicted and
   b. When sonar conditions are not known or predicted.

6. Describe the A-3 pattern, including:

   a. Its purpose,
   b. Number of sonobuoys required, and
   c. Pattern geometry.

7. State the radius of the A-3 pattern:

   a. When sonar conditions are known or predicted and
   b. When sonar conditions are not known or predicted.

8. Describe the A-4 pattern, including:

   a. Its purpose,
   b. Main considerations for expansion,
   c. Sonobuoy spacing, and
   d. The circumstances under which it is used.

9. Describe the A-5 pattern, including:

   a. Its purpose,
   b. Number of sonobuoys required,
   c. Pattern geometry, and
   d. Buoy spacing with and without knowledge of sonar conditions.

10. List and describe the main considerations for laying an active sonobuoy pattern.

Active Sonobuoy Attack Criteria

1. Given a scenario, use the Active Sonobuoy Attack Criteria to determine if you can attack, complying with the MK-46's operational limits.

PASSIVE SONOBUOY TACTICS

Passive Sonobuoy Theory

1. State the definition and/or purpose of ASW terms associated with passive localization.

2. Given a Brevity Code Word or term associated with passive localization, state its definition; or, given the definition, state the Brevity Code Word.

3. State or identify the four major advantages and two major disadvantages of passive prosecution compared to active prosecution.

Passive Sonobuoy Description

1. State the following characteristics of the SSQ-41A and SSQ-41PIP sonobuoys:

   Type
   Available Search Frequencies
   Selectable Hydrofoam Depths
   Weight

Operating Life
Selectable RF Channels
RF Power Output

2. State the advantages of the SSQ-41PIP over the SSQ-41A.

Passive Sonobuoy Life Selection

1. List the five factors that must be considered when making a passive sonobuoy life selection decision.

2. Make a sonobuoy life selection decision when given the five essential items of information.

Passive Sonobuoy Patterns

1. State the following information about the P-1 pattern:

   a. Number of buoys required,
   b. Buoy spacing required,
   c. Pattern geometry, and
   d. Tactical situation in which the pattern is used.

2. State the following information about the P-2 pattern:

   a. Number of buoys required,
   b. Buoy spacing required,
   c. Pattern geometry, and
   d. Tactical situation in which the pattern is used.

3. State the following information about the P-3 pattern:

   a. Number of buoys required,
   b. Buoy spacing required,
   c. Pattern geometry, and
   d. Tactical situation in which the pattern is used.

4. State the following information about the P-4 pattern:

   a. Number of buoys required,
   b. Buoy spacing required,
   c. Pattern geometry, and
   d. Tactical situation in which the pattern is used.

5. State the following information about the P-5 pattern:

   a. Number of buoys required,
   b. Buoy spacing required,
   c. Pattern geometry, and
   d. Tactical situation in which the pattern is used.

6. Given a scenario, determine the passive pattern necessary for prosecution.

Passive Fixing

1. Given relative signal strengths from three buoys in simultaneous contact and MDR, plot an area of probability using the comparative LOFAR fixing technique.

2. Define the term "sound pressure loss" and state the procedure used by the sensor operator in determining sound pressure loss values.

3. Given percentages of sound pressure loss, construct a series of hyperbolic broad-band noise fixes which result in the determination of a position, course, and speed for a subsurface contact.

4. Calculate and construct a line of position when only two buoys are in simultaneous contact.

Passive Sonobuoy Attack Criteria

1. Identify the attack cirteria that must be met with passive prosecution.

2. Given a scenario, use the passive attack criteria to determine if you can attack.

RADAR

Radar Theory

1. List and define the design characteristics of a pulsed radar and explain their effect upon radar performance.

2. List and describe the factors affecting airborne radar detection capability and the methods of compensating for each.

3. List the three primary applications of airborne radar in LAMPS.

4. Given a Brevity Code Word associated with radar, state its definition; or, given the definition, state the Brevity Code Word.

Radar Tactical Employment

1. List and describe the two basic radar airplans.

2. List and describe the three basic radar approaches.

3. Given a scenario, select the best radar airplan and approach.

4. Given a Brevity Code Word associated with ASST, state its definition; or, given the definition, state the Brevity Code Word.

5. State the procedures for conducting an ASST mission.

6. List and describe the two primary types of radar tactics.

7. State the purpose of an SSSC mission.

Visual Search

1. Given a visual search Brevity Code Word, state its definition; or, given the definition, state its Brevity Code Word.

2. List the principles of visual search.

3. Given a TACAID, meteorological visibility, and size of contact, determine the optimum visual Sweep Width.

4. Describe the four standard types of visual search.

5. Given a tactical scenario, choose the best type of visual search.

TACTICAL MISSION PLANNING

Tactical Mission Brief/Debrief

1. State the items of information to be covered in the tactical mission brief.

2. State the three sources of information used to reconstruct a tactical mission for a debrief.

EMCON

1. Define the term EMCON.

2. List the SH-2F equipment which is affected by EMCON conditions.

3. Given an EMCON Plan, indicate its major components.

4. State the procedure for using an EMCON Plan to determine the restrictions on SH-2F mission equipment.

Acoustic Detection Range Prediction

1. State the meaning of the acronym "ASRAP."

2. State the three primary uses of ASRAP.

3. State the organization responsible for compiling ASRAP data.

4. State the method used to determine ASRAP forecasts.

5. Given a sample passive ASRAP message, determine:

   The area of ocean for which the message is applicable.
   The sonic layer depth (SLD).
   The significant wave height (WH).
   The gradient in the thermocline below the sonic layer depth (GR).
   The data on which the forecast period begins.
   The ambient noise (AN).
   The propagation loss classification (PLCLAS).
   The minimum depth required for convergence zone (DR).
   The available depth excess in the prediction area (DX).

6. Define propagation loss profile as it relates to the passive ASRAP message.

7. Given a sample ASRAP message, plot the propagation loss profiles.

8. State the formula used to compute Figure of Merit (FOM).

9. Given a sample ASRAP message and a Source level (SL), compute the Figure of Merit.

10. Given an ASRAP message, the Recognition Differential, and Source Level, calculate and plot the FOM line on the propagation loss profile and determine the MDR for direct path reception and all CZ reception.

11. Given a sample Active ASRAP message, determine predicted ranges for any requested SSQ-47 sonobuoy.

12. State the two major constraints of the active ASRAP format.

COORDINATED OPERATIONS

Shipboard Control of Air ASW Operations

1. Given a Brevity Code Word or term associated with shipboard command and control, state its definition; or, given the definition, state the Brevity Code Word.

2. List and define the three types of aircraft control used by the ASAC (Anti-Submarine Air Controller).

3. Describe the duties/functions of the ATACO (Air Tactical ASW Control Officer).

4. Describe the duties/functions of the ASAC (Anti-Submarine Air Controller).

Introduction to U.S. Airborne ASW Platforms

1. List the primary mission strengths and limitations of the principle U.S. Airborne ASW platforms.

2. Given a U.S. Airborne ASW platform, list its principle sensor capabilities.

3. Given a U.S. Airborne ASW platform, list its ordnance capability.

Acoustic Data Link

1. List and describe the major components of the SH-2F LAMPS MK-1 Data Link System.

2. Define the relationship between Data Link Capability and aircraft altitude.

3. Given a Brevity Code Word associated with Data Link, state its definition; or, given the definition, state the Brevity Code Word.

NAVAL AND MERCHANT SHIP RIGGING AND RECOGNITION

This unit is being developed by HSL-31's Air Intelligence Officer.

Appendix K

PROTOTYPE OF STUDY GUIDE

FOR MEDIATED SEGMENTS

TAILWHEEL LOCK FAILURE

GRIM SYMPTON SERIES

Study Guide

OBJECTIVE

State the corrective procedure for a tailwheel locking pin.

GENERALITY

The corrective procedure for a tailwheel lock failure is:

1. Control aircraft's heading

   ---Use the rudder pedals and brakes to correct for any swerve or drift.

   ---If pedals and brakes are ineffective, take off and perform a hover landing.

2. Apply rotor brake smoothly during shutdown

   ---Soak up the rotor's torque slowly to avoid pivoting on the main gear.

NOTE

When you have a tailwheel lock failure, try to avoid running landings and shipboard operations.

COMMENTS

The SH-2F is equipped with a castering tailwheel which can be locked in the fore-and-aft position to hold a desired heading. However, the locking mechanism is equipped with a shear pin to protect the tailwheel from over-stress. If this pin breaks, you'll encounter a tailwheel lock failure. This will occur most often during a running landing.

NOTE

The tape/slide program on tailwheel lock failure refers to a tailwheel as "steerable"; it is not! The SH-2F has a lockable, castering tailwheel.

PRACTICE

State the two steps you should take in case of a tailwheel lock failure:

1.

2.

FEEDBACK

The two steps you should take for a tailwheel lock failure are:

1. Control heading of aircraft. (Use rudder and brakes to correct for swerve or drift. If these prove ineffective, take off and perform a hover landing.)

2. Apply rotor brake smoothly.

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