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MILITARY HANDBOOK

TRAINING MATERIALS DEVELOPMENT

PART 1 OF 2

AMSC N/A AREA ILSS

DEPARTMENT OF THE NAVY
WASHINGTON, D.C. 20362-5101

Training Material Development

1. This military standardization handbook was developed by the Naval Sea Systems Command, Department of Navy in accordance with established procedures.

2. This document supplements departmental manuals, directives, and military standards and provides basic and fundamental information on training material development. It should provide valuable information and guidance to personnel responsible for developing training materials.

3. Beneficial comments and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 55Z3, Washington, D.C. 20362-5101 by using the self-addressed Standardization Document Improvement Proposal. (DD form 1426) appearing at the end of this document or by letter.

FOREWORD

The operational readiness of the military is highly dependent upon well-trained officer and enlisted personnel. As military technology becomes more sophisticated and complex, the need for adequate and cost-effective training programs becomes more acute. In an attempt to meet the requirements of all effective training program, this handbook institutes a training material development program which utilizes a systems approach to training.

DOD-HDBK-292 is intended for use as a guideline for development, support, review and approval of all military training materials. This handbook is the supporting document, to be used in conjunction with MIL-STD-001379 for all military training materials acquired to support training in the formal and informal school environment. These training materials include management documentation, curricula, instructional media materials, evaluation and support materials.

This document defines tile tasks required to develop and support training materials for the military and provides a recommended sequence of task performance. This handbook is a two part summary of procedures for Training Material Development and contains methods and formats for application by the military as well as general guidelines for interpretation and application of processes therein.

This handbook was prepared by NAVSEA for those who will be analyzing, designing, developing, implementing, and controlling training materials for military personnel in a variety of technologies and skills.

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1. SCOPE

1.1 Purpose. This handbook provides standardized procedures and guidelines for the preparation, support, review, approval, and evaluation of military training data/materials as specified in MIL-STD-001379 for the Training Materials Development Process.

1.2 Applicability. This handbook is applicable to all military programs.

1.3 Applicability guidance. This Handbook is intended to be the governing document for all military training in the formal and informal environment. These training materials include management, curriculum, and instructional media materials.

1.4 Tailoring of task, procedures, or requirement descriptions. The training data/materials and their individual development procedures described in this handbook are inclusive for MIL-STD-001379 and the accompanying Data Item Descriptions (DID); however, each training program and its supporting training data/material is unique. The training agency that is the ultimate user of these training materials may choose to use only certain DIDs and then only certain portions of those DIDs. Material Preparing Activities must be aware of the portions that are deleted.

2. REFERENCED DOCUMENTS

2.1 Government documents.

2.1.1 Specifications standards and handbooks. Unless otherwise specified the following standards and other reference documents of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation form a part of this handbook to the extent specified herein.

STANDARDS

MILITARY

MIL-STD-12	Abbreviations for use on drawings and in specifications
MIL-STD-1388-1	Logistic Support Analysis
MIL-STD-001379	Military Training Programs

2.1.2 Other Government documents.

ATC Form 258	Air Force Trainee Evaluation of Training Form
ATC Form 304	Course Evaluation
AF Form 1250	Certificate of Training Form
NAVSO Form 12410/10	Navy Certificate of Training Form
DoD 5220.22-M	Industrial Security Manual for Safeguarding Information
OPNAVINST 5510.1	Department of the Navy Supplement to the DoD Information Security Program Regulation

2.2 Order of Precedence. In the event of a conflict between the text of this handbook and the references cited herein, the text of this handbook shall take precedence.

3. DEFINITIONS

3.1 Action verbs. The portion of the learning objective or task statement. which conveys action and reflects the type of learning that is to occur. Action verbs must reflect behaviors that are measurable, observable, verifiable, and reliable.

3.2 Advanced training. The training at a higher technical level provided to trainees at some time in their career after they have received replacement training pertinent to their field of specialization]. Advanced training may contain some refresher information required to maintain a smooth flow of training.

3.3 Audio-visual aid. Any static or dynamic device utilized to facilitate and reinforce learning through one or both of tile physical senses of sight and hearing.

3.4 Audit trail. A documented record of the processes, procedures, and major decisions used to design, modify develop, add training materials, and is maintained for the life of the training materials.

3.5 Behavior. Any activity, overt or covert, capable of being measured.

3.6 Background training. The training that provides basic technical knowledge and skills required to prepare for further specialized training or a first assignment.

3.7 Change. Pages issued to add, amend, correct, substitute, delete, or otherwise modify data by replacing, deleting or adding pa,gcs.

3.8 Condition. That portion of the learning objective or task statement which describes the situation/environment in which the trainees write-/express/ perform the specified behavior. Conditions include any pertinent influence upon task performance, including any or all of the following: location of performance, environment, equipmentt, manuals, or supervision required.

3.9 Consumable. Those training materials and supplies that are designed to be destroyed or expended through routine use.

3.10 Content. The information which is presented by training materials to develop knowledge, skills, attitudes, etc. This is in contrast to "methods and techniques," which is a process for engaging in the instruction and learning involved.

3.11 Contract data requirements list (CDRL). The CDRL, Form DD 1423, when part of a contract, is the sole document listing all data to be delivered under the contract.

3.12 Contractor furnished equipment (CFE). Items manufactured or purchased by the contractor for inclusion in or support of system, subsystem, or equipment training.

3.13 Conversion training.

a. Training of personnel to change from one specialty to another.
b. Training given to previously trained and experienced personnel to enable them to operate and maintain a new/modified system, subsystem or equipment. The training will be sufficient to allow the personnel to assume new duties at an advanced level which normally involves replacement as well as advanced training.

3.14 Corrective maintenance. The actions performed to restore an item to a specified condition.

3.15 Course. An ordered arrangement of subject matter designed to instruct personnel in the knowledge and skills required in the performance of job assignments or tasks in a designated area of specialization. A course categorizes the training level or nature of the training. It may be defined as a series of instruction parts, sections, and lesson topics developed to accomplish specific training objective A course usually concerns a single job assignment or task (Practical training skills type training) or a section of organized knowledge (information type training).

3.16 Course curriculum model manager (CCMM). A training activity assigned the responsibility for surveillance and maintaining specified courses. The CCMM is responsible for initiating curriculum development/revision, conducting curriculum reviews and feedback analysis, maintaining course audit documentation, budgeting for production and distribution of curriculum materials, and submitting course data Lo update the management documentation.

3.17 Course evaluation. A critique of the course to include course effectiveness, instructor effectiveness, technical documentation effectiveness.

3.18 Course identification number (CIN). The CIN identifies the activity responsible for the course and its assigned number.

3.19 Criterion.

a. The standard by which something is measured.
b. In test validation, it is the standard against which test instruments are judged to indicate the degree with which they predict the same human performance as the standard measures.

c. In evaluation, it is the measure used to determine the adequacy of a product, process, behavior, etc.

3.20 Curriculum. All training conducted within a school, outlined into specific topics, along with detailed objectives, to include behavior, conditions and standards.

3.21 Curriculum control authority (CCA). The agency, normally the functional commanders, who approve instructional methods and materials and who operate, program resources, and maintain assigned courses.

3.22 Curriculum materials. All materials required for the presentation of information and the development of skills in formal school training. Curriculum materials consist of Instructor Guides, Trainee Guides, and instructional media materials.

3.23 Data item description (DID). Identifies the approved description of a data item to be developed/delivered in accordance with CDRL, DD Form 1423, requirements in support of a contract.

3.24 Depot maintenance level. That maintenance, as defined in the system maintenance policy documentation, performed on equipment requiring major work effort that can not be realistically performed at the organizational or intermediate maintenance levels.

3.25 Developing activity. Any activity which produces training materials.

3.26 Device. A mechanism designed to serve a special purpose or perform a special function. A device has a name/nomenclature and reference designator and can be operated and maintained. Commonly referred to as "hardware":

3.27 Diagram sheet. Refer to Instruction Sheet.

3.28 Discrete skill. The discrete skills or tasks comprise each primary skill. They are determined after all primary skills have been identified.

3.29 Discussion-demonstration-activity (DDA) pages. Outlines the subject matter to be taught and provides direction to the instructor to guide and assist him with his presentation.

3.30 Duty. A duty (primary skill) consists of one or more tasks performed in one functional area. A duty is the major subdivision of the work performed by one individual. It is recognized as being one of the position incumbent's principal responsibilities. A collection of tasks.

3.31 Element. In training development, the smallest unit of behavior that has practical meaning to instructional analyst/designers. Elements are always steps of procedure in performing a task.

3.32 End-item. The system, subsystem, equipment, or related support equipment (e.g., ship, aircraft, multimeter, transmission, engine, computer, radio, mobile machine shop, or oscilloscope, etc.), being procured on contract and required to conduct training.

3.33 Entry skills. Specific, measurable behaviors that have been determined through the process of analysis of learning requirements to be basic to subsequent knowledge or skill in the course.

3.34 Environment. The physical condition and surroundings in which a job is performed or in which training takes place, including tools, equipment and job performance aids.

3.35 Equipment. Any device that supports any system or subsystem. Equipment is made up of various components.

3.36 Evaluation. The process of interpreting the results of measurement of trainee achievement for the purpose of making a judgment or decision on the success of the instruction or the trainee.

3.37 Exercise controller guide (ECG). A document which provides a set of exercises for use in either the formal or informal training environment.

3.38 Fault applicability list. An administrative tool identifying all approved equipment faults applicable to a particular curriculum.

3.39 Federal supply code for manufacturers (FSCM). A five digit number assigned to manufacturers of items that are procured by the federal government.

3.40 Fidelity. The degree to which a testing situation truthfully and accurately reflects the job situation.

3.41 Follow-on training. All formal school training conducted after initial training and before replacement training. Follow-on training provides additional staff and fleet personnel required to initially man school and fleet installations.

3.42 Formal training. Training accomplished by means of a structured and scheduled training action characterized by careful planning and use of curricula.

3.43 For training use only. A directive term/statement indicating the document must only be used in a training environment.

3.44 Government-furnished equipment (GEE). Equipment which has been selected and is to be furnished by the Government to a contractor or Government activity for installation in, or use with, or in support of the system/-equipment during production, conversion, or modification.

3.45 Graphic. A still picture or illustration, such as a chart, poster, or diagram, produced from artwork or by photography.

3.46 Hardware simulators. Hardware simulators are used to train personnel in such tasks as operation, emergency procedures, troubleshooting, and maintenance of the simulated system. They allow for an external interface between the system/equipment and the trainee. Hardware simulators must be realistic in their interface with the trainee. They must react to trainee inputs as the actual hardware would.

3.47 Individualized instruction. A method of training where the subject content, presentation rate, and presentation media are tailored to the needs of the individual trainee. Individualized instruction is characterized by multi-level instruction, multi-media instruction, and self-paced instruction techniques.

3.48 Informal training. Training not accomplished by a structured and scheduled training action. Informal training is provided to supplement formal training.

3.49 Information Sheet. See Instruction Sheet.

3.50 Initial training. Training or instruction provided by a vendor or manufacturer on equipment, system(s) , or device(s) furnished to the Government, regardless of the site at which the training is conducted.

3.51 In process reivew (IPR). A review of a partially developed product to insure that the partial product or development process meets the acquisition requirements.

3.52 Instruction sheet. A generic term for any of a variety of single-purpose, single-page or multi-page guide sheets designed to give the trainee certain detailed information or instructions about a task to be performed or a learning activity to be undertaken.

(a) Assignment sheet. An instruction sheet designed to direct self-study efforts of a trainee.

(b) Diagram sheet. An instruction sheet that provides the trainee with a diagram, schematic, illustration, or definitions used by the instructor during the course of instruction.

(c) Information sheet. An instruction sheet that provides informa-

tion related to subject matter contained in texts or reference documentation required, but not readily available to trainees.

(d) Job sheet. An instruction sheet that provides complete information required to perform a job, task, or other unit of work involving a sequence of manipulative steps. The job sheet is used to direct the trainee in the performance of a specific job.

(e) Problem sheet. An instruction sheet that provides a trainee with the conditions and parameters of a problem and procedural directions for the solution.

3.53 Instructional day. The instructional day consists of eight hours divided into instructional periods.

3.54 Instructional delivery system. Any method containing plans and procedures for the presentation of instruction. Platform instruction, television, formal on the job training, and standard test equipment procedures are all delivery systems.

3.55 Instructional material. All items of material prepared, procured, and made use of in a course or program as part of the teaching or learning process. This includes the general categories of training aids (instructional aids), training devices, training equipment (instructional equipment), and instructional literature.

3.56 Instructional media materials (IMM). Training materials that present a body of information. They may be self-supporting or supplementary to the instructor/trainee guides in the teaching-learning process.

3.57 Instructional period. An hour in the instructional day consisting of 50 minutes of contact time followed normally with a 10 minute break. (However, other training realities may require different minutes of contact time/break time).

3.58 Instructor. Personnel, military, and civilian, whose primary duty is teaching in a classroom learning center, laboratory, shop, and line or field situations on subjects pertinent to the primary mission of the school/course. Those personnel not primarily involved instructing but whose duties require instructor qualifications to directly supervise instructors, proctor testing, maintain curricula and course materials, evaluate training, counsel students, and other similar duties.

3.59 Instructor guide (IG). An approved plan for a course that provides specific definition and direction to the instructor on learning objectives, equipment, and instructional media material requirements, and conduct of the course.

3.60 Intermediate maintenance. That maintenance which is the responsibility of and is performed by designated maintenance activities for direct support of using organizations.

3.61 Job. The duties, tasks, and task elements performed by an individual which constitute his assignment. The job is the basic unit used in carrying out the personnel actions of selection, training, classification, and assignment.

3.62 Job analysis. The basic method used to obtain factual components of a job, involving observation of workers, conversations with those who know the job, analysis questionnaires completed by job incumbents, and study of documents involved in performance of the job.

3.63 Job entry requirements. The skill and knowledge requirements of a job assignment upon a ratee's entry into a specific billet; the requirements represent the end results of the training pipeline for a particular job assignment identified by rate (pay-grade) and rating.

3.64 Job environment. The operational and maintenance on-the-job tactical surroundings where the results of training are put into actual practice to accomplish the job tasks.

3.65 Job expert. An individual who has had recent field experience in job performance/supervision. Although the terms "subject matter expert" and "job expert" are often used interchangeably they are not synonymous.

3.66 Job performance measure (JPM). An instrument used to evaluate proficiency of a job holder on each task he performs.

3.67 Job sheet. See Instruction Sheet.

3.68 Job task inventory (JTI). Results of information gathered in job analysis. Lists of duties and tasks, varying in refinement from basic input data to duties and tasks which constitute the job performed by incumbents, within a rating.

3.69 Knowledge. Ability to retain and recognize or recall principles, rules, concepts, processes, symbology, and terminology.

3.70 Learning. A change in the behavior of the trainee as a result of experience. The behavior can be physical and overt, or it can be intellectual or attitudinal.

3.71 Learning objectives. A statement of the behavior or performance expected of a trainee as the result of a learning experience, expressed in terms of the behavior, the conditions under which it is to be exhibited, and the standards to which it will be performed or demonstrated. The types of learning objectives are:

(a) Course learning objectives (CLO). The statements which describe the overall knowledge and skills to be attained upon completion of a course.

(b) Topic learning objectives (TLO). The statements which identify the objectives of the topic.

3.72 Lecture guide (LG). An outline of major sections, key topics, and discussion points which are numerically keyed to a set of 35mm slides stored in plastic pages bound at the back of the guide.

3.73 Logistic support analysis (LSA). The selective application of scientific and engineering efforts undertaken during the acquisition process, as part of the system engineering and design process to assist in complying with supportability and other Integrated Logistic Support (ILS) objectives.

3.74 Logistic support analysis record (LSAR). This record documents the results of the Logistic Support analysis and contains data required for standardized training programs.

3.75 Maintenance trainer. A trainer on which individuals learn the methods and procedures necessary to maintain a specific system, subsystem, or equipment.

3.76 Maintenance training simulator. A device, usually computer-controlled, that simulates tactical operational equipment and allows trainees to practice maintenance tasks or procedures.

3.77 Management materials. documents that define training requirements and provide an overall plan for accomplishing them.

3.78 Management plan. A program for the assignment, monitoring, and assessment of the personnel, materials, and resources dedicated to a specific mission, operation, or function.

3.79 Manpower, personnel, and training analysis (MPT). Manpower analysis consists of identification of tasks and man-hours required to perform a job/function; personnel analysis consists of identification of ratings and military occupational specialty and skill levels required to Perform the job/ function; and training analysis consists of identification of training tasks/functions required for personnel to obtain skill levels necessary to operate and maintain the system, subsystem, or equipment.

3.80 Master materials list (MML). A list in the Instructor guide which identifies the texts, references, equipment, films, graphics, and instructional media materials required to support the curriculum.

3.81 Master schedule. A breakdown listing each topic of instruction, prepared by the training activity, to indicate the period program for each day and week of the course.

3.82 Materials preparing activity (MPA). An organization that develops training materials, prepared major changes or revisions, and produces training materials as directed by the Procuring Activity. MPAs may be either contractors or training facilities.

3.83 Media. The techniques for physically presenting instructional material to the trainee.

3.84 Media selection. The act of selecting the most cost-effective medium for the presentation of instruction to the trainee.

3.85 Military occupational specialty (MOS). This classification system supplements the enlisted rating structure in identifying personnel on active or inactive duty and billets in manpower authorization. MOS codes reflect special knowledge and skills that identify personnel and requirements When the rating structure is insufficient by itself for manpower management.

3.86 Military standard. Establishes formats, contents, and procedures for preparation of and standardization of DoD documents in accordance with the basic policy of the Defense Standardization and Specification Program.

3.87 Mock-up. A three-dimensional training aid designed to represent tactical operational equipment. It may be a scaled or a cutaway model, and may be capable of disassembly or operational simulation.

3.88 Multimedia. Use of more than one medium to convey the content of instruction.

3.89 National stock number (NSN). A number assigned under the Federal Cataloging Program or North Atlantic Treaty organization (NATO) codification of equipment system to each approved item. Identification which provides a unique identification of an item of supply with a Federal supply Classification (13 characters).

3.90 Naval aviation maintenance program (NAMP). An integrated system which provides maintenance policies, procedures, and responsibilities for the conduct of all Naval Aviation Maintenance.

3.91 Navy enlisted classification (NEC). Refer to Military Occupational Specialty (MOS).

3.92 Naval officer billet classification (NOBC). this classification system supplements the officer ranking structure in identifying personnel on active or inactive duty and billets in manpower authorization.

3.93 Navy training plan (NTP). The principal document for stating billets, personnel, military construction, and training materials support requirements. It controls the planning and implementing action for meeting the requirements of the system, subsystem, or equipment or non-hardware-oriented development, to produce trained and qualified personnel required to install, operate, maintain, or otherwise use the same being introduced into the Navy.

3.94 Objective. Refer to Learning Objective.

3.95 Objective assignment chart (OAC). Refer to Profile Item-to-Topic Objective Assignment Chart.

3.96 On-the-job training (OJT). A program of training designed specifically to train an individaul without the necessity for interrupting the performance of daily assigned duties relative to the trainee's work assignment. OJT may take the form of formal classroom training, reading assignments, job performance with or without supervision, self-paced instructional materials, or combinations thereof.

3.97 On board training (OBT). other than formal school training, conducted by a command for attached personnel. Training material is available to the unit commander for use by his personnel to improve operation or maintenance skills. OBT encompasses training in assigned professional, technical, and military duties and is independent of the site at which training is conducted.

3.98 Operational training. Training provided in the operational environment or in the simulated operational environment such as at a trainer.

3.99 Organization maintenance. That maintenance which is the responsibility of and is performed by a using organization on its assigned equipment. Its phases normally consist of inspecting, servicing, lubricating, adjusting, and replacing parts, minor assemblies, and subassemblies.

3.100 Part. The largest organization element of the Instructor Guide (IG). It provides the framework for a lesson based on the content of the Personnel Performance Profile Table(s).

3.101 Performance checklist. The breakdown of a task into elements that must be correctly performed to determine whether each trainee satisfactorily meets the performance standards described in the objective.

3.102 Personalization. The act of an instructor annotating the required detail to training material, the Instructor Guide in particular, by consulting the referenced technical documentation to support and enhance his ability to teach the required material.

3.103 Personnel performance profile (PPP) tables. A minimum requirements listing of all knowledge and skills required to operate and maintain a system, subsystem, or equipment or to perform a task or function. The five types of PPPs are:

(a) Background. A tabular listing of the mental skills and their supporting knowledge basic to mastery of a subject field.
(b) Equipment. A tabular list of equipment knowledge and skills.
(c) Subsystem. A tabular list of subsystem knowledge and skills.
(d) System. A tabular list of system level knowledge and skills.
(e) Task/function. A tabular list of knowledge and skills required to perform a task or function which is not unique to the operation or maintenance of a particular system, subsystem, or equipment.

3.104 Personnel performance profile table index (PPP table index). A list of all PPP table numbers covered within a particular training path chart.

3.105 Personnel qualification standard (PQS). The PQS is a program that provides a method to qualify officer and enlisted personnel to perform their job assignments. A PQS is a written compilation of knowledge and skills, derived from task analysis, that are requirements for qualification on specific watch-station, maintenance of specific equipment, subsystem, or system, or to perform as a team member within the assigned operational unit.

3.106 Pilot course. The first full length course conducted at a military school by military instructors using the curriculum and supporting training material prepared specifically for that course. It has as its purpose the “shaking down” or “validating” of the curriculum and materials in a classroom situation to determine their effectiveness in attaining the approved learning objectives or training goals.

3.107 Prefaulted module (PFM). An equipment module which has a preengineered casualty installed to produce a documented set of conditions/indications for training purposes.

3.108 Prerequisite training. That training which personnel must be previously completed in order to be qualified for entry into training for which they are now being considered.

3.109 Presentation media. Different methods of conveying or communicating information to individuals engaged in learning. These media may include

printed materials, audio-visual devices, hardware simulators, or stimulators.

3.110 Preventive maintenance. The care and servicing needed to maintain equipment, and to support equipment and facilities in satisfactory operating condition. This is done by providing for systematic inspection, detection, and correction of just beginning failures either before they occur or before they develop into major defects.

3.111 Primary skill. The primary skill is a major segment of work which, when combined with all other primary skills equal the task/function or background material.

3.112 Problem sheet. Refer to Instruction Sheet.

3.113 Process task. A task which consists of a series of steps resulting in the individual obtaining a single discrete result. The task is evaluated by observing the process and by scoring each step or element as it is performed in terms of sequence, completeness, accuracy, or speed.

3.114 Procuring activity. Activities or agencies that perform vital roles in the acquisition and support of training materials.

3.115 Procurement document. A contractual document used to obtain personnel, services, supplies, or equipment.

3.116 Product task. A task which terminates in a discrete product or outcome which is observable and measurable. The task is evaluated by looking at the product or outcome in terms of completeness, accuracy, tolerance, clarity, error, or quantity.

3.117 Proficiency. A specific standard of performance which the learner must meet in order to demonstrate mastery of a specified behavior.

3.118 Profile item-to-topic objective assignment chart (OAC). An administrative tool designed to reflect the coverage of PPP line items within a curriculum.

3.119 Programed instruction (PI). A trainee-centered method of instruction which presents the information in planned steps or increments, wit-h the appropriate response immediately following each step. The trainee is guided step-by-step to the successful completion of the assigned task or training exercise.

3.120 Programing medium. A document that integrates the use of instructional media materials by directing the instructor and trainee use of the materials and providing supplemental information. A programing medium

may be a Self-Study Workbook, Lecture Guide, Trainee Guide, Exercise Controller Guide, or Instructor Utilization Handbooks.

3.121 Project plan. A formal planning document submitted to the Procuring Activity for approval of all new courses/course requiring additional resources.

3.122 Ready for training (RFT) date. The date on which the contractor is to have training materials ready for use.

3.123 Realia. Realia is any object utilized as an educational medium to provide instruction on the object itself. It can range from a simple hand tool to a complete operating system.

3.124 Replacement training,

(a) Prepares new personnel for their first assignment.
(b) Formal school training that provides personnel with the minimum required operational and maintenance qualifications on their assigned system, subsystem, and equipment.

3.125 Revision. A new edition of an existing material or document prepared in lieu of a change whenever the volume of material requiring change is so great as to make the insertion of page changes impractical and costly, usually in excess of 50 percent of the total. A revision supersedes the preceding edition and incorporates all previously issued changes.

3.126 Scheduled maintenance. Any maintenance actions performed on a routine basis such as periodic inspections and servicing.

3.127 School. An organizational entity consisting of trainees, instructors, support staff, facilities, equipment, and other resources required for conducting instruction in a specified area of specialization. A school may be a separate activity with a commanding officer or officer-in-charge or other officer in authority, but often is a component division, department or other organizational entity of a school's command or other education or training activity.

3.128 Section. Provides the content of instruction for a group of closely related lesson topics required to teach a subject. Each section is developed to support a specific Training Objective Statement (TOS) or TOS combination.

3.129 Self-study workbook (SSWB). A document containing a series of lessons arranged in discrete steps with self-test questions which allow the user to monitor the trainees' progress.

3.130 Sequencing. Arranging the course/topic learning objectives, discussion teaching points, teaching steps, and criterion steps into the most appropriate sequence for effective learning.

3.131 Shipboard training. The training of individuals or teams on board ships, as contrasted to training on board shore stations or training of shipbased personnel at activities ashore.

3.132 Simulation. A representation of reality for training purposes. Three types are common: simulating parts of the system, simulating the operation of the system, and simulating the environment in which the system will operate.

3.133 Simulator. Any training device, machine, or apparatus that reproduces a desired condition or set of conditions synthetically. A relatively complex item of training equipment using electronic and mechanical means to reproduce all conditions necessary for an individual or a crew to practice operational/maintenance tasks.

3.134 Simulator software (SS). The software (computer programs) necessary to enable the trainer to perform the various functions. SS includes all realtime programs necessary for trainer operation as a training device, diagnostic or other maintenance or support programs, debug, or software development tools to be used in correction of errors in the present programs or in future modifications. All other programs or material necessary to recreate, copy, produce, maintain, support, and update any of the SS as well as any other applicable software or software procedures developed or produced during the period of the contract must also be included. All computer vendor programs and commercially marketed programs as well as those programs developed, modified, or otherwise produced or provided by the trainer manufacturer and the documentation are included in the SS.

3.135 Skill. The ability to perform a job-related activity which is required for the effective performance of a task. Skill performance may require application of mental skills and knowledge.

3.136 Skills profiles. Concise listings of performance skills and knowledge currently taught in a course.

3.137 Software. The programs and routines used to extend the capability of automatic data processing equipment. Non-equipment training material, such as pamphlets, handouts, schematics, charts, audiovisual products, guide sheets, etc. Also, manuals, program listings, and other related documentation associated with computer programing.

3.138 Standard. A statement of how well a task or topic learning objective must be performed. The standard specifies how well, completely or accurately, a process must be performed or product produced. the

standard reflects task requirements the job or learning requirement in the classroom. If a product is standard, it is in terms of accuracy, tolerance, completeness, format, clarity, errors, or quantity. If a process is standard, it is in terms of sequence, completeness, accuracy or speed. Both product and process must be observable and measurable.

3.139 Stimulators. A stimulator is a device used to generate and supply realistic input signals to the training environments. These signals may be supplied to the training hardware to allow it to simulate normal operation, or the signals may be supplied directly to the student to create a realistic data environment for mental skill practice. Trainee in the training environment are not required to interface directly with stimulators. Therefore, stimulators do not need to resemble tactical hardware.

3.140 Stimulus. The event, situation, condition, signal or cue to which a response must be made.

3.141 Student guide. Refer to Trainee Guide.

3.142 Subject matter expert (SME). An individual who has a thorough knowledge of a job, duties/tasks, which qualifies him to assist in the curriculum development process (e.g., consultation/review analysis/etc.). Refer to Job Expert.

3.143 Subsystem. Any collection of equipment which, when taken as a whole, supports a system in meeting the tactical or strategic requirements.

3.144 Surveillance. Monitoring, analyzing, and reporting procedures used to ensure that training materials remain job-task oriented, accurate, and up-to-date.

3.145 System. Any grouping of subsystems or equipment that exists to meet a tactical or strategic purpose. Systems may be single or multi-purpose.

3.146 Systems approach. A generic term referring to the orderly process of analysis, design, development, implementation, evaluation, revision, and operation of a collection of interrelated training elements.

3.147 Table assignment chart (TAC). A graphic representation of a complete training pipeline for a category of personnel. The TAC will identify, by means of PPP table numbers, the areas of knowledge and skill required by personnel.

3.148 Table assignment matrix (TAM). A matrix which reflects the level of training required to produce personnel qualified to coordinate, direct, or perform operation, maintenance, or task/functio[n] of the system, subsystem, or equipment.

3.149 Task. A single unit of specific work behavior with clear beginning and ending points and directly observable or otherwise measurable process, frequently but not always resulting in a product that can be evaluated for quantity, quality, accuracy, or fitness in the work environment. A task is the lowest level of behavior in a job that describes the performance of a meaningful function in the job under consideration.

3.150 Task analysis. A process of reviewing actual job content and context to classify information into units of work (duties/primary skills and tasks/discrete skills) within a job. The process provides a procedure for isolating each unique unit of work, provides a procedure for describing each unit accomplished and provides descriptive information to assist in the design and testing of training products.

3.151 Task inventory. Refer to Job Task Inventory.

3.152 Teachability. The development and organization of the contents of the training materials (Instructor Guide and Trainee Guide) to ensure effective trainee learning.

3.153 Technical ahnds-on training system (THOTS). THOTS provides a "closed-loop" of instruction. THOTS packets lead the student from objectives (in the packet) to the maintenance documentation to the actual equipment for the hands-on training, and then back to the THOTS packets for answers and observations.

3.154 Technical training-equipment (TTE). Refer to Training Equipment.

3.155 Test. Any device or technique used to measure the performance of a trainee on a specific task or subject matter.

(a) Comprehensive test. A test given at the completion of a major section of a course and, as required, at completion of a course to measure whether the trainee has mastered the course learning objectives.

(b) Knowledge test. A test that measures the achievement of theory supporting skill through the use of test items written at the appropriate knowledge and training levels.

(c) Performance test. A sample work situation in which the trainee performs a practical task to demonstrate how well the trainee has mastered the skills required for the performance of the job. For some circumstances this could be a written test if designed as a job sample for trainees whose responsibilities involve only paper procedures.

(d) Post test. A test administered after the completion of instruction to assess whether a trainee has mastered the objectives of the course or unit.

(e) Pre-test. Administered prior to instruction to determine how much the trainee already knows.

(f) Progress test. A short examination administered daily or weekly throughout the course to evaluate trainee progress. It is administered at strategic points in a course to determine the degree to which trainees are accomplishing the topic learning desired.

(g) Quiz (blitz). possibly unannounced, test administered by the instructor to measure achievement on material recently taught or on any small, newly completed unit of work.

3.156 Test item analysis. The process of evaluating single test items by any of several statistical methods. For norm-referenced tests, this usually involves the determination of how well an individual item separates examinees, its relative difficulty, reliability, and validity.

3.157 Testing constraints. Limitations such as time, money, personnel, facilities, and other resources, which prohibit tests from being reliable measures of the job tasks they represent.

3.158 Topic. The basic organizational unit of instruction, covering one or more closely related learning objectives.

3.159 Topic learning objectives (TLO). Refer to Learning Objectives.

3.160 Topical outline. An outline of the topics to be included in the Instructor Guide.

3.161 Trainee. Any person undergoing formal or informal training.

3.162 Trainee guide (TG). A generic term for the various printed materials developed for trainee use. A publication which provides each trainee with the supplementary material, in addition to technical manuals, judged to be required for successful completion of a course of study.

3.163 Training. Activities designed to prepare individuals and teams/units for job/duty performance by the teaching of job skills and knowledge.

3.164 Training agency (TA). An office, command, or headquarters exercising command of and providing support to some major portion of the military's formalized training effort.

3.165 Training aid equipment. A category of logistic support equipment. Equipment used to display training aids but which is not itself the subject of instruction. Most kinds of training aid equipment can be used for purposes other than training.

3.166 Training aids. Refer to Instructional Aids. Any item which is developed or procured with the primary intent that it must assist in training and the process of learning. This does not include instructional literature and logistic support equipment.

3.167 Training analysis. A process for proceeding from an inventory of job tasks, such as that provided by a job task analysis, to an organized set of learning objectives.

3.168 Training equipment. The hardware or software in the form of equipments, devices, system or subsystems, part or components (actual, duplicated, simulated, or otherwise represented) and supporting materials. The training equipment is to be used by trainee/instructor personnel to achieve required skill levels appropriate to the performance of operation, support and maintenance tasks such as setup, checkout, use of, repair, servicing, adjustment, and troubleshooting various systems , subsystems , installation, components, and equipment of operational related end items or ground support equipment applicable thereto.

3.169 Training facility (TF). A military command which has a primary mission of conducting or supporting training. A school or institution at which courses are offered.

3.170 Training level assignment (TLA). A tabular listing in Personnel Performance Profile (PPP) table number sequence that imposes training levels for the PPP line items and identifies the environment where training for a particular PPP line item will take place.

3.171 Training material outline (TMO). A document which provides detailed recommendations with justification for instructional media materials in relation to each topic listed on the outline.

3.172 Training objective statement (TOS). A group of statements which describe the equipment, subsystem, system, or task/function depths and skill levels to be attained in support of coordinating, directing, or performing operation, maintenance or task/function. They define depth and level of training for, Personnel Performance Profile (PPP) line items.

3.173 Training package. A set of instructional literature, aids, and equipments circulated as a unit to provide a training capability on a given subject. A segment of a school curriculum available as a unit/module for training of personnel.

3.174 Training path chart (TPC). An element of the Training Path System containing a graphic presentation of the order in which training objective statement system, subsystem, equipment, task/function knowledge depths and skill levels are acquired by training. The TPC constitutes

the final job model and defines the particular rating (e.g., Naval Enlisted Code (NEC) or Naval Officer Billet Classification (NOBC)).

3.175 Training path system (TPS). A coordinated system for identifying the training requirements for specific trainees. These trainees must attain the knowledge and skills necessary to coordinate, direct, or perform operation and maintenance of a system, subsystem, equipment, or task/function. The TPS is based on the knowledge and skills items set forth in personnel performance profiles and upon an orderly categorization of these items.

3.176 Training pipeline. Continuum of training programs (courses) covering training for a rating (or occupational grouping) from recruit training through the actual job situations.

3.177 Training program. An assembly or series of courses or other requirements which have been organized to fulfill a broad overall training objective.

3.178 Training resources (TR). The manpower, equipment, materials, facilities, and funds required for the conduct and support of training.

3.179 Training schedule. The planning for utilization of instructors, trainees, and facilities within a school.

3.180 Training specifications. A detailed description for the development of the job task analysis (job analysis), instructional materials, and the conducting of courses designed for preparing technical personnel to perform assigned tasks within their occupational fields.

3.181 Training standard. A quantitative or qualitative measure for the determination of a level of competence or readiness. A standardized procedure or exercise.

3.182 Training support-material. The material used as instructor aids for presenting information in a lecture or discussion and as trainee aids in an individualized training course or some other self-learning process.

3.183 Using activity. Any activity responsible for the presentation and maintenance of training materials.

3.184 Validation. The process by which the curriculum materials and instructional media materials are reviewed for technical and literary accuracy, adequacy, and suitability for presentation.

3.185 Verification. The process by which previously validated curriculum materials and instructional media materials are proved to be adequate in the actual training environment.

4. GENERAL DESCRIPTION

4.1 Purpose. Fleet readiness requires personnel who are trained to meet the minimum operation or maintenance requirements, or who have sufficient training to rapidly reach proficiency upon reporting to their job assignment. The Training Materials Development Process provides direction to develop the training for those reporting to the fleet.

4.2 Focus. This handbook provides practical application of techniques and procedures and gives step-by-step instructions for developing the various components of the training materials. The basis for most of the training supporting fleet readiness is equipment-man interaction which consists of the equipment needs that are met by man. Although the focus of the Training Materials Development Process is on equipment operation and maintenance, the same procedures and sequences may also lead to the design and production of training materials for non-equipment related assignments (e.g., Navy instructor, administration).

4.3 Systematic approach. The Training Materials Development Process is a systematic approach to training. This approach integrates the process of analysis, design, development, implementation, and evaluation. The systems approach to training proceeds from an analysis of job task inventories to a selection of tasks to be trained, the identification of skills and knowledge required to support those tasks, the development of training objectives, the design and development of training materials, the conduct of courses, and the evaluation of courses and course materials, This approach to training provides positive identification of training requirements, implements standard guidelines for materials development, and assesses the effectiveness of training and training materials.

4.4 Product descriptions and development sequence. The handbook falls into four basic development categories: planning and analysis, training requirements, curriculum, and instructional media material. Training material development usually follows a logical order as shown on Figure 4-1-1. Training requirements specified in acquisition contracts may be tailored to suit the particular equipment being procured. As in any system, data is gathered, plans are formulated, outlines are drafted, and then the substance is developed or compiled in guides for instructors and trainees.

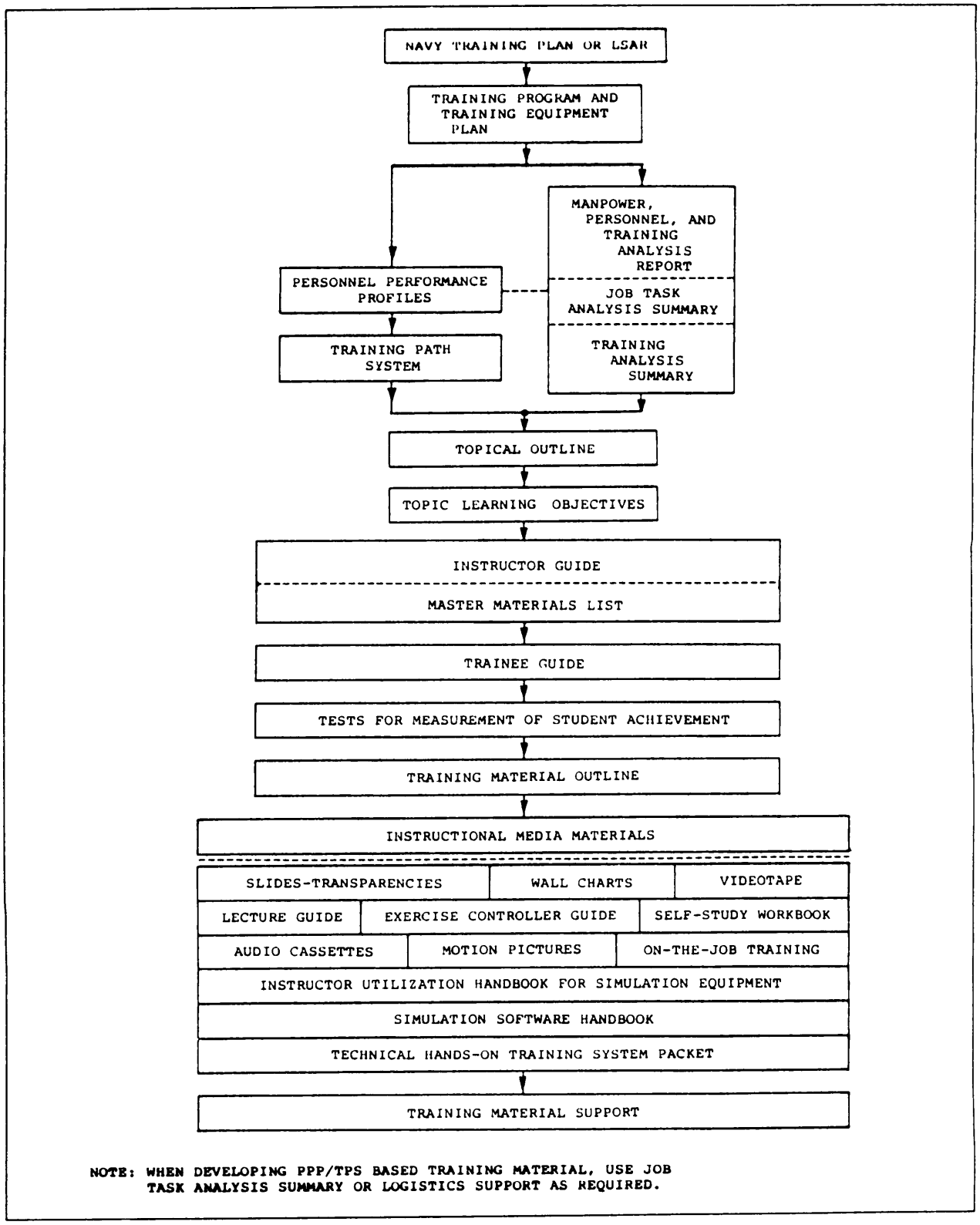

FIGURE 4-1-1. Representation of the training materials development.

5.1 TRAINING PROGRAM AND TRAINING EQUIPMENT PLAN

5.1 Training program and training equipment plan. The Training Program and Training Equipment Plan (TP/TEP) supplies information concerning the contractor's plan for providing training. This section describes the format, content, and development guidelines of the elements of a TP/TEP as specified in tile military standard and in DI-ILSS-80076.

5.1.1 Use. The data compiled defines all training and training support elements required to provide specific trained personnel to support specifi systems, subsystems, or equipment by a predetermined support date. The TP/TEP describes all knowledge factors necessary to prepare and conduct a successful training program and attain optimum use of all personnel, hardware, and funds. Data in this plan is derived from the following sources:

(a) Contractor manuals
(b) Logistic Support Analysis Record
(c) Logistic support plans
(d) Maintainability analysis
(e) Maintenance plans
(f) Navy Training Plan
(g) Procurement specifications
(h) Test requirement documents

5.1.2 Elements. The TP/TEP is organized into five major elements, identified as parts, which are further divided into sections. Contens and sequential order of presentation is as follows:

(a) Front Matter
(b) Training Project Plan
(c) Course Schedule Data
(d) Price Data
(e) General Information

5.1.3 Front matter development. The front matter consists of a cover and table of contents. The steps for developing the Front Matter are described below.

(a) Cover development. The cover includes the security classification (if required), title of the plan, Course Identification Number (CIN), course title (with no abbreviations) or the complete name of the weapon system, the activity or organization for which the plan is prepared, contract number, the name and address of agency preparing the plan, and the publication date of the plan (see figure 5-1-1).

1. Security requirements. Each TP/TEP must bear the highest security classification demanded by its contents. Classification must be in accordance with the effective edition of tile

Industrial Security Manual for Safeguarding Classified Information (DoD Instruction 5220.22-M), the Department of the Navy supplement to the DoD Information Security Program Regulation (OPNAVINST 5510.1), and applicable Procuring Activity instructions .

(b) Table of contents development. The table of contents must list all of the contents of the TP/TEP. The table of contents for the first volume of a multivolume set must contain a complete listing of all volumes . Subsequent volumes must contain only the contents of the respective volume (see figure 5-1-2).

5.1.3.1 Training project plan development. The Training Project Plan presents the who, what, when, where, how, and why of the training program. The plan consists of six separate sections, containing data and information for training courses, and must identify and provide justification for resource requirements (see figure 5-1-3). The specific elements of data and information to be included are as follows:

(a) Course data. Section 1 outlines the course to be taught, the length, learning objective(s), basic content, trainee population, trainee prerequisites, required number of instructors, and support materials. It also identifies what Procuring Activity/Agency or functional unit will receive the training. This information is grouped by course and separately indicated for each course and instructor training service.

1. Course title. The course title must identify the proposed title of the course, without abbreviations. The complete nomenclature of the equipment is included with the appropriate maintenance level.

2. Course identification number. The CIN assignment is made by the training agency.

3. Type training. The following list provides the types of available training.

(a) Advanced
(b) Background
(c) Conversion
(d) Factory (initial)
(e) Flight
(f) Replacement
(g) Depot

4. Prerequisites. List prerequisite knowledge and skills required of the trainees that are scheduled to attend the course. These

may be equipment specific, rate specific, knowledge and skills specific, or course specific.

5. Purpose. State briefly what the course intends to do and what is expected of the trainees who attend this course.

6. Overview. Outline the systems, subsystems, equipment, or components and the broad knowledge and skills that will be taught. in the course (e.g., remove, repair, replace, operate, fault isolate, troubleshoot, component description, location, function, and safety). The overview helps the Training, Agency project what the course will actually contain.

7. Course length. Enter the time allotted to teach the course. This time is expressed in total number of days and hours. The instructional day consists of 8 hours divided into instructional periods of 50 minutes of trainee contact with a ten minute break.

8. Number of classes. Enter the total number of times this course is to be taught.

9. Class size. Enter the maximum and minimum number of trainees comprising each class. This may further be broken down by the trainee specialty ratings. This number may be dictated by fleet requirements located in the Navy Training Plan or equipment procurement specifications.

10. Instructor and support manning. Enter the total number of instructors or instructor support personnel who are required to prepare or conduct this course, both current and planned.

11. Contracting agency/activity. Enter the training agent/activity that is acquiring the training, (e.g., Commander Naval Sea System Command, Commander Naval Air Systems Command).

12. Agency to receive training/training sit. Enter the name and location of the training agency to receive the training and the location of the training site (e.g., Naval Air Maintenance Training Group, Detachment 1038, Lemoore).

(CLASSIFICATION)

C-102-3940

TRAINING PROGRAM AND TRAINING EQUIPMENT PLAN

for the

X-1B COMMUNICATION, NAVIGATION, AND IDENTIFICATION (CNI) SYSTEMS

Prepared for

Department of the Navy
Naval Air Systems Command
Washington, DC

Prepared by

FBN Aerospace Corporation
Phoenix, Arizona 85340-0082

Contract No. N00019-85-0260

1 February 1986

(CLASSIFICATION)

FIGURE 5-1-1. Example cover.

TABLE OF CONTENTS

FIGURE 5-1-2. Example table of contents.

TRAINING PROJECT PLAN PART 2 - SECTION 1

COURSE DATA

Course title: X-1B Communications, Navigation, and Identification (CNI) Systems Organizational Maintenance

CIN: C-102-3940

Type training: Factory training (initial for instructor)

Prerequisites : AT-83XX(E-6)

Purpose: Upon successful completion of this course, Aviation Electronics Technicians will have acquired sufficient knowledge and skills, including system analysis and troubleshooting techniques, to be able to perform organizational maintenance in the squadron working environment on the X-1B Communications, Navigation, and Identification Systems of the X-1B Weapon System.

Overview:

I. Introduction to the X-1B Weapon System

A. Introduction to the course

B. X-1B aircraft familiarization and mission

1. General aircraft description

2. Avionics circuit breaker panel locations

3. Hostile radar characteristics

4. X-1B Primary combat mission

5. X-1B Operational mission profiles

II. X-1B Communication System

A. Description and locations of systems

1. Functional description of systems

(Page 1 of 27)

FIGURE 5-1-3. Example course data. (Sheet 1 of 4)

TRAINING PROJECT PLAN PART 2 - SECTION 1

COURSE DATA - Continued.

2. Locations of systems components

B. UHF Radio System

1. Location of switches and circuit breakers

2. Power requirements

3. Theory of operations

4. Power supply block diagram

5. Transmitting and receiving limitations

c. VHF and HF Radio Systems

1. Location of switches and circuit breakers

2. AC and DC power requirements

3. Signal flow for transmitting and receiving

4. Power supply block diagrams

5. Operating parameters and troubleshooting

D. Data Transmission System

1. Purpose

2. Location of switches and circuit breakers

3. Power requirements

4. Regulated power supply operation

5. Operating theory and signal flow tracing

E. Communication System troubleshooting laboratory

1. Power up and operate the Communication System

(Page 2 of 27)

FIGURE 5-1-3. Example course data. (Sheet 2 of 4)

TRAINING PROJECT PLAN PART 2 - SECTION 1

COURSE DATA - Continued.

2. Troubleshoot and locate fault in the UHF Radio System

3. Troubleshoot and locate fault in the VHF Radio System

4. Troubleshoot and locate fault in the Data Transmitting System

III. X-1B Navigation System

A. Type and purpose of the Navigation Systems

1. Description of X-1B Navigation System components

2. Locations of Navigation System components

B. Radio Navigation Systems

1. Controls and instruments function and location

2. Power supplies and requirements

3. Operating theory

4. Signal flow block diagrams

5. Operating rages and limitations

C. Inertial Navigation System

1. Description and function of controls and instruments

2. Stable platform components and theory of operation

3. Main computer purpose and operation

4. Inertial tracking signal flow schematics

5. Programing and fault isolation of the system

D. Navigation Systems operation and troubleshooting laboratory

(Page 3 of 27)

FIGURE 5-1-3. Example course data. (Sheet 3 of 4)

TRAINING PROJECT PLAN PART 2 - SECTION 1

COURSE DATA - Continued.

1. Navigation Systems set up and operation

2. Troubleshoot and locate fault in the Radio Navigation System

3. Troubleshoot and fault isolate the Inertial Navigation System

IV X-1B Identification System

A. Introduction to the X-1B Identification System

1. Purpose

2. Location of switches and circuit breakers

3. Power requirements

4. Operating theory and signal flow tracing

B. X-1B Identification System operation and troubleshooting laboratory

1. Troubleshoot and locate fault in the Identification System

Course length: 200 Instructional hours/33 days

Number of classes: 2 (Factory/Whidbey Island)

Class size: 8 max, 4 min

Instructor and instructor support manning required:

Current:	2 instructors	Planned:	2 instructors
	1 support		1 support

Procuring agent/activity: Commander Naval Air Systems Command (COMNAVAIRSYSCOM) Washington, D.C.

Agency to receive training/training site: Naval Air Maintenance Training Group (NAMTRAGRUDETACHMENT 1001) Whidbey Island, WA

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FIGURE 5-1-3. Example course data. (Sheet 4 of 4)

(b) Justification for course development, change, or revision. Section 2, briefly describes the reasons for the proposed course development, change, or revision and the anticipated benefits.

(1) Cite specific references. Official formal correspondence must back up/justify the reason the course must be developed, changed, or revised.

(2) Cite anticipated benefits. Explain in short narrative statements the type, extent, and content of the proposed modifications to the course and the benefits of these modifications. Specific training documents and materials must be identified as shown in the following example:

> Lesson Topic 3.1.4, SH-2 Lamps Avionics Equipment Organizational Maintenance (C-102-3376). This topic will be replaced to update the course material to include and address the latest AN/ALR-66A(V)A equipment . New trainee assignment sheets, test items, and four transparencies must be developed to support this topic.

(3) A course revision is an addition, deletion, or alteration of logical segments of the course to such an extent that changes to logistics, personnel allocations, or operating funds are ultimately involved. For course change/revision proposals, include the proposed modifications to the course, identify all recommended deletions and additions, and identify impacts to the PPP and TPS or the Training Analysis Summary. Justification for a revision may come from one of the following sources:

(a) Tasking by higher authority
(b) Navy Training Plans
(c) Internal/external course reviews
(d) Surveillance/external feedback
(e) New technology/techniques/equipment

(c) Impact if course development. change, or revision is not undertaken. Section 3, explains in a short, narrative statement the impact on fleet requirements and capabilities if this proposed course/modification is not funded, implemented, or developed. The following example is provided:

> If the SH-2 Lamps Avionics Equipment Organizational Maintenance (C-102-3376) course is not modified to include the data on the AN/ALR-66A(V)1 equipment, the maintenance technician will not be trained to support the new model of this equipment which is already in fleet use.

(d) Milestone chart. Section 4, shows figuratively all the required events and products from the start dates to the estimated completion dates . Preparation of these charts requires sufficient knowledge of the use and need of all products and events in order to plan for their development and use in the proper time frame to meet the specific RFT date. These charts are individualized per product or event and then a composite milestone is developed to show comprehensive events and products to meet RFT dates.

(e) Resource requirements. Section 5, document course resource requirements required to conduct training as to type, identification, description, quantity, and resource provided. Present data in tabular format.

(1) Related end item equipment. List all support equipment and related end-item components in the following columns: Item, nomenclature, part number, NSN, military designation, GFE or CFE, and disposition after course completion (see figure 5-1-4).

(2) Training equipment. List each trainer or training device in the following columns: Item, nomenclature, part number, NSN, military designation, Federal Supply Code for Manufacturers (FSCM), quantity, GFE/CFE, and disposition (after course completion).

The FSCM is a five character alphanumeric code assigned by Defense Logistics Services Center (DLSC) and is contained in the Cataloging Handbook H-4 Series. List the source for each trainer or item of training equipment. Disposition of this equipment after the course is taught must be specific as to recipient and location (see figure 5-1-5).

Use of any available trainer and training illustrations is acceptable and must be noted with the training equipment list.

(3) Audio-visual aids. List all required audio-visual aids in the following columns: Type, total quantity, number of classes/site, development specifications, procurement document, disposition (after course completion), and special notes. The quantity may be expressed as 25/1 (25 transparencies and 1 master) (see figure 5-1-6).

(4) Training material. List the required training material to be developed to conduct the proposed course in the following columns: Type (PPP, TPS, or TAS, Instructor Guides, Trainee Guides), quantity per course, total quantity required. Separate training material data may not duplicate data located in other available training material; i.e., schematics must not be direct lifts from technical documentation and made part of formal training material (Trainee Guide, Instruction Sheets). Department of Defense (DoD) or military service publications and technical data must be used whenever feasible. Some course

types may make use of vendor/manufactures training material (see figure 5-1-7).

(5) Publications. Separate and list all required publications by categories (commercial, Government service publication, technical manual documentation, and directives) in the Identification Number column. List the titles, of each category, in alphanumeric order in the Title column. Provide the quantity, supplier, and disposition (after course completion). If any publication is under development place To Be Developed (TBD), in the Identification Number column and the proposed title in the Title column (see figure 5-1-8).

(6) Consumable material. List all the consumable material required to conduct training for the proposed course in the following columns: Item, nomenclature, part number, national supply number, quantity, supply source, and justification for replacement (expected useful life in hours of operation). If the consumable is in the Federal Supply System, use the FSCM number in the supply source column (see figure 5-1-9).

(7) Equipment refurbishment. List all GFE and CFE used during the conduct of the training course that must be replaced/ refurbished at the completion of the course. List in the following columns: Item, nomenclature, GFE/CFE, part number, NSN, military designation, procurement status (indicate if replacement, refurbishment cost was a part of course cost, or requires addition procurement action) (see figure 5-1-10).

(8) Facilities. Identify any requirement for military construction or facilities modification by training location, cost per location, and total cost, including a justification for the requirement (see figure 5-1-11).

(9) Personnel. Identify the total personnel requirements by operator, maintenance, and support (manpower type, billet requirements) and training billet requirements by fiscal year, including a justification for the requirement (trainee, instructor, training support) (see figure 5-1-12).

(f) Follow-on training recommendations. Section 6, identifies in short narrative format, the contractor's recommendation of any follow-on training program in support of the system, subsystem, equipment, or functional components. These recommendations must be based on the contractor's knowledge and will be the results of any of the studies that determine cost-effectiveness of the various methods of conducting training. The current approved DoD training program documentation must be used as a baseline for the development of this information.

TRAINING PROJECT PLAN PART 2 - SECTION 5

RELATED END-ITEM EQUIPMENT REQUIRED TO CONDUCT TRAINING

COURSE TITLE: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

CIN: C-102-3940

ITEM	NOMENCLATURE	P/N	NSN	MIL DESIG	GFE/CFE	DISPOSITION
1	Test Set Altimeter	5816445-501	6RX-4720-00-906-6374TX	AN/APM 392	GFE	Retain by Navy
2	Test Set Radio	132277	6RX-6625-00-057-7453MF	AN/ARM 122	GFE	Retain by Navy

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FIGURE 5-1-4. Example related end-item equipment required to conduct training format.

TRAINING PROJECT PLAN PART 2 - SECTION 5

TRAINING EQUIPMENT REQUIRED TO CONDUCT TRAINING

COURSE TITLE: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

CIN: C-102-3940

ITEM	NOMENCLATURE	P/N	NSN	MIL DESIG	FSCM	QTY	GFE/CFE	DISPOSITION
1	Navigational System Maintenance	9070810001-019	PRM-662500-919-4994	(If Assigned)	88277	1	CFE	Ship to Whidbey Island, WA, Det 1001

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FIGURE 5-1-5. Example training equipment required to conduct training format.

TRAINING PROJECT PLAN PART 2 - SECTION 5

AUDIO-VISUAL AIDS REQUIRED TO CONDUCT TRAINING

COURSE TITLE: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

CIN: C-102-3940

A/V Aids Review Conference Required (or Not Required)

Type	Total Quantity	Number of Classes/Site	Development Specification	Procurement Document	Disposition	Special Notes
Transparencies	25/1	2/Factory Whidbey Island, WA	MIL-T-81821	MIL-STD-001379C	NAMTRAGRUDET 1001 Whidbey Island, WA	Framed numbering film.

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FIGURE 5-1-6. Example audio-visual aids required to conduct training format.

TRAINING PROJECT PLAN PART 2 - SECTION 5

TRAINING MATERIAL

COURSE TITLE: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

CIN: C-102-3940

TYPE	QUANTITY PER COURSE	TOTAL QUANTITY REQUIRED
Personnel Performance Profile	1	1
Training Plan System	1	1
or		
Training Analysis Summary	1	2
Instructor Guide	1	3
Trainee Guide	8	16

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FIGURE 5-1-7. Example training material format.

TRAINING PROJECT PLAN PART 2 - SECTION 5

PUBLICATIONS REQUIRED TO CONDUCT TRAINING

COURSE TITLE: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

CIN: C-102-3940

IDENTIFICATION NUMBER	TITLE	QUANTITY	SUPPLIER	DISPOSITION
Technical Manuals NA 01-85ADA-2.23.3	Integrated Weapons System Testing and Troubleshooting, X-1B	6	Navy	Retained by Navy
Commercial 404744	Introduction to Digital Fundamentals	6	Litton Guidance Systems	Retained by Navy
Directives OPNAVINST 4790.2	The Naval Aviation Maintenance Program	1	Navy	Retained by Navy

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FIGURE 5-1-8. Example publications required to conduct training format.

TRAINING PROJECT PLAN PART 2 - SECTION 5

CONSUMABLE MATERIAL

COURSE TITLE: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

CIN: C-102-3940

ITEM	NOMENCLATURE	P/N	NSN	QUANTITY	SUPPLY SOURCE	JUSTIFICATION FOR REPLACEMENT
1	Micro-circuit	5N7447A	5962-01-057-1547	24	FSCM 01295	Expected life/100 hours
2	Battery	BA200/U	6135-00-050-3287	1	FSCM 89349	Expected life/10 hours
3	LED Display	FND507	5895-01	6	FSCM 34148	Expected life/1000 hours

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FIGURE 5-1-9. Example consumable material format.

TRAINING PROJECT PLAN PART 2 - SECTION 5

EQUIPMENT REFURBISHMENT

COURSE TITLE: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

CIN: C-102-3940

ITEM	NOMENCLATURE	P/N	NSN	MIL DESIG	PROCUREMENT STATUS	SUPPLY SOURCE	REMARKS
GFE 1	Test Set Battery	5927444-001	6RX-4720-00-906-6374TX	AN/BB 401	Scheduled Replacement	FSCM-55288	Non-Rechargeable Battery
CFE 1	Radar Set	10203-002	N-3666-00-105-66RD	AN/SP 168	Scheduled Overhaul	FSCM-2238	Raster-Blaster Occult Shader Replacement

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FIGURE 5-1-10. Example equipment refurbishment format.

TRAINING PROJECT PLAN PART 2 - SECTION 5	
FACILITIES	
COURSE TITLE: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance	
CIN: C-102-3940	
CHECK ONE: ✓ Site preparation/military constuction for existing space ___ Military construction for a new space	
TRAINING LOCATION	COST
Whidbey Island, WA	None Total Cost 0
	(Page 18 of 27)

FIGURE 5-1-11. Example facilities format.

TRAINING PROJECT PLAN PART 2 - SECTION 5

PERSONNEL

COURSE TITLE: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

CIN: C-102-3940

OPERATOR, MAINTENANCE, AND SUPPORT		TRAINING BILLET REQUIREMENTS BY FISCAL YEAR*							
MANPOWER TYPE	BILLET REQUIREMENTS		FY 86	FY 87	FY 88	FY 89	FY ___	FY ___	FY ___
OFFICER	6	TRAINEE	18	37	37	24			
ENLISTED	40	INSTRUCTOR	2	3	2				
CIVIL SERVICE	0	TRAINING SUPPORT	1	1					
CONTRACTOR	0								

*The last fiscal year requirements represents the steady state requirements

(Page 19 of 27)

FIGURE 5-1-12. Example personnel format.

5.1.3.2 Course schedule data. This section is used to plan, develop, and monitor the materials, events, and personnel required to implement a training course/program. The required data may be given in narrative format; however, if the narrative format is used, the data must also be presented on the training milestone chart.

(a) Course presentations. Indicate in one statement under the subject heading the title, number, location, start and completion dates of the proposed course presentations.

(b) Training date. List the date the training, to include trained DoD personnel, and training materials must be ready for training to support operational unit requireinents. This date is normally found in the Navy Training Plan and will be reflected on the composite training milestone chart.

(c) Preparation leadtime. State the estimated number of calendar days after receipt of contract authorization (award) that developer needs to prepare the course. Further document the number of man-hours required to develop course data/materials.

(d) Presentation leadtime. Identify the estimated lead time required, in calendar days, after course development completion, the preparation lead time required for the first and subsequent course presentations. Included will be time required for instructor personalization to support the first class convening.

(e) Student load. List the minimum, maximum, and optimum student load and number of classes that can be taught during a course presentation time cycle. Attention must be given to the training agency's individual requirements, trainer design, number of shifts, instructor to trainee ratio, etc.

(f) Audio-visual aid review. Indicate in a single statement the recommended date for an audio-visual aid review selection conference, if one is required. This date may be waived for an incremental review of audio-visual aids to be accomplished as part of an in-process training material review. The date(s) will be indicated on the milestone chart. If none is required, indicate as such.

(g) Topical outline/training analysis review. The Topical Outline/Training Analysis Summary precedes the development of the Topical Outline and is reviewed/approved by the contracting activity. Conference requirements dates must be established and shown on the training milestone chart.

(h) Instructor guide review. The review of the Instructor Guide is planned in conjunction with the desires of the contracting activity or its designated representative. Often, preliminary draft and final reviews are indicated on a CDRL. The preliminary delivery review is when the Instructor Guide is reviewed as it is developed, the draft is the reviewed/corrected Instructor Guide which will be used in the conduct of the course, and the final Instructor Guide is then the finished product. The Instructor Guide may be reviewed in completed stand-alone increments (Front Matter, Parts, Reference Material,

Instruction Sheets) as they are developed or at pre-established in-process review (IPR) meetings, A thorough Instructor Guide review must be completed in sufficient time, before the first course presentation, to check for sufficient outline detail to ensure the proper coverage, consistency, and teachability is achieved. All review dates must be reflected on the training milestone chart.

(i) GFE/CFE. All GFE/CFE items, specialized operator/maintenance trainers and training devices, publications, software, and other training resources to be used in the conduct of the course must be available at the training site in sufficient time to be inspected and inventoried before the proposed RFT date. The dates will be reflected on training milestone chart.

(j) Training materials. Review/inspection of all the individual training materials must be completed in time for all materials to be reviewed prior to the first course presentation. The CDRL may designate other, each of these materials is to be delivered for review/inspection. The number of reviews is determined by the training agency.

(k) Target date. Identifies the date by which the contractor must receive the "turn-on" to comply with the schedules indicated as the results of 5.1.3.2, (a) through (j). If the target date is not met, all milestone/schedules presented in the Training Plan may have to be adjusted accordingly.

(l) Training milestone chart. A milestone chart is a composite of all training requirements and dates indicated in 5.1.3.2.(a) through (k). This chart reflects the coordination of all training requirements/components to meet the course start date and fleet trained personnel requirements.

(m) Instructors. Outline the number of instructors and training maintenance personnel involved during course set-up and presentation and describe the services each will provide. Types of service may be engineering, trainer (operational maintenance), or instructional support,

5 .1.3.3 Price data. Price data must contain the contractor's price to the Government with appropriate supporting data. This information must be grouped by course and separately indicated for each individual proposed course and instructor training service. If more than one course is included in the TP/TEP, each course must be separately priced in a manner that. will permit selective acquisition of individual courses at the indicated price without affecting the cost of other courses. The cost data in this section must be submitted on DD Form 633 with detailed supporting data. The specific elements of supporting data to be separately indicated must include the following:

(a) Course preparation time in man-hours and cost.
(b) Initial course presentation time in man-hours and cost.
(c) Overhead rate and cost.
(d) Administrative and coordination cost identifying the cost and description of proposed effort.

(e) Instructor's per diem cost identifying the cost per instructor per day, number of instructors, and number of days per instructor.
(f) Instructor's travel (labor cost only) identifying the number of instructors with duration and number of trips per instructor.
(g) Instructor's travel/transportation costs identifying the number of instructors and the number of trips per instructor.
(h) Cost for each related end-item equipment, training equipment, audio-visual and training material, publication, refurbishment of GFE and CFE items, and the quantity and cost by item of consumable material (see 5.1.3.1. (e)(1) through 5.1.3.1. (e)(7)).
(i) Cost of trainee transportation required between the MPA training site and the trainee housing location during the course if such transportation is provided by the MPA and included in the proposed price for the proposed course.
(j) Price of new facilities or modification of existing facilities required to conduct the course if provided by the MPA and included in the proposed price for the proposed course.
(k) Cost of any subcontractor effort required to conduct the course if included in the proposed price for the course. Subcontractor costs included in the course proposal must be verified by copies of potential subcontractor proposals.
(l) Price per trainee hour for follow-on course presentation. The price per trainee hour must be separately indicated for the minimum, maximum, and optimum number of trainees per class recommended by the MPA in accordance with 5.1.3.2.(e).
(m) Explanation and justification of costs associated with nonproductive effort such as standby time during course presentation intervals,
(n) Any other cost elements and supporting cost data required by the instructions on the reverse side of the appropriate DD Form 633.
(o) All other cost elements not specifically identified in 5,1.3.3. (a) through 5.1.3.3.(n) which are included in the proposed price for the course . 'Such additional cost elements must be specifically identified and justified with appropriate supporting cost data.

5.1.3.4 General information. This section must contain information, in contractor format, applicable to all courses and instructor services, For any of the elements of general information previously provided in a currently valid TP/TEP, the appropriate portions of the applicable TP/TEP may be referenced in lieu of repeating the information (see figure 5-1-13). General Information shall consist of the following categories:

(a) Course title
(b) Course identification number
(c) Company name and address
(d) Location of training/justification
(e) Government facilities required
(f) Organizational structure
(g) Individual instructor qualifications

TABLE 5-2-III. System level matrix development sequence.
(Sheet 1 of 2)

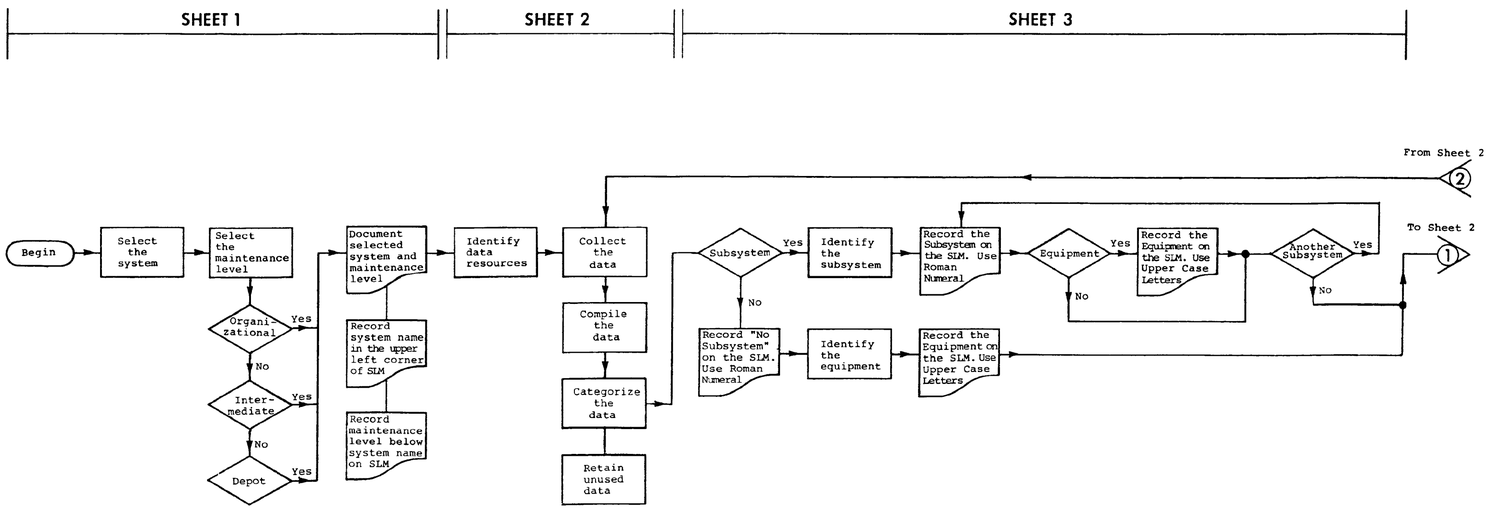
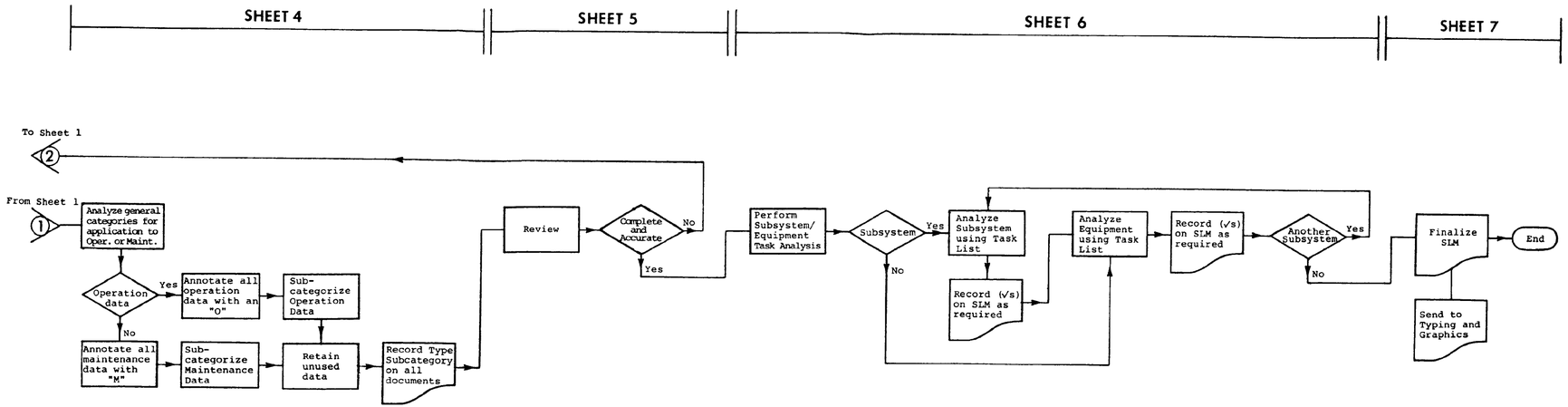


TABLE 5-2-III. System level matrix development sequence.
(Sheet 2 of 2)



(h) Trainee housing/messing (if at MPA site)
(i) Trainee transportation
(j) Administrative support required
(k) Trainee security clearance
(l) Class hours

GENERAL INFORMATION PART 5

COURSE TITLE: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

CIN: C-102-3940

Company name/address

FGN Aerospace Corporation, Phoenix, Arizona

Location of training/justification

NAMTRAGRUDET 1001, NAS Whidbey Island, Oak Harbor, Washington for the following reasons:

1. Operational maintenance trainer available only at NAS Whidbey Island

2. Travel cost is less to send instructors to NAS Whidbey Island versus sending trainees to FGN Aerospace Corporation, Phoenix, Arizona.

Government facilities required

One classroom for eight (8) trainees equipped with one chalkboard, overhead projector, and projection screen. One laboratory equipped with an operational maintenance trainer.

Organizational structure

See Attachment (1), Organization/structure of training department
See Attachment (2), Training supervisory personnel resumes

Individual instructor qualifications

See Attachment (3), Instructor resumes which include all information from DI-ILSS-80076 paragraph 10.4.5.e.

Trainee housing/messing (if at contractor site)

Numerous chain motels ranging in cost from $30 - $50 a day, located from 1-20 miles away, are available with 2 week advance reservations .

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FIGURE 5-1-13. Example general information format. (Sheet 1 of 2)

GENERAL INFORMATION PART 5 - Continued.

Trainee transportation (if at contractor site)

Rental cars must be provided.

Administrative support required.

NAVPRO will assist with the necessary arrangements for pay, medical assistance, etc.

Trainee security clearance

Secret clearance is required for access to the operational maintenance trainer.

Class hours

Daily: 0800 - 1600

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FIGURE 5-1-13. Example general information format. (Sheet 2 of 2)

5.2 MANPOWER, PERSONNEL, AND TRAINING ANALYSIS REPORT

5.2 Manpower, personnel, and training analysis report. This report provides timely and accurate identification of how technical tasks will be performed by operator and maintenance personnel, job descriptions, and manpower requirements necessary for the proper operation, maintenance, and repair of system, subsystem, and equipment in accordance with the mission, employment doctrine, personnel requirements, and support concept. This section describes the format, content, and development guidelines specified in the military standard and in DI-ILSS-80077.

5.2.1 Use. The data compiled for this report is used as a basis for the design and development of all training, training support material, and for manpower resource planning. Early planning identifies all training and training course development requirements to ensure that trained personnel will be available when the system, subsystem, or equipment reaches operational units .

5.2.2 Elements. The elements of the Manpower, Personnel, and Training Analysis Report are as follows:

(a) Cover. The Cover provides information relevant to the identification of this report.

(b) System, subsystem, and equipment introduction and description. This section consists of narrative statements outlining the description of all system, subsystem, or equipment being analyzed, approved operational and maintenance concepts, and must be addressed along with providing a listing of all GFE.

(c) Job task analysis summary. This section lists all the procedural steps, or support equipment required to operate and maintain a specific system, subsystem, or equipment or to support a specific task/function.

(d) Job training task list. This section lists the training tasks to be performed by the trainee and the most appropriate training method for each task.

(e) Manpower planning data. This section provides the information necessary for determining the number of personnel required to operate and maintain the system, subsystem, or equipment.

(f) Manpower summary. This section lists the total number of required operator or maintenance personnel classified by personnel specialties and skill level.

(g) Job training anaylsis matrix. This section provides a matrix listing of the subsystems and equipments which comprise a system, tasks to be performed, and knowledge required to perform the tasks.

(h) Training analysis summary. This section provides a summary listing of learning objectives and the skills and knowledge required to perform the tasks which resulted from the job task analysis summary and the job training task list.

procedural steps are performed. Used the alphanumeric code as provided in the LSAR.

(d) Task description. This is a brief statement describing the operation or maintenance task to be performed. Statements are obtained from the LSAR (e.g., "Remove and Replace the AN/APQ-129A (IFF) Radar.").

(e) Step number. Each task is sequenced into logical steps just as they are performed and then numbered accordingly.

(f) Step description. This description uses action verbs to explain the tasks to be performed (e.g., "Loosen the screws," "Remove bolts"). Include environmental conditions, speed of action, perception, coordination, safety, and a description of the system, subsystem, or equipment status that is necessary prior to performance of the step (e.g., "Do not move card from side to side because this may damage the card."). Notes between steps are permitted.

(g) Equipment. List all of the equipment, tools, and test equipment required to perform each task step opposite the step description. Use complete nomenclature and part numbers.

(h) Training required. Write "Yes" opposite each step description that requires training. Write "No" when no training is required. The LSAR provides the data to complete this column.

5.2.3.4 Job training task list. This section lists the tasks, including conditions and standards, to be performed by the trainee and must identify those tasks listed on the Job Task Analysis Summary for which training is to be provided (see figure 5-2-3).

(a) Job title. Identifies the job to be performed precisely by including level of operation or maintenance and the specific system, subsystem, equipment, or task/function.

(b) Course title. Titles shall be descriptive. The following guidelines should be used:

(1) Familiarization course. These course titles must begin with the appropriate weapon system identification and include the type of trainee, in parenthesis, that this course supports.

Examples:

(a) SH-60B Aircraft Familiarization (Pilot)
(b) F/A-18 Aircraft Familiarization (Enlisted Mechanic)

(2) Operation course. These course titles must begin with a complete military designation/nomenclature.

Examples:

(a) AN/USM 470(V)1 Automatic Test Set (ATS) Operator
(b) AN/BQH-5 Sonar Recorder Set Operator

(3) Organizational maintenance. These course titles must begin with the weapon system identification. If specific equipment is taught in the course, the equipment identification is listed following the weapon system.

Examples:

(a) S-3B - Power Plant and Related Systems Organizational Maintenance
(b) F-8J - AN/APQ-124 Radar System Organizational Maintenance

(4) Intermediate maintenance. These course titles must begin with the specific equipment and do not identify the weapon system in the title.

Examples:

(a) AN/USM-450A New Electronic Warfare Test Set (NEWTS) Intermediate Maintenance
(b) AN/TSQ-140 Ground Data Link Intermediate Maintenance

(c) Training task number. This number is an alphanumeric code resulting from a Job Task Analysis and a Training Task Analysis. It identifies a task that is to be taught to perform a specific job.

(d) Training task statement. This statement begins with a present tense action verb that is measurable (shows overt behavior) and ends with an object for the action (see table 5-2-I).

Examples:

(1) Remove/replace the antenna.
(2) Troubleshoot the assembly.
(3) Calibrate the test set.

(e) Conditions. List under what conditions or in what environment- the trainee is required to perform the indicated task. Limits to or aids for the performance of the task are also listed.

Examples:

(1) . . . by memory . . .
(2) . . . with publications . . .
(3) . . . using the trainer . . .
(4) . . . using MRC cards . . .
(5) . . . with support equipment . . .
(6) . . . with prefaulted module . . .

(f) Standards. Enter the required performance standard in terms of accuracy, quality, time, or degree of supervision. The standard is found in the applicable operation or maintenance manual.

Examples:

(1) . . . in accordance with the applicable maintenance manual.
(2) . . . as prescribed by/in . . .
(3) . . . within the tolerance prescribed in/by, . .

(g) Training method. Indicate which training method/environment is most appropriate for the instruction and comprehension of the training task. Use the abbreviation in this column.

(1) Le - Lecture (Formal classroom)
(2) De - Demonstration (Formal classroom/laboratory)
(3) PA - Practical Application (Formal laboratory)
(4) PJ - Practical Job Training (Framp)
(5) OJ - On-the-Job Training (Squadron/maintenance activity)

(h) Notes. This column is used to add any additional, relevant information needed to perform or to instruct the task. Media suggestions, safety observations, training methods time constraints, prerequisite skills, and space constraints are appropriate entries.

5.2.3.5 Manpower planning data. This section indicates by task the level of operation or maintenance, personnel by rate to perform the task, time to perform a specific task, frequency of the task, and scheduling of the task performance (see figure 5-2-4).

(a) Nomenclature. List specific name or model of the system, subsystem, or equipment to be operated or maintained.
(b) Part number. List the assigned manufacturer's part number which identifies the specific items.
(c) Training task no. This number is the alphanumerical code of the training task as it correlates with LSAR data.
(d) Operation/maintenance. Indicate the type of task, by entering an "X" under the appropriate description.

(1) Oper - Operator
(2) O - Organizational level maintenance
(3) I - Intermediate level maintenance
(4) D - Depot level maintenance

(e) Personnel. Indicate the total number of personnel by specialty and skill level required to perform the task.

TABLE 5-2-I. Skill/knowledge action verbs.

SKILLS		
accomplish	employ	perform
adjust	energize	plot
align	enter	polish
apply	exchange	position
assemble	fabricate	remove
balance	find	repair
blend	inject	replace
build	insert	show
calibrate	inspect	solder
change	install	start
check	isolate	stop
clean	load	synchronize
complete	locate	test
construct	manipulate	tie
correct	measure	trace
deenergize	mix	troubleshoot
demonstrate	move	use
	operate	utilize

KNOWLEDGE		
achieve	differentiate	name
administer	distinguish	observe
analyze	divide	recite
calculate	draw	recognize
choose	eliminate	repeat
coordinate	evaluate	report
communicate	explain	select
compare	express	solve
compute	fill out	spell
condense	illustrate	state
decide	instruct	submit
define	interpret	summarize
deliver	list	synthesize
derive	manage	translate
describe	match	write
determine	monitor	
diagnose		

(1) Rating/navy enlisted classification. Enter the Navy general or service ratings and the Navy Enlisted Classification (NEC) most nearly applicable to the task described. More than one specialty may be listed (see NAVPERS 18068D (Enlisted personnel) and NEC - Navy Enlisted classifications).

(2) Military occupational specialty. Enter the specialty code most nearly applicable to the task described. More than one specialty may be listed; however, each entry must be indicated as a separate line item (see MOS P1200.7C - Military Occupational Specialty (MOS) for Marine personnel).

(3) Number of Personnel by skill level. Evaluate the task to determine the number of personnel, by skill level, necessary to complete the task. Skill levels are defined as follows:

(a) B - Basic: Applies to the qualifications of personnel in pay grade E-4 and below.
(b) I - Intermediate : Applies to the qualifications of personnel in pay grade E-5.
(c) A - Advanced: Applies to the qualifications of personnel in pay grade E-6 and above.
(d) Total: Enter total number of personnel of all skill levels for each rating.

(f) Elapsed time by skill level. Indicates the elapsed time in minutes and tenths of hours required to perform each task/step.

NOTE: The time indicated here is the time expended by maintenance personnel in performing preventive, corrective, or servicing maintenance work. It does not consider such items as:

(1) Ground handling
(2) Supervision as an administrative effort
(3) Training
(4) Quality of workload control
(5) Travel to or from the immediate work area
(6) Time spent in obtaining spares, repair parts, test equipment, etc.
(7) Additional work resulting from accident
(8) Maintenance or operational errors not chargeable to the contractor
(9) Improved efficiency resulting from increased experience after the maintainability demonstration

(g) Frequency. The frequency of task performance may be predicted or actual. This number may be written on a scheduled basis, failure or damage rate, usage data, etc. The frequency number is in relation to the frequency of the task to the occurrence of the task per 1000

system, subsystem, or equipment utilization hours, cycles, or events. This number must be expressed as a number taken to four decimal places.

(h) Task schedule. Identify the tasks to be performed on an unscheduled or scheduled basis by expressing the total man-minutes for each task listed (minutes and tenths, 3 digits).

5.2.3.6 Manpower summary. This section provides the total operator or maintenance (except depot) manpower requirements for the system, subsystem, or equipment. Personnel specialties and skill levels are specified (see figure 5-2-5).

5.2.3.7 Job training analysis matrix. This section provides a matrix listing of the subsystems and equipments which comprise a system, the tasks to be performed, and the knowledge required to perform the tasks. The Job Training Analysis Matrix is the source document for training development when LSAR data has not been developed. The matrix consists of the following:

(a) System level matrix. The System Level Matrix (SLM) identifies the system, subsystem, and equipment. The SLM matches the tasks to the equipment (see figures 5-2-6 and 5-2-8).

(b) Subsystem\equipment level matrix. The Subsystem/Equipment Level Matrix (SS/ELM) identifies the subsystem or equipment, the tasks to be performed, and the knowledge required to perform the tasks (see figures 5-2-7 and 5-2-9).

MANPOWER, PERSONNEL, AND TRAINING ANALYSIS REPORT

X-1B Communications, Navigation, and Identification (CNI) System
Organizational Maintenance

Prepared for

Department of the Navy
Commander Naval Air Systems Command
Washington, D.C.

Prepared by

FBN Aerospace
Phoenix, Arizona 85340-0082

Contract No. N00019-85-0260

20 July 1985

FIGURE 5-2-1. Example manpower, personnel, and training analysis report cover.

JOB TASK ANALYSIS SUMMARY

Nomenclature: AN/APX-129A(IFF) Radar Date: Apr 85

TASK IDENT.	TASK DESCRIPTION	STEP NO.	STEP DESCRIPTION	EQUIPMENT	TRAINING REQUIRED
15E2	Remove Radar.	1	Locate the radar.		Yes
		2	Remove the access panel.	Screw driver, Flat blade	Yes
		2a	Loosen fasteners.	Speed wrench with Phillips Apex. (Part No.)	Yes
		2b	Lift the panel.		No
		2c	Store the panel.		No
		3	Disconnect cables/ cooling lines.	3/4" open-end wrench (Part No./NSN	Yes
		3a	Remove safety wire.		Yes
		3b	Cap cooling lines.		Yes
		4	Loosen mounting brackets.		No
		4a	Remove safty wire.	Side-cutting pliers (Part No./NSN)	Yes
		4b	Turn wing nut counterclockwise.		No
			NOTE: Radar is heavy and requires more than one person to remove.		
			Remove the radar.		Yes

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FIGURE 5-2-2. Example job task analysis summary.

JOB TRAINING TASK LIST

Job Title: Organization Maintenance on AN/APX-129A IFF Radar

Course Title: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

TRAINING TASK NO.	TRAINING TASK STATEMENT	CONDITIONS	STANDARDS	TRAINING METHOD	NOTES
15E2.6	Remove the radar.	Using the hard-ware trainer	In accordance with the Radar technical publication	Le/PA	Radar requires 2 people to remove.

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FIGURE 5-2-3. Example job training task list.

MANPOWER PLANNING DATA

Nomenclature: AN/APX-129A IFF Radar Part Number: 9070810001-019

TASK NO.	OPERATION/ MAINTENANCE				PERSONNEL						ELAPSED TIME				FRE-QUENCY	TASK SCHEDULE	
	Oper.	Maintenance			Rating/ NEC	MOS	No. Pers by Skill Level			TOTAL	B	I	A	TOTAL		Un-Sched.	Sched.
		O	I	D			B	I	A								
15E2.5		X			AT/8390		1	1		2	5	30		35	0050	30.3	30.3

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NOTE:

1. O - Operational
2. I - Intermediate
3. D - Depot
4. B - Basic
5. A - Advanced

FIGURE 5-2-4. Example manpower planning data.

MANPOWER SUMMARY

X-1B AIRCRAFT SYSTEM IMPROVED CAPABILITY (ICAP)

NAMTRAGRUDET	NEC	MOS	GRADE/RATE	NO. REQUIRED	ON BOARD DATE/FY
ARM INSTR	8390/9502	N/A	AOC	1	87
ARM INSTR	8390/9502	N/A	A01	1	87
Elect/INST INSTR	8390/9502	N/A	AEC	1	87
Elect/INST INSTR	8390/9502	N/A	AE1	1	87
Elect INSTR	8390/9502	N/A	ATC	1	87
Elect INSTR	6690/9502	N/A	AT1	1	87
P/P INSTR	8390/9502	N/A	ADC	1	87
P/P INSTR	6490/9502	N/A	AD1	1	87
A/F INSTR	8390/9502	N/A	AMSC	1	87
A/F INSTR	8390/9502	N/A	AMS1	1	87
			TOTAL	10	

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FIGURE 5-2-5. Example manpower summary.

SYSTEM LEVEL MATRIX

System: X-1B Communication, Navigation, and Identification (CNI) System	TASK TO BE PERFORMED																					
	1. Perform safety	2. Inspect	3. Service	4. Initialize	5. Operate	6. Shutdown	7. Test/checkout	8. Fault isolation	9. Troubleshoot	10. Remove	11. Replace	12. Install	13. Disassemble	14. Assemble	15. Repair	16. Align	17. Adjust	18. Calibrate	19. Perform corrosion control	20. Document	21. Other(s)	
Subsystem/Equipment:																						
I. X-1B Communication System																						
A. AN/ARC-51 UHF Transceiver																						
B. C-8776/ARC Control Box																						
C. AT-611/A UHF Antenna																						
D. AN/ARC-94 HF Transceiver																						
E. C-593/ARC HF Control Box																						
F. 490T-1 HF Coupler																						
G. AN/AIC-22 ICS																						
II. X-1B Navigation System																						
A. AN/ARN-118 TACAN Set																						
B. ID-1308/A Indicator																						
C. AT-3124/A TACAN Antenna																						
D. C-1385/A Control Box																						
III. X-1B IFF System																						
A. AN/APX-100 Transponder																						
B. C-1678/APX IFF Control																						

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FIGURE 5-2-6. Example system level matrix.

SUBSYSTEM/EQUIPMENT LEVEL MATRIX

Subsystem/Equipment: I. X-1B Communication System	KNOWLEDGE												
	a. Safety	b. Special tool usage	c. Support equipment usage	d. Test equipment usage	e. Theory of operation	f. Component locations	g. Failure analysis	h. Interface requirements	i. Connector repair procedures	j. Use of forms	k. Other(s)		
Tasks to be performed:													
1. Perform safety	I.1.a												
2. Test/checkout			I.2.c	I.2.d	I.2.e	I.2.f		I.2.h					
3. Fault isolation				I.3.d	I.3.e		I.3.g						
4. Troubleshoot				I.4.d	I.4.e		I.4.g						
5. Repair		I.5.b				I.5.f		I.5.h	I.5.i				
6. Document										I.6.j			

(Page 15 of 20)

FIGURE 5-2-7. Example subsystem/equipment level matrix.

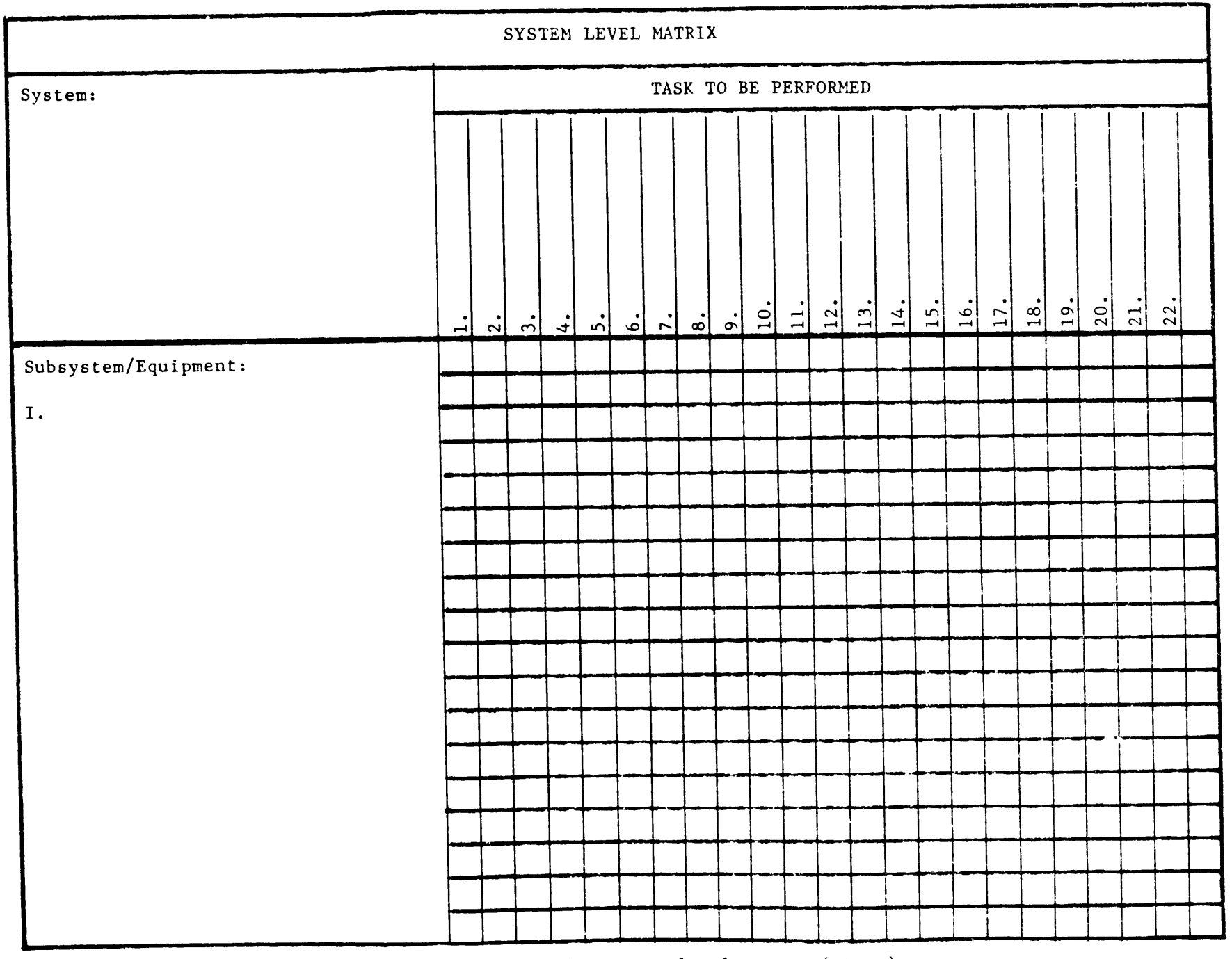


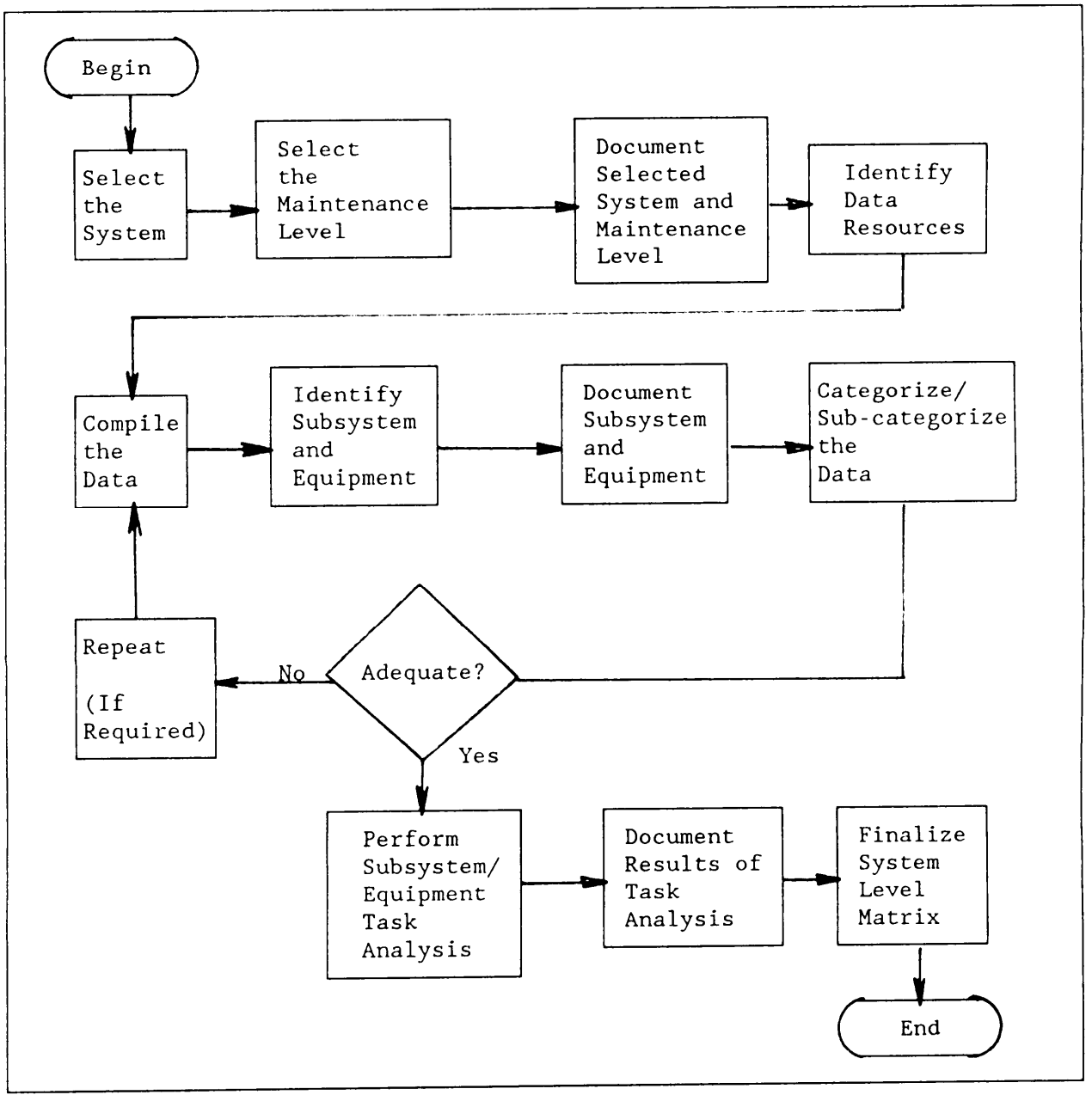
FIGURE 5-2-8. Example system level matrix (blank).

SUBSYSTEM/EQUIPMENT LEVEL MATRIX													
Subsystem/Equipment:	KNOWLEDGE												
	a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.		
Tasks to be performed: 1. 2. 3.													

FIGURE 5-2-9. Example subsystem/equipment level matrix (blank).

5.2.3.7.1 SLM development. The sequence for SLM development is described in the following paragraphs. Refer to table 5-2-II for an overview of the sequence. Refer to table 5-2-III, (a decision matrix flow chart located at the end of this development sequence) for each sequential step. The development model is shown on Figure 5-2-6.

TABLE 5-2-II. System level matrix development sequence overview.



Step 1. Select the system, refer to table 5-2-III, sheet 1. Choose only one system. Consider for illustration purposes that a system is a major part of an aircraft weapons system (e.g., Power Plants and Related Equipments). Many different systems exist and support equipment often requires analysis as a separate system.

Step 2. Select the maintenance level, refer to table 5-2-III, sheet 1. Choose only one maintenance level. The maintenance levels are restricted to organizational, intermediate, and depot level maintenance and are defined in Naval Aviation Maintenance Program (NAMP) and other Government maintenance system documentation.

Step 3. Document selected system and maintenance level. A blank format for the SLM working copy is provided (see figure 5-2-8). Reproduce the SLM form to use as working copy. Refer to table 5-2-III, sheet 1.

Step 4. Identify data sources, refer to table 5-2-III, sheet 2. Choose any combination of data sources. Data sources include procedural and technical documentation, engineering disciplines, draft information, and outlines. In the event documentation is not available, consult with program managers, design engineers, and other persons responsible for specific equipments such as subject matter experts. Under all circumstances acquire data from as many sources as possible. Thoroughnesss and accuracy are required for effective training analysis.

Step 5. Collect the data, refer to table 5-2-III, sheet 2. Compile the data from the appropriate sources and separate the data into the general categories to be considered for training analysis.

(a) Refer to table 5-2-IV to help identify the general categories. This table is not all inclusive nor restrictive. Other data unique to the equipment or to the training situation may require additional categories.
(b) After separating the data into categories, retain the unused data.

TABLE 5-2-IV. Categories of eauipment characteristics.

A. Physical/functional/operational description
1. Purpose (Intended use)
2. Operating processes
3. Dimensions
4. Capabilities

TABLE 5-2-IV. Categories of equipment characteristics - Continued.

5. Limitations
6. Manual/automatic aspects

B. Requirements (Operation, logistics, interface , maintenance , environment)

1. Power
2. Input/output signal
3. Coding
4. Procedures
   a. Pre-operational
   b. Normal operation
   c. Shutdown
   d. Emergency operation
   e. Post-operational
5. Ancillary equipment (test, handling, monitoring, etc.)
6. System/subsystem interface
7. Maintenance policy
8. Tests (on-line, off-line)
9. preventive maintenance (adjustments, cleaning, lubricating)
10. Corrective maintenance (fault isolation, level of repair, disassembly, assembly)
11. Environment
    a. Temperature
    b. Ventilation
    c. Electromagnetic fields
    d. Radiation
    e. Chilled air/water
12. Calitbration and alignment
13. Accuracy

c. Documentation

1. Technical publications
2. Operation and maintenance procedures
3. Logs

D. Safety

E. Security

Step 6. Identify the system, subsystem(s), or equipment, refer to foldout table 5-2-III, sheet 3. From the categorized data, identify every subsystem and its related equipment.

(a) Determine if the system has a subsystem.

(1) Record the complete name of the identified subsystem. Use Roman numerals for numbering subsystems.

(b) Determine if the subsystem has subordinate equipment.

(1) Record the complete name of the identified equipment. Use upper-case letters for numbering equipment.

(c) Determine if there are any more subsystems in the selected system.

(1) If "Yes", repeat steps 6a. and 6b.
(2) If "No", record the words "NO SUBSYSTEM" to the right of the Roman numeral "I" on the SLM working copy.

(a) If there are subsystem equipment(s) identified, record the complete name of each equipment.

1 To the right of upper case alphabetical letter A, record the first equipment's complete name.

2 Each additional equipment's name is recorded to the right of upper case alphabetical letters (B, C, D, etc.).

(b) After recording all subsystem equipment(s), proceed to the next step.
(c) If no equipment(s) are identified for the subsystem, do not enter upper case letters.

Step 7. Categorize/subcategorize the data, refer to table 5-2-III, sheet 4. Analyze all general categories of data to determine if the data is applicable to operation or maintenance.

(a) Separate the operation data from all other data.
(b) Categorize/subcategorize the operation data.

(1) Annotate all operation data with an "O" for operation.
(2) Subcategorize and annotate operation data as required.
(3) After categorizing retain the unused data.

(c) Separate the maintenance data from all other data.

(1) Annotate all maintenance data with “M” for maintenance.
(2) Subcategorize and annotate maintenance data as required.
(3) After categorizing retain the unused data.

Step 8. Review, refer to table 5-2-III, sheet 5. To ensure completeness and accuracy of the development process, all data, including unused data, is reviewed by SLM developers and a jury of subject matter experts. This review is used to refine the SLM and prevent oversight.

Step 9. Repeat steps 5 through 8, if required. This is necessary if the previous review process indicates significant data missing from the developed SLM working copy or errors exist in categorizing the data.

Step 10. Perform subsystem/equipment task analysis, refer to table 5-2-III, sheet 6. The task analysis provides a list of minimum tasks the operator/maintainer performs to cause the subsystem(s) and equipment(s) to function adequately in the intended operational environment. The most important rule in developing task analysis is to allow the equipments to determine the tasks. The job task analysis is described below.

(a) Start with subsystem "I" from the SLM working copy.

(1) Analyze subsystem "I" operation/maintenance data.
(2) Determine tasks by comparing the subsystem data and the SLM task list (see table 5-2-V).

(a) Is task 1 (perform safety Precautions) require to operate/maintain the subsystem?

1 If "Yes," record a check mark in the block of the SLM working copy.

2 If "No," proceed to next task.

(b) Is task 2 (Inspect) required to operate/maintain the subsystem?

1 If "Yes," record check mark.

2 If "No," proceed to next task.

(3) Continue step 10.a. (2) until all subsystem tasks are identified and check marks are annotated on the SLM working copy.

TABLE 5-2-V. Task list.

1. Perform safety precautions	12. Install
2. Inspect	13. Disassemble
3. Service	14. Assemble
4. Initialize	15. Repair
5. Operate	16. Align
6. Shutdown	17. Ad-just
7. Test/checkout	18. Calibrate
8. Fault isolate	19. Perform corrosion control maintenance
9. Troubleshoot	20. Document
10. Remove	21. Other(s) (If Required)
11. Replace	

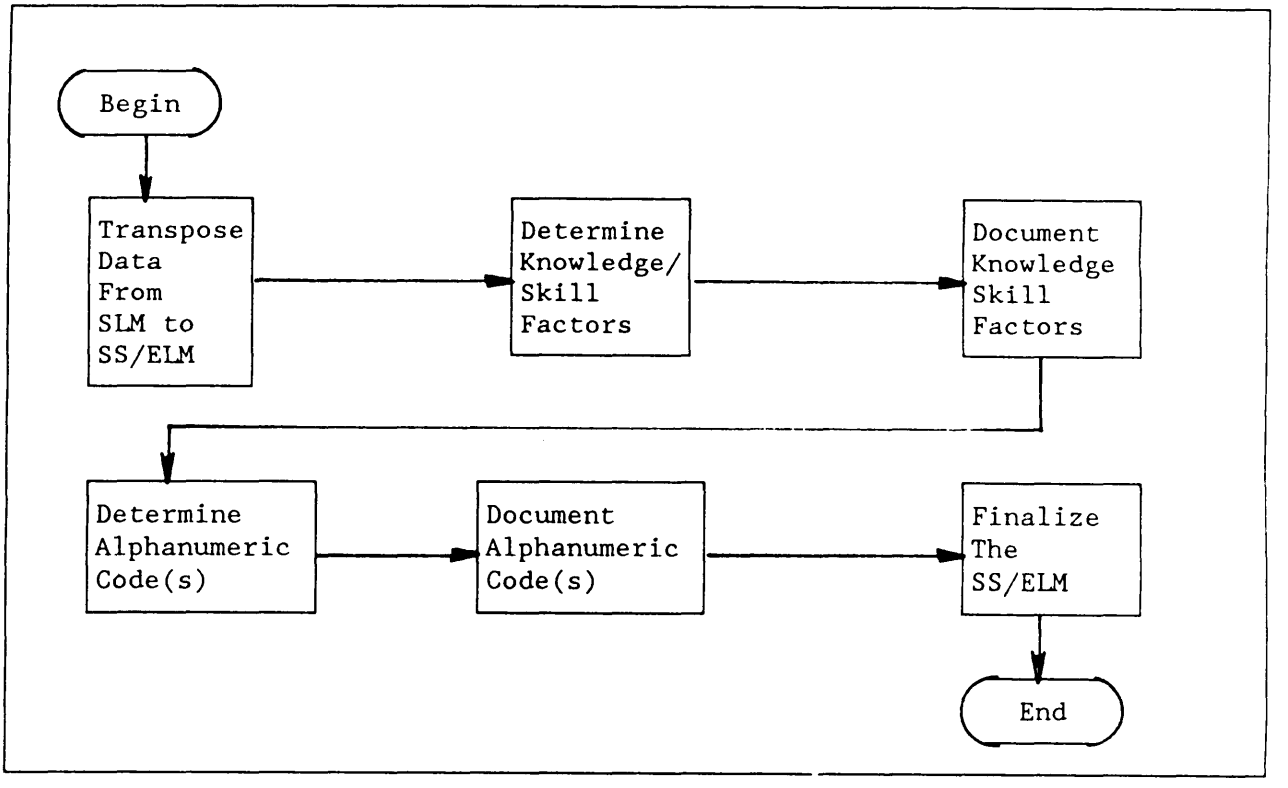
Step 11. Analyze the equipment "I.A" operation and maitenance data.

a. Determine tasks by comparing the equipment data and the SLM task list (see table 5-2-V).
b. Repeat Step 10.a.2. (a) and (b) for the equipment from the SLM working copy.
c. Continue Step n(a) and (b) until all tasks are identified for every equipment listed on the SLM working copy.

Step 12. Finalize completed SLM, refer to table 5-2-III, sheet 7. Send the completed SLM working copy to typing and graphics.

5.2.3.7.2 SS/ELM development. For every subsystem and equipment with a task identified on the SLM, SS/ELM is developed. The SS/ELM development sequence is described in the following paragraphs. Refer to table 5-2-VI for an overview of the sequence. Refer to table 5-2-VII, (a decision matrix flow chart located at the end of this development sequence) for each sequential step. The development model is shown on figure 5-2-7.

TABLE 5-2-VI. Subsystem/eauipment level matrix development seagence overview.



Step 1. Transpose data from the SLM to the SS/ELM, refer to table 5-2-VII, sheet 1. A blank format for the SS/ELM working copy is provided (see figure 5-2-9). Reproduce the SS/ELM form to use as a working copy.

(a) Transpose the complete name of the subsystem/equipment.

(1) For subsystems, record the Roman numeral and the complete name in the upper left corner of the SS/ELM working copy.

(2) For equipments, record the upper case alphabetical character and the complete name.

NOTE: The development model, (figure 5-2-7) is for a subsystem; therefore, the SS/ELM does not reflect equipments .

(b) Transpose each task that is check marked,

(1) Record the tasks starting with number one.
(2) Record only the tasks applicable to one subsystem or equipment on a single SS/ELM working copy.

Step 2. Determine knowledge/skills factors, refer to table 5-2-VII, sheet 2.

(a) Select from the list the knowledge/skills factors required for each task recorded on the SS/ELM working copy (see table 5-2-VIII).

TABLE 5-2-VIII. Knowledge/skills factors.

1.	Safety precautions	12.	Security requirements
2.	Special tool usage	13.	Use of forms
3.	Support equipment usage	14.	Functional description
4.	Test equipment usage	15.	Physical description
5.	Theory of operation	16.	Maintenance philosophy
6.	Component locations	17.	Power requirements
7.	Failure analysis	18.	Programming
8.	Interface requirements	19.	Load/unload procedures
9.	Corrective repair procedures	20.	Use of MIARS
10.	Troubleshooting procedures	21.	Other(s) (If Required)
11.	Emergency procedures		

(b) When adding new knowledge/skills factors, use the least amount of words necessary to convey the type of knowledge/skills required.
(c) Document knowledge factors by recording the knowledge/skills factors on the SS/ELM working copy.

Step 3. Determine alphanumeric code(s), refer to table 5-2-VII, sheet 3. An alphanumeric code system is used to match the tasks to the knowledge/ skill factors and provides an audit trail. Determine the code by examining the SS/ELM working copy (see tables 5-2-IX and 5-2-X).

(a) All codes on a particular SS/ELM begin with the Roman numeral or upper case letter as recorded in the upper left corner of the form.
(b) The next digit of the code is the Arabic number identifying the task from the left column of the form.
(c) The last digit of the code is the lower case letter identifying the knowledge/skill factor from the row heading on the form.

TABLE 5-2-IX. System\subsystem knowledge\skill factors alphanumeric code.

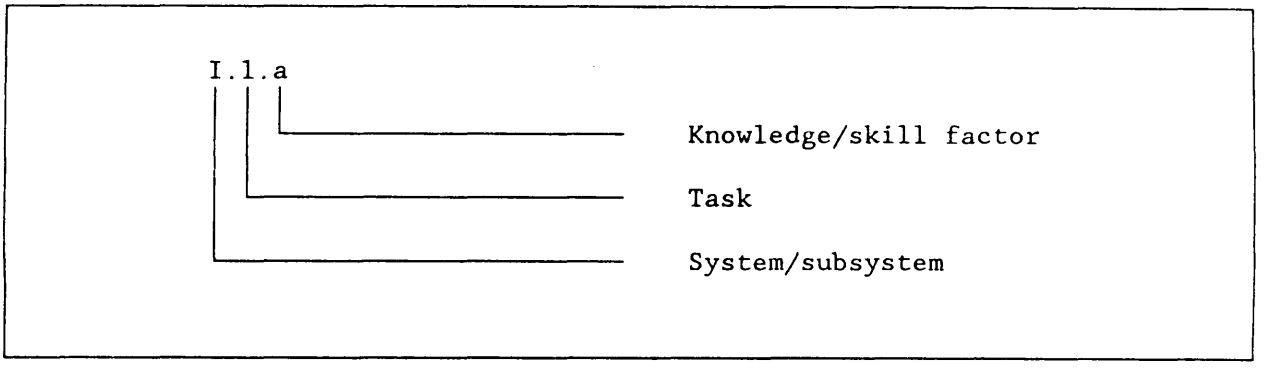
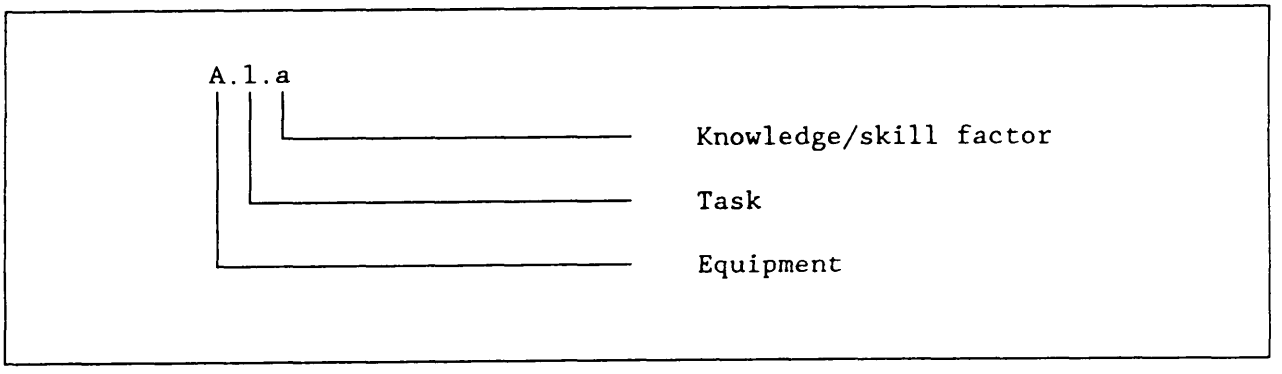


TABLE 5-2-X. Equipment knowledge\skill factors alphanumeric code.

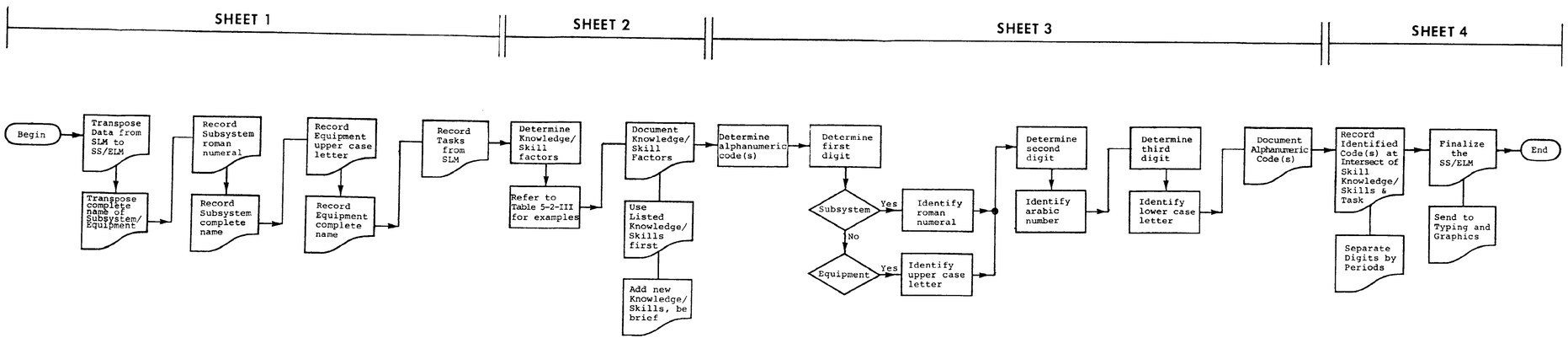


Step 4. Document the alphanumeric code(s), refer to table 5-2-VII, sheet 4. Record the alphanumeric code(s) on the SS/ELM working copy at the intersection of the task and the knowledge/skills factor.

Step 5. Finalize the SS/ELM, refer to table 5-2-VII, sheet 4. Send the SS/ELM working copy to typing and graphics for finalization.

5.2.3.7.3 Finalize the job training analysis matrix. Combine the finalized SLM and the SS/ELM for the selected system.

TABLE 5-2-VII. Subsystem/equipment level matrix development sequence.



5.2.3.8 Training analysis summary. The training analysis summary provides a listing of learning objectives and the skills/knowledge required to perform the tasks .

(a) PPP/TPS based curriculum development. The information provided by a completed Job Task Analysis is utilized to develop PPP and the TPS, as discussed in 5.3 and 5.4, respectively, providing positive identification of end-user training requirements.

(b) Non-PPP\TPS based curriculum development. The information provided by a completed job task analysis is utilized to develop the Training Analysis Summary. This training analysis summary is the result of a training analysis using the job task analysis summary and the job training list. If LSA data is not available, the training analysis uses the job training analysis matrix.

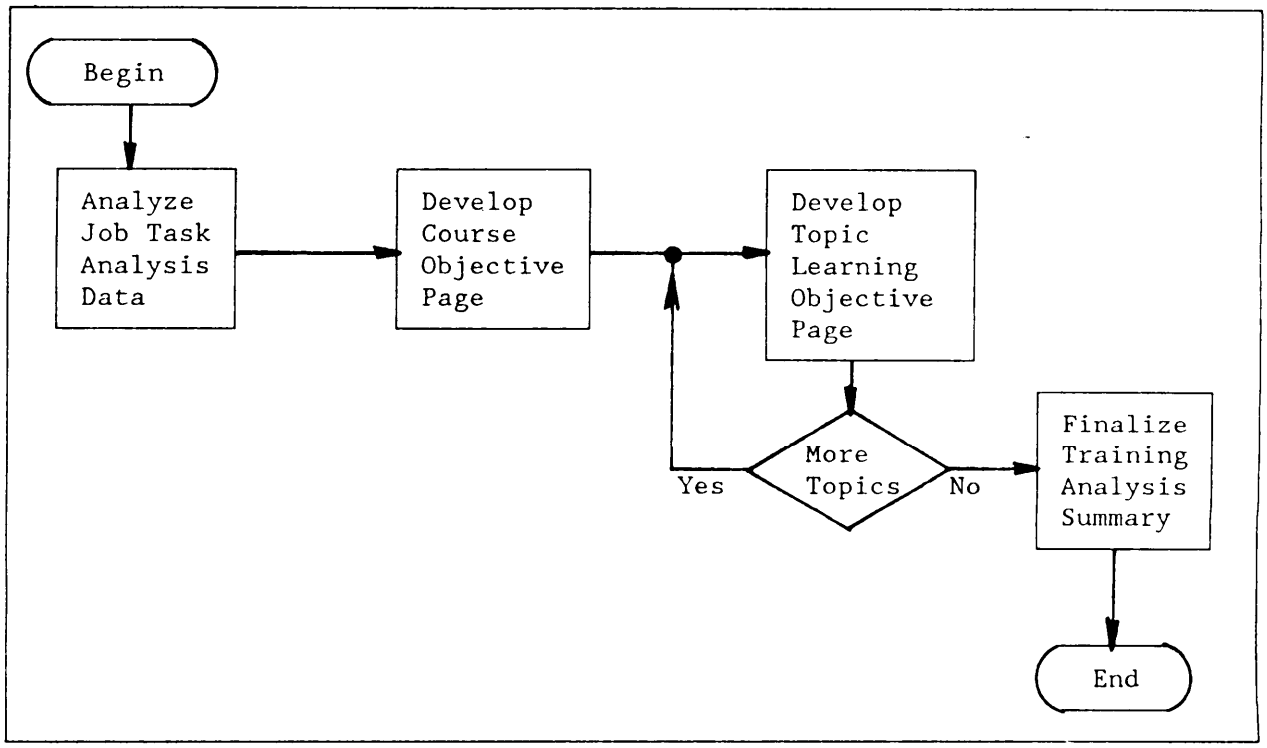
(c) Training analysis summary. The CLO and TLO development are discussed in 5.5 and 5.6, respectively. The training analysis summary consists of the following:

1. Course objective. This page identifies the objective of the course. The course objective consists of a general statement of who is to be trained to perform what, to what degree of qualification, where, and under what general conditions.
2. Topic learning objectives. This page identifies the learning objectives for each topic and the task(s), expressed in behavioral terms and the skill(s)/knowledge required to perform the task(s).

5.2.3.8.1 Training analysis summary development. The training analysis summary development sequence is described in the following paragraphs. Refer to table 5-2-XI for an overview of the sequence. The development models are table 5-2-XII, training task development model statements and figures 5-2-10 and 5-2-12, course objectives and 5-2-11 and 5-2-13, TLOS. Refer to table 5-2-XIII (a decision matrix flow chart located at the end of this development sequence) for each sequential step.

Step 1. Analyze job task analysis data, refer to table 5-2-XIII, Sheet 1. This data is required to determine target population, authorized maintenance level, teaching sequence, and full understanding of tasks, knowledge and skills to be taught. System, subsystems, and equipments, job tasks, and related knowledge are contained in the job task analysis data; however, the training analysis summary developer is required to extract the data and state the information in behavioral terms.

TABLE 5-2-XI. Training analysis summary development sequence overview.



Step 2. Develop the course objectives page, refer to table 5-2-XIII, sheet 1. Refer to figure 5-2-10 for a develop model.

(a) Reproduce the figure 5-2-12 format to serve as a working copy.
(b) Determine the course title. It must contain the complete name/nomenclature of the system, subsystem, or equipment including the approved designations (e.g. , AN/XXX, MK 1, MOD 1, etc.).
(c) Record the course title to the right and on the same line as the words "Course Title." Use upper case letters.

Step 3. Determine the course objectives, refer to table 5-2-XIII, Sheet 2.

(a) The course objective answers the following questions:

(1) Who is to be trained (enlisted rating/officer specialty)?
(2) What is to be performed (subject and maintenance level)?
(3) To what degree of qualification (supervision required)?
(4) What is the eventual job assignment in which the trainee

will be required to perform (squadron, fleet, maintenance facility)?

(b) Record the course objectives to the right of the words "Course Objective." Additional lines begin flush left.

Step 4. Develop the topic learning objective page, refer to table 5-2-XIII, sheet 3. Refer to figure 5-2-11 for a development model.

(a) Reproduce the figure 5-2-13 format to serve as a working copy.
(b) Determine the number of topics. Using the job training task analysis, answer the following questions:

(1) Will a single topic provide a logical teaching sequence?
(2) Is the scope of the training too broad for a single topic?
(3) Is the information basic enough for a single topic?
(4) Can a single topic cover the material in a logical manner or will several smaller topics be adequate?

(c) Determine the topic title. If more than a single topic is required, determine the first topic title. The remaining topic(s) are determined as each TLO page is developed.
(d) Document the topic title. Center the topic title in the upper portion of the page, using upper case letters.

Step 5. Determine the topic learning objectives, refer to table 5-2-XIII, sheet 4.

(a) There are three main elements of a learning objective: behavior, condition, and standard. Each element requirement must be met before the learning objective expresses an instructional goal in terms of measurable trainee performance.

(1) Behavior - states how the trainee will demonstrate knowledge, skill, or attitude and consists of a subject, a performance-oriented verb, an object, and identifies what the trainee should be able to do upon completion. Behavior must be expressed as an overt action or contain an indicator that requires an overt action. Examples of action verbs are provided (see table 5-2-I).
(2) Condition - states under what circumstances or environment the behavior is performed. The condition provides the training level phrase and any other aiding or limiting condition.
(3) Standard - states the required accepted demonstration of performance (extent of required capability) in terms of accuracy, quality, time, or degree of supervision.

(b) Is criteria met (behavior, condition, and standard)?

(1) If "No," revise topic learning objective.
(2) If "Yes," proceed to next step.

(c) Document the topic learning objectives. Record the objectives two lines below the words "Learning Objectives," flush left.

Step 6. Determine the training task number, refer to foldout Table 5-2-XIII, Sheet 5. The number is listed on the Job Task Training List, left column. Record the number to the right of the words "Training Task No."

(a) Determine training task(s) by analyzing the job task analysis summary, job training task list, or job training analysis matrix with the following considerations:

1. Frequency of performance. Training required due to task frequency; i.e., the task might rate low for training priority if it is rarely performed.

2. Probable consequence of inadequate performance. Points to the need for selecting tasks for training that are essential to job performance. Inadequate performance on certain tasks could result in injury to personnel, loss of life, or damage to equipment.

3. Task delay tolerance. Training is affected by time constraints. A measure of how much delay can be tolerated between the time the need for task performance is identified and the time the actual task performance must begin. This is based upon known time constraints associated with the equipment, which, if ignored will result in equipment loss or damage (e.g., loss of power to a computer must be restored within a set time interval or stored memory is lost).

4. Task learning difficulty. The learning difficulty of a task refers to the time, effort, and assistance required to achieve performance proficiency.

5. Probability of deficient performance. Used to ensure that training is given in those essential job skills in which personnel frequently perform poorly.

6. Immediacy of Performance. The criteria:

(a) Whether or not there is a high probability of the trainee encountering the task on the job fairly soon

after completing training. In this context, "Fairly soon" means that the task is encountered within the first year after completion of training.

(b) The predicted or measured amount of the loss of proficiency in the skill that takes place during the time interval between completion of training and job assignment.

7. Percent of work force performing the task. Indicates the need for training to accomplish the tasks that are most often performed on the job.

8. Percent of total work time spent performing the task. Indicates a need to provide training to assist personnel in the efficient performance of those tasks on which they spend the most time.

(b) Express in behavioral terms (behavior, condition, and standard).
(c) Use acceptable action verbs (see table 5-2-I).
(d) Use the model statements, refer to table 5-2-XII. Derivatives or similarly developed tasks are permissible.
(e) Document training task(s), record task(s) in the teaching sequence, and complete knowledge/skills determination and recording for each task before recording the next task.

TABLE 5-2-XII. Training task development model statements.

1. State the purpose(s) of the _____.
2. Define the abbreviations, terms, and symbols used with the _____.
3. State the operational characteristics and capabilities of the _____.
4. Explain the differences between models of the _____.

TABLE 5-2-XII. Training task development model statements. - Continued.

5. State the security requirements for the _____.

6. List all subsystems in the _____.

7. List displays, controls, and indicators directly associated with the _____.

8. Explain how the _____ works (functional operation).

9. Describe the functions of each control and indicator in each position, condition, and color.

10. Explain physical interface between the _____ and related external equipments. Include name, physical appearance, reference designators, and locations.

11. Describe functional interface between the _____ and related external equipments.

    a. Electrical (Power sources)

    b. Electronic (input, output, and control signals)

    c. Pneumatic (gasses of any type, for example, nitrogen, freon, air helium, etc.)

    d. Hydraulic (liquids of any type; e.g., hydraulic oil, lube oil, water, etc.)

    e. Mechanical

        (1) Structural or hull
        (2) Shafts, gears, springs, deck equipment, power train

12. List authority and regulations pertaining to the operation of the _____, including external equipments which interface with it.

13. Explain operational tasks to perform on the _____.

    a. Pre-operational procedures
        (1) Routine (GO/NO-GO, self-tests, pre-flight)
        (2) Installation
        (3) Assembly

TABLE 5-2-XII. Training task development model statements. - Continued.

b. Operational procedures

c. Post-operational procedures (post-flight)

14. Explain casualty/degraded/abnormal/not full mission capable modes of operation of the _____.

15. List data logging requirements for the _____. Include logging method, type of data logged, and disposition.

16. Name all acceptance tests for the _____.

17. Explain personnel and equipment safety precautions which are to be observed during operation.

18. Define maintenance policy for the _____ and include:

a. Preventive maintenance - the requirement for periodic performance of tasks to minimize equipment malfunctions.

(1) Servicing - scheduled/not scheduled inspections, cleaning, fueling, lubrication, corrosion controls and any other function in support of full mission capable.
(2) Operational checks (confidence or self-test)
(a) Pre-maintenance procedures
(b) Performance checks
(c) Degradation/deterioration checks
(d) Quality assurance checks

(3) Progressive maintenance (if applicable) periodic refurbishment of components or assemblies in order to maintain levels of performance or reliability.

b. Corrective maintenance - checks and procedures used to locate and correct malfunctions.

(1) Servicing - scheduled/not scheduled inspections, cleaning, fueling, lubrication, corrosion control and any other function in support of full mission capability.

(2) Fault Isolation - location of faults to the level of available spares and authorized repair level.

TABLE 5-2-XII. Training task development model statements. - Continued.

(a) Equipment operational checks and tests
(b) Fault isolation tests and procedures

(3) Analytical procedures - isolation of faults, using authorized methods not contained in prescribed maintenance documentation.

(4) Post-maintenance procedures - procedures performed after repair including quality assurance checks.

19. Explain alignment, adjustment, and calibration procedures for the _____.

20. Explain operational tests for maintenance of the _____. Include the tests' names, uses,and procedures.

21. Describe the recognition and interpretation of all malfunction indications for the _____.

22. Explain the systematic fault isolation procedures contained in prescribed maintenance documentation for the _____.

23. Explain authorized methods to isolate faults which cannot be located using procedures contained in prescribed maintenance documentation for the _____.

24. Describe the procedures to disassemble, repair, and reassemble the _____ to the authorized maintenance level.

25. Explain post-repair procedures for the _____.

26. Explain personnel and equipment safety precautions which are to be observed when performing maintenance on the _____.

27. Describe the organization, content, and use of all technical documentation provided for use with the _____.

28. Perform the following tasks for operation of the _____.

a. Pre-operational procedures
(1) Routine
(2) Installation
(3) Assembly

TABLE 5-2-XII. Training task development model statements. - Continued.

b. Operational procedures
c. Post-operational procedures
29. Recognize and interpret all indications occurring during the performance of the operating procedures and perform appropriate operator actions in the proper sequences for the _____
30. Perform operational tasks in the casualty/degraded/abnormal/not full mission capable modes of operation of the _____
31. Perform acceptance tests for the _____.
32. Adhere to personnel and equipment safety precautions during all operational procedures of the _____.
33. Use special tools and test equipment required for maintenance of the _____ as prescribed in applicable documentation.
34. Perform preventive maintenance procedures, including quality assurance procedures, on the _____ as presented in the Naval Aviation Maintenance Program (NAMP).
35. Perform alignment, adjustment, and calibration procedures on the _____.
36. Perform operational tests (and diagnostic programs) for maintenance of the _____
37. Recognize and interpret all malfunction indications for the _____.
38. Perform fault isolation procedures contained in prescribed maintenance documentation.
39. Use authorized methods to isolate faults which cannot be located using procedures contained in prescribed maintenance documentation.
40. Disassemble, repair, and reassemble the _____ to the authorized maintenance level.

TABLE 5-2-XII. Training task development model statements - Continued.

41. Perform post-repair procedures, including quality assurance procedures, on the _____
42. Adhere to personnel and equipment safety precautions when performing all maintenance procedures on the _____

Step 7. Determine the knowledge/skills required, refer to table 5-2-XIII, sheet 6. Analyze the job task analysis summary, job training task list, or job training analysis matrix to determine the minimum knowledge requirements to perform the specific task.

(a) Record the required knowledge/skills.

(1) Use outline format for classroom environment,
(2) For lab assignments, use "Notes" to record such knowledge/-skills information requiring special emphasis.
Examples:

(a) NOTE: Observe all safety precautions.
(b) NOTE: Theory of equipment operation, use of test equipment, theoretical troubleshooting, trainer operation, etc., was taught in previous lessons.
(c) NOTE: Operational checkout and troubleshooting procedures are outlined in NAVAIR 01-85ADC-2-23.3, Integrated Weapons System Testing and Troubleshooting X-1B (ICAP).

(b) Verify for completeness; more tasks/more topics?

(1) If "Yes," repeat development process for each additional task or topic.
(2) If "No," proceed to next step.

Step 8. Finalize training analysis summary, refer to table 5-2-XIII, sheet 6.

Send working copies of TAS to typing and graphics for final deliverable.

TRAINING ANALYSIS SUMMARY

Course Title: X-1B Communications, Navigation, and Identification (CNI) System Organizational Maintenance

Course Objective: Upon successful completion of this course, Aviation Electronics Technicians will have acquired sufficient knowledge and skills, including system analysis and troubleshooting techniques , to be able to perform in the squadron working environment with supervision, organizational maintenance on the Communications, Navigation, and Identification Systems of the X-1B aircraft.

FIGURE 5-2-10. Example training analysis summary course objective page.

X-1B AIRCRAFT FAMILIARIZATION AND MISSION

Learning Objective:

Demonstrate a knowledge of the X-1B aircraft by writing the general aircraft descriptions, circuit breaker panel locations, radar characteristics, and the aircraft's mission using the applicable technical documentation.

Training Task No.: 15E1

Task	Knowledge
1. Select the X-1B general aircraft description from a list of descriptions .	1. General aircraft description: a. All weather, supersonic jet b. Four place seating c. Twin jet engines d. Enlarged tail fin cap e. Five jammer pods
2. Given a list of avionics circuit breaker panels and a list of possible locations, match each circuit breaker panel to its location.	2. Avionics circuit breaker panel locations: a. Forward cockpit circuit breaker panels b. After cockpit circuit breaker panels
3. Given a list of hositle radars encountered and, a list of possible radar characteristics, match each hostile radar to its characteristics .	3. Hostile radar characteristics: a. Early warning radar provisions (1) Long range detection (2) Aircraft course and speed (3) Ground defense alert b. Ground Control Intercept (GCI) radars (1) Fighter interceptors (2) More accurate aircraft course and speed

FIGURE 5-2-11. Example training analysis summary topic learning objective page. (Sheet 1 of 2)

X-1B AIRCRAFT FAMILIARIZATION AND MISSION

Training Task No.: 15 E1

Task	Knowledge
	c. Gun laying and missile guidance radars (1) Provides highly accurate target information (2) Positions guns and missiles
4. State the primary combat mission of the X-1B aircraft.	4. Primary combat mission - jamming of hostile radars a. Operational mission profiles (1) Loiter profiles (2) Penetration profiles
5. Given true/false statements concerning the X-1B operational mission profiles, select the true statements .	

FIGURE 5-2-11. Example training analysis summary topic learning objective page. (Sheet 2 of 2)

TRAINING ANALYSIS SUMMARY

Course Title:

Course Objectives:

FIGURE 5-2-12. Example course objective page (blank).

(TOPIC TITLE)

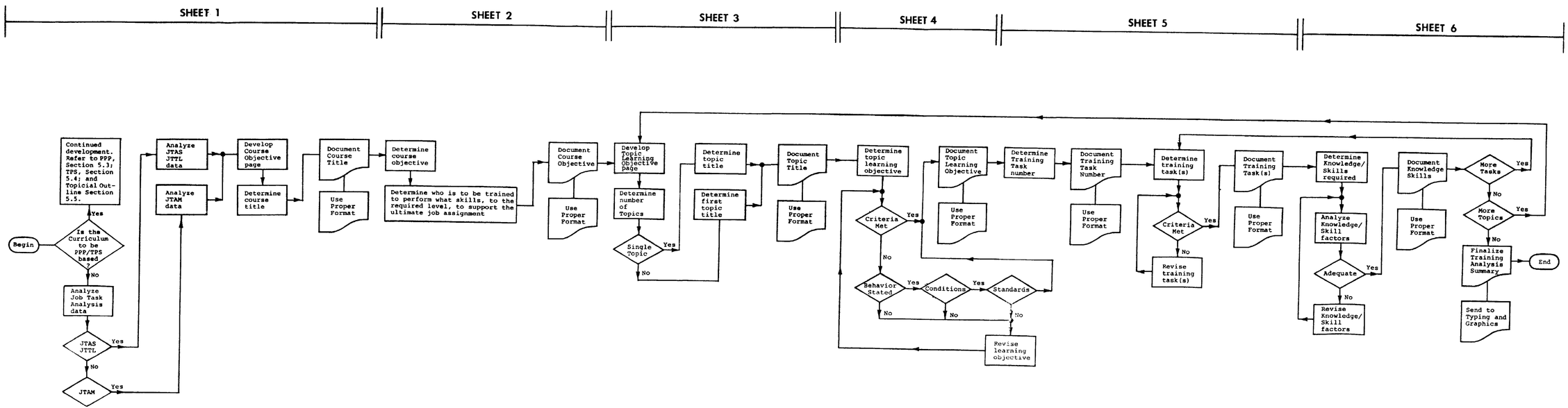
Learning Objective:

Training Task No.:

Task	Knowledge
	Skills

FIGURE 5-2-13. Example topic learning objective page (blank).

TABLE 5-2-XIII. Training analysis summary development sequence.



5.3 PERSONNEL PERFORMANCE PROFILES

5.3 Personnel performance profiles. A PPP table is a minimum requirements listing of all knowledge and skills required to operate and maintain a system, subsystem, or equipment, or to perform a task or function. This section describes the format, content, and development guidelines for PPP tables in preliminary form prepared to support curricula as specified in the miliary standard and in DI-ILSS-80078.

5.3.1 Use. PPP tables are a basic element in the design, development, and management of training. The profiles are essential to developing TPS, TLO, Tests and Test Items, and IMM.

5.3.2 Elements. The content and detail of a PPP table includes applicable knowledge and skill items in subject areas as defined in the following paragraphs. PPPs fall into five categories:

(a) Background PPPs. List the prerequisite knowledge and skills required to learn the operation and maintenance of a system, subsystem, or equipment. Figure 5-3-1 is an example of the background PPP table format.

(b) System PPPs. List the knowledge and skills required to operate and maintain a system. Figure 5-3-2 is an example of the system PPP table format.

(c) Subsystem PPPs. List the knowledge and skills required to operate and maintain a subsystem. Figure 5-3-3 is an example of the subsystem PPP table format.

(d) Equipment PPPs. List the knowledge and skills required to operate and maintain an individual equipment or equipment assemblage. Figure 5-3-4 is an example of the equipment PPP table format.

(e) Task/Function PPPs. List the knowledge and skills required to perform a specific task or function not unique to the operation or maintenance of a particular system, subsystem, or equipment. Figure 5-3-5 is an example of the task\function PPP table format.

Usually, combinations of profiles from the above categories go into the design and development of specific training.

PERSONNEL PERFORMANCE PROFILE

TABLE A074

BACKGROUND KNOWLEDGE AND SKILL

BEARINGS AND LUBRICATION

1 JANUARY 1986

A074-1/A074-2

FIGURE 5-3-1. Example background PPP table. (Sheet 1 of 6)

TABLE A074. Bearings and lubrication.

ITEM NO.	KNOWLEDGE/SKILL
1.	KNOWLEDGE
1-1.	Define the terms, abbreviations, and symbols associated with Bearings and Lubrications.
1-2.	State the purpose of the lubricant.
1-3.	Describe the different types of friction. a. Static b. Kinetic (1) Sliding (2) Rolling (3) Fluid
1-4.	Explain the basic theory of lubrication.
1-5.	Describe the vital properties of a lubricant and why they are important. a. Viscosity b. Viscosity index c. Pour point d. Flash point e. Fire point f. Auto-ignition point g. Neutralization number h. Demulsibility i. Precipitation number
1-6.	Describe the different sources of lubricating oils. a. Mineral oil b. Fixed oils (1) Animal (2) Vegetable c. Synthetics (1) Silicones (2) Poly glycols (3) Silicate osters (4) Fluid compounds
1-7.	Describe the basic process of refining mineral oils.
1-8.	Explain how pure mineral oil may be improved.
1-9.	Explain the navy oil classification numbers.

A074-3

FIGURE 5-3-1. Example background PPP table. (Sheet 2 of 6)

TABLE A074. Bearings and lubrication - Continued

ITEM NO.	KNOWLEDGE/SKILL
1-10.	Describe the classes of navy oils.
1-11.	Explain how greases are classified. a. Composition (1) Calcium soap base (2) Sodium soap base (3) Lithium soap base (4) Mixed soap base (5) Silicone grease (6) Di-basic acid ester grease b. Military specification number (1) VV-G-632 (2) Mil-G-18709 (3) Mil-G-15719 (4) Mil-G-23459 (5) Mil-G-17740 (6) W-G-671
1-12.	Describe lubricant sampling utilizing the Gerin diesel sample kit.
1-13.	State the fundamental factors for the selection of the proper lubricant. a. Speed b. Clearances c. Load d. Environment
1-14.	Explain the methods used to keep lubricating oils clean by shipboard methods. a. Strainers b. Filters c. Settling tank d. Centrifugal purifier
1-15.	State the safety precautions associated with lubricants,
1-16.	State the purpose of a bearing.
1-17.	Explain bearing classification. a. Sliding surface (friction or plain) and function (1) Radial (2) Guide (3) Thrust

A074-4

FIGURE 5-3-1. Example background PPP table. (Sheet 3 of 6)

TABLE A074. Bearings and lubrication - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-17. (Cont.)	b. Rolling contact (anti-friction and friction) (1) Radial (2) Thrust (3) Angular contact
1-18.	Define plain bearing.
1-19.	Describe the types of plain bearings. a. Radial bearings (1) Solid bearing (2) Half bearing (3) Split bearing (4) Self-aligning bearing b. Guide bearing c. Thrust bearings (1) Single disk (2) Multiple disk (3) Tilting pad (4) Multi-collar
1-20.	Describe the properties of a good bearing material. a. Strength b. Fatigue resistance c. Malleability d. Porosity e. Thermal conductivity f. Corrosion resistance
1-21.	Describe the materials used in bearings. a. Solid bearing b. Sintered bearing c. Lined bearing (1) Babbit
1-22.	Describe the backing materials used in bearings.
1-23.	State the methods used to determine oil clearances in plain bearings. a. Crown thickness b. Leads c. Bridge gaps d. Depth micrometer
1-24.	Define rolling contact bearing.

A074-5

FIGURE 5-3-1. Example background PPP table. (Sheet 4 of 6)

TABLE A074. Bearings and lubrication - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1.25.	Identify the parts of rolling contact bearings. a. Ball bearing b. Roller bearing c. Needle bearing d. Tapered roller bearing
1-26.	Describe the different applications of rolling contact bearings. a. Deep groove ball bearing b. Maximum capacity ball bearing c. Extended inner ring ball bearing d. Angular contact ball bearing e. Trust ball bearing f. Self-aligning ball bearing g. Roller bearing h Needle bearing i. Tapered roller bearing
1-27.	Describe methods for lubricating rolling contact bearings.
1-28.	Describe methods for removing and installing rolling contact bearings.
1-29.	Describe the parts of a Kingsbury thrust bearing. a. Housing b. Collar c. Base ring d. Leveling plates (1) Lower (2) Upper e. Shoes f. Filler pieces g. Inner case h. Adjustment shims
1-30.	Explain how a Kingsbury thrust bearing works.
1-31.	Explain the different applications of a Kingsbury thrust bearing. a. Drive shafts b. Pumps c. Turbines d. Internal combustion engines

A074-6

FIGURE 5-3-1. Example background PPP table. (Sheet 5 of 6)

TABLE A074. Bearings and lubrication - Continued.

ITEM NO.	KNOWLEDGE/SKILL
2.	SKILLS
2-1.	Perform a lubricating oil sample using the Gerin diesel lube oil sample kit. a. Fuel oil dilution b. Acid content c. Solid contaminants
2-2.	Perform lubrication requirement identification.
2-3.	Perform a rolling contact bearing change including: a. Proper tools b. Proper procedure c. Heating a new bearing d. Removal of old bearing e. Installation of a new bearing
2-4.	Perform lubrication utilizing methods and tools required.

A074-7/A074-8

FIGURE 5-3-1. Example background PPP table. (Sheet 6 of 6)

PERSONNEL PERFORMANCE PROFILE

FOR

MOBILE CONSTRUCTION BATTALION VEHICLES - DEPLOYED SYSTEM

TABLE D547

MOBILE BATTALION VEHICLES - DEPLOYED

1 JANUARY 1986

SYSTEM MODIFICATION RECORD

None

NEW DESIGN - DRAWING NUMBER

None

D547-1/D547-2

FIGURE 5-3-2. Example system PPP table. (Sheet 1 of 7)

TABLE D547. Mobile construction battalion vehicles - deployed (System).

ITEM NO.	KNOWLEDGE/SKILL
1.	SYSTEM KNOWLEDGE
1-1.	GENERAL
1-1-1.	State the purpose of the Mobile Construction Battalion Vehicles - Deployed system.
1-1-2.	State that the Mobile Construction Battalion Vehicles-Deployed system consists of the following subsystems including the function of each. a. General Utility Vehicles b. Tanked Vehicles c. Earth Moving Vehicles d. Ancillary Vehicles e. Accessory Equipments
1-1-3.	Define the abbreviations, terms, and symbols used with the Mobile Construction Battalion Vehicles - Deployed system.
1-1-4.	State the operational characteristics and capabilities of the Mobile Construction Battalion Vehicles - Deployed system in terms of the parameters and limitations as listed in the applicable technical documentation.
1-1-5.	Describe the differences between the various models of the Mobile Construction Battalion Vehicles - Deployed system.
1-2.	PHYSICAL DESCRIPTION
1-2-1.	Describe all subsystems or major equipments of the Mobile Construction Battalion Vehicles - Deployed system. Include the name, nomenclature, physical appearance, reference designation, location and construction features of each. a. General Utility Vehicles b. Tanked Vehicles c. Earth Moving Vehicles d. Ancillary Vehicles e. Accessory Equipments
1-2-2.	Describe controls, indicators, and displays directly associated with the Mobile Construction Battalion Vehicles -

D547-3

FIGURE 5-3-2 Example system PPP table. (Sheet 2 of 7)

TABLE D547. Mobile construction battalion vehicles - deployed (System) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-2-2. (Cont.)	Deployed system. Include name, referenece designation, positions, locations, and colors of each. a. General Utility Vehicles b. Tanked Vehicles c. Earth Moving Vehicles d. Ancillary Vehicles e. Accessory Equipments
1-3.	FUNCTIONAL DESCRIPTION
1-3-1.	Describe how the Mobile Construction Battalion Vehicles-Deployed system works (functional operation). Include, when applicable, the methods of control, operational modes, inputs, and outputs of each. a. General Utility Vehicles b. Tanked Vehicles c. Earth Moving Vehicles d. Ancillary Vehicles e. Accessory Equipments
1-3-2.	Describe the functions of each control, indicator, and display of the Mobile Construction Battalion Vehicles-Deployed system. Include, when applicable, electrical signal flow, fluid flow, steam flow, mechanical transfer, pneumatic control, position, color, or indication of each. a. General Utility Vehicles b. Tanked Vehicles c. Earth Moving Vehicles d. Ancillary Vehicles e. Accessory Equipments
1-4.	INTERFACE DESCRIPTION There are no interfaces between the Mobile Construction Battalion Vehicles - Deployed system and any other system.
1-5.	OPERATIONAL DESCRIPTION
1-5-1.	Describe the authority and regulations pertaining to the operation of the Mobile Construction Battalion Vehicles-Deployed system.

D547-4

FIGURE 5-3-2. Example system PPP table. (Sheet 3 of 7)

TABLE D547. Mobile construction battalion vehicles - deployed (System) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-5-2.	Describe operational tasks for Mobile Construction Battalion Vehicles - Deployed system. a. Pre-Operational procedures b. Operational procedures c. Post-Operational procedures
1-5-3.	Describe indications which should or may occur during operation of the Mobile Construction Battalion Vehicles - Deployed system. Include alarms, indicators, displays, and readouts.
1-5-4.	Describe casualty/degraded/abnormal/not full mission capable mode(s) of operation for the Mobile Construction Battalion Vehicles - Deployed system.
1-5-5.	Describe daca logging requirements for the Mobile Construction Battalion Vehicles - Deployed system. Include logging method, types of data logged, and disposition.
1-5-6.	Describe the personnel and equipment safety precautions which are to be observed during operation of the Mobile Construction Battalion Vehicles - Deployed system.
1-6.	MAINTENANCE DESCRIPTION
1-6-1.	Define the maintenance policy for the Mobile Construction Battalion Vehicles - Deployed system. a. Preventive maintenance - the requirement for periodic performance of tasks to minimize system malfunctions by doing the following: (1) cleaning (2) inspection (3) lubrication (4) painting (5) degradation/deterioration checks (6) performance checks (7) pre-maintenance procedures

D547-5

FIGURE 5-3-2. Example system PPP table. (Sheet 4 of 7)

TABLE D547. Mobile construction battalion vehicles - deployed (System) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-6-1. (Cont.)	b. Corrective Maintenance - checks and procedures used to locate and correct malfunctions as determined by the following guides: (1) Authorized repair responsibility to correct malfunctions to the authorized maintenance level. (2) Fault Isolation - location of faults to the level of available spares, and to the authorized repair level including system operational checks and tests, as well as fault isolation tests and procedures. (3) Analytical procedures - isolation of faults using authorized techniques not contained in prescribed maintenance documentation. (4) Post-maintenance procedures - procedures performed after repair.
1-6-2.	Describe the use of special tools and test equipment required for maintenance of the Mobile Construction Battalion Vehicles - Deployed system as prescribed in applicable documentation.
1-6-3.	Describe preventive maintenance procedures for the Mobile Construction Battalion Vehicles - Deployed system. Include recognition and interpretation of indications, records, and reports.
1-6-4.	Describe alignment, adjustment, and calibration procedures for the Mobile Construction Battalion Vehicles - Deployed system.
1-6-5.	Describe the operational tests used for maintenance of the Mobile Construction Battalion Vehicles - Deployed system. Include test name, use, and the procedures.
1-6-6.	Describe the recognition and interpretation of all malfunction indications for the Mobile Construction Battalion Vehicles - Deployed system.
1-6-7.	Describe the systematic fault isolation procedures contained in the prescribed maintenance documentation for the Mobile Construction Battalion Vehicles - Deployed system.

D547-6

FIGURE 5-3-2. Example system PPP table. (Sheet 5 of 7)

TABLE D547. Mobile construction battalion vehicles - deployed (System) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-6-8.	Describe authorized techniques to isolate faults which cannot be located using procedures contained in the prescribed documentation.
1-6-9.	Describe the post-repair procedures for the Mobile Construction Battalion Vehicles - Deployed system.
1-6-10.	Describe personnel and equipment safety precautions which are to be observed while performing maintenance on the Mobile Construction Battalion Vehicles - Deployed system.
1-7.	DOCUMENTATION
1-7-1.	Describe the organization, content, and use of all technical documentation provided for use with the Mobile Construction Battalion Vehicles - Deployed system.
2.	SYSTEM SKILLS
2-1.	OPERATION
2-1-1.	Perform tasks for operation of the Mobile Construction Battalion Vehicles - Deployed system. a. Pre-Operational procedures b. Operational procedures c. Post-Operational procedures
2-1-2.	Recognize and interpret all indications occurring during performance of the operating procedures, and perform appropriate operator actions in proper sequences for the Mobile Construction Battalion Vehicles - Deployed system.
2-1-3.	Perform tasks for casualty/degraded/abnormal/not full mission capable mode(s) of operation of the Mobile Construction Battalion Vehicles - Deployed system.
2-1-4.	Perform data logging requirements for the Mobile Construction Battalion Vehicles - Deployed system.
2-1-5.	Adhere to personnel and equipment safety precautions during operation of the Mobile Construction Battalion Vehicles- Deployed system.

D547-7

FIGURE 5-3-2. Example system PPP table. (Sheet 6 of 7)

TABLE D547. Mobile construction battalion vehicles - deployed (System) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
2-2.	MAINTENANCE
2-2-1.	Use special tools and test equipment required for maintenance of the Mobile Construction Battalion Vehicles - Deployed system.
2-2-2.	Perform preventive maintenance procedures including quality assurance procedures for the Mobile Construction Battalion Vehicles - Deployed system, as scheduled by the Planned Maintenance System (PMS).
2-2-3.	Perform alignment, adjustment, and calibration procedures on the Mobile Construction Battalion Vehicles - Deployed system.
2-2-4.	Perform operational tests used for maintenance of the Mobile Construction Battalion Vehicles - Deployed system.
2-2-5.	Recognize and interpret all malfunction indications for the Mobile Construction Battalion Vehicles - Deployed system.
2-2-6.	Perform systematic fault isolation procedures contained in prescribed maintenance documentation.
2-2-7.	Use authorized methods to isolate faults which cannot be located using the procedures contained in the prescribed maintenance documentation.
2-2-8.	Perform post-repair procedures, including quality assurance procedures, on the Mobile Construction Battalion Vehicles-Deployed system.
2-2-9.	Adhere to personnel and equipment safety precautions when performing maintenance on the Mobile Construction Battalion Vehicles - Deployed system.

D547-8

FIGURE 5-3-2. Example system PPP table. (Sheet 7 of 7)

PERSONNEL PERFORMANCE PROFILE

FOR

MOBILE BATTALION VEHICLES - DEPLOYED

TABLE D548

GENERAL UTILITY VEHICLES

15 MARCH 1986

SUBSYSTEM MODIFICATION RECORD

None

NEW DESIGN - DRAWING NUMBER

None

D548-1/D548-2

FIGURE 5-3-3. Example subsystem PPP table. (Sheet 1 of 7)

TABLE D548. General utility vehicles (Subsystem).

ITEM NO.	KNOWLEDGE/SKILL
1.	SUBSYSTEM KNOWLEDGE
1-1.	GENERAL
1-1-1.	State tile function of the General Utility Vehicles.
1-1-2.	State that the General Utility Vehicles subsystem consists of the following Commercial Utility Cargo Vehicle (CUCV) equipment including the function of each. a. CUCV (TYPE A), Utility b. CUCV (TYPE B), Cargo c. CUCV (TYPE C), Ambuldnce d. CUCV (5-TON), Dump e. CUCV (2.5-TON), Cargo f. CUCV (15-TON), Dump
1-1-3.	Define the abbreviations, terms, and symbols used with the General Utility Vehicles.
1-1-4.	State the operational characteristics and capabilities of the General Utility Vehicles in terms of the parameters and limitations as listed in the operating specifications pages of the applicable technical documentation.
1-1-5.	Describe the differences between the various models of the General Utility Vehicles.
1-2.	PHYSICAL DESCRIPTION
1-2-1.	Describe all equipments or major functional areas of the General Utility Vehicles. Include the name, nomenclature, physical appearance , reference designation, location and construction features. a. CUCV (TYPE A), Utility b. CUCV (TYPE B), Cargo c. CUCV (TYPE C), Ambulance d. CUCV (5-TON), Dump e. CUCV (2.5-TON), Cargo f. CUCV (15-TON), Dump
1-2-2.	Describe controls, indicators, and displays directly associated with the General Utility Vehicles.

D548-3

FIGURE 5-3-3. Example subsystem PPP table. (Sheet 2 of 7)

'CABLE D548. General utility vehicle (Subsystem) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-2-2. (Cont.)	Include name, reference designation, postions, locations, and colors of each. a. CUCV (TYPE A), Utility b. CUCV (TYPE B), Cargo c. CUCV (TYPE C), Ambulance d. CUCV (5-TON), Dump e. CUCV (2.5-TON), Cargo f. CUCV (15-TON), Dump
1-3.	FUNCTIONAL DESCRIPTION
1-3-1.	Describe how the General Utility vehicles works (functional operation). Include, when applicable, the methods of control, signal flow, and indications. a. CUCV (TYPE A), Utility b. CUCV (TYPE B), Cargo c. CUCV (TYPE C), Ambulance d. CUCV (5-TON), Dump e. CUCV (2.5-TON), Cargo f. CUCV (15-TON), Dump
1-3-2.	Describe the functions of each control, indicator, and display of the General Utility Vehicles. Include, when applicable, electrical signal flow, fluid flow, steam flow, mechanical transfer, pneumatic control, position, color, or indication of each. a. CUCV (TYPE A), Utility b. CUCV (TYPE B), Cargo c. CUCV (TYPE C), Ambulance d. CUCV (5-TON), Dump e. CUCV (2.5-TON), Cargo f. CUCV (15-TON), Dump
1-4.	INTERFACE DESCRIPTION There are no interfaces between the General Utility Vehicles and any other subsystem.

D548-4

FIGURE 5-3-3. Example subsystem PPP table. (Sheet 3 of 7)

TABLE D548. General utility vehicles (Subsystem) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-5.	OPERATIONAL DESCRIPTION
1-5-1.	Describe the authority and regulations pertaining to the operation of the General Utility Vehicles.
1-5-2.	Describe operational tasks for General Utility Vehicles a. Pre-Operational procedures b. Operational procedures c. Post-Operational procedures
1-5-3.	Describe indications which should or may occur during operation of the General Utility Vehicles. Include alarms, indicators, displays, and readouts.
1-5-4.	Describe casualty/degraded/abnormal/not full mission capable mode(s) of operation for the General Utility Vehicles.
1-5-5.	Describe data logging requirements for the General Utility Vehicles. Include logging method, types of data logged, and disposition.
1-5-6.	Describe personnel and equipment safety precautions which are to be observed during operation of the General Utility Vehicles.
1-6.	MAINTENANCE DESCRIPTION
1-6-1.	Define the maintenance policy for the General Utility Vehicles. a. Preventive maintenance - the requirement for periodic performance of tasks to minimize system malfunctions by doing the following: (1) cleaning (2) inspection (3) lubrication (4) painting (5) degradation/deterioration checks (6) performance checks (7) pre-maintenance procedures

D548-5

FIGURE 5-3-3. Example subsystem PPP table. (Sheet 4 of 7)

TABLE D548. General utility vehicles (Subsystem) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-6-1. (Cont.)	b. Corrective maintenance - checks and procedures used to locate and correct malfunctions as determined by the following guides: (1) Authorized repair responsibility to correct malfunctions to the authorized maintenance level. (2) Fault Isolation - location of faults to the level of available spares, and to the authorized repair level including system operational checks and tests, as well as fault isolation tests and procedures. (3) Analytical procedures - isolation of faults using authorized techniques not contained in prescribed maintenance documentation. (4) Post-maintenance procedures - procedures performed after repair.
1-6-2.	Describe the use of special tools and test equipment required for maintenance of the General Utility Vehicles as prescribed in applicable documentation.
1-6-3.	Describe preventive maintenance procedures for the General Utility Vehicles. Include recognition and interpretation of indications, records, and reports.
1-6-4.	Describe alignment, adjustment, and calibration procedures for the General Utility Vehicles.
1-6-5.	Describe the operational tests used for maintenance of the General Utility Vehicles. Include test name, use, and the procedures.
1-6-6	Describe the recognition and interpretation of all malfunction indications for the General Utility Vehicles.
1-6-7.	Describe the systematic fault isolation procedures contained in the prescribed maintenance documentation for the General Utility Vehicles.
1-6-8.	Describe authorized techniques to isolate faults which cannot be located using procedures contained in the prescribed documentation.

D548-6

FIGURE 5-3-3. Example subsystem PPP table. (Sheet 5 of 7)

TABLE D548. General utility vehicles (Subsystem) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
16-9.	Describe the post-repair procedures for the General Utiliyty Vehicles.
1-6-10.	Describe personnel and equipment safety precautions which are to be observed while performing maintenance on the General Utility Vehicles.
1-7.	DOCUMENTATION
1-7-1.	Describe the organization, content, and use of all technical documentation provided for use with the General Utility Vehicles.
2.	SUBSYSTEM SKILLS
2-1.	OPERATION
2-1-1.	Perform tasks for operation of the General Utility Vehicles. a. Pre-Operational procedures b. Operational procedures c. Post-Operational procedures
2-1-2.	Recognize and interpret all indications occurring during performance of the operating procedures, and perform appropriate operator actions in proper sequences for the General Utility Vehicles.
2-1-3.	Perform tasks and casualty/degraded/abnormal/not full mission capable modes of operation of the General utility Vehicles.
2-1-4.	Perform data logging requirements for the General Utility Vehicles.
2-1-5.	Adhere to personnel and equipment safety precautions during operation of the General Utility Vehicles.
2-2.	MAINTENANCE
2-2-1.	Use special tools and special test equipment required for maintenance of the General Utility Vehicles as prescribed in applicable document.

D548-7

FIGURE 5-3-3. Example subsystem PPP table. (Sheet 6 of 7)

TABLE D548. General utility vehicles (Subsystem)- - Continued.

ITEM NO.	KNOWLEDGE/SKILL
2-2-2.	Perform preventive maintenance procedures including quality assurance procedures on the General Utility Vehicles as scheduled by the Planned Maintenance System (PMS).
2-2-3.	Perform alignment adjustment and calibration procedures on the General Utility Vehicles.
2-2-4.	Perform operational tests used for maintenance of the General Utility Vehicles.
2-2-5.	Recognize and interpret all malfunction indications for the General Utility Vehicles.
2-2-6.	Perform systematic fault isolation procedures contained in prescribed maintenance documentation.
2-2-7.	Use authorized methods to isolate faults which cannot be located using the procedures in the prescribed maintenance documentation.
2-2-8.	Perform post-repair procedures, including quality assurance procedures, on the General Utility Vehicles.
2-2-9.	Adhere to personnel and equipment safety precautions when performing maintenance on the General Utility Vehicles.

D548-8

FIGURE 5-3-3. Example subsystem PPP table. (Sheet 7 of 7)

PERSONNEL PERFORMANCE PROFILE

FOR

GENERAL UTILITY VEHICLES

TABLE D542

COMMERCIAL UTILITY CARGO VEHICLE (TYPE A), UTILITY

30 MARCH 1986

EQUIPMENT MODIFICATION RECORD

None

NEW DESIGN - DRAWING NUMBER

None

D542-1/D542-2

FIGURE 5-3-4. Example equipment table. (Sheet 1 of 9)

TABLE D542. Commercial utility cargo vehicle (TYPE A), utility (Equipment).

ITEM NO.	KNOWLEDGE/SKILL
1.	EQUIPMENT KNOWLEDGE
1-1.	GENERAL
1-1-1.	State the functions of the CUCV (TYPE A).
1-1-2.	State that the CUCV (TYPE A) consists of the following major functional areas. Include the function of each. a. Engine b. Transmission c. NP208 transfer case d. NP205 transfer case e. Front axle f. Rear axle g. Electrical system h. Wheels/tires i. Frame j. Body k. Painting/rustproofing
1-1-3.	Define the abbreviations, terms, and symbols used with the CUCV (TYPE A).
1-1-4.	State the operational characteristics and capabilities of the CUCV (TYPE A).
1-1-5.	State the security requirements for the CUCV (TYPE A).
1-2.	PHYSICAL DESCRIPTION
1-2-1.	Describe all major and associated components of the CUCV (TYPE A). Include name, nomenclature, physical appearance, reference designator, location, and construction features. a. Engine b. Transmission c. NP208 transfer case d. NP205 transfer case e. Front axle f. Rear axle g. Electrical system h. Wheels/tires

D542-3

FIGURE 5-3-4. Example equipment PPP table. (Sheet 2 of 9)

TABLE D542. Commercial utility cargo vehicle (TYPE A), utility (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-2-1. (Cont.)	i. Frame j. Body k. Painting/rustproofing
1-2-2.	Describe displays, controls, and indicators associated with the CUCV (TYPE A). designators, positions, colors, and location. a. Steering wheel b. Gear shift lever c. Brake pedal d. Foot throttle pedal e. Four wheel drive selector f. Heater/defroster g. Inside rear-view mirror h. Key-operated ignition i. Fuel gauge j. Speedometer/odometer k. Lighted transmission dials l. Generator output lamp m. Oil Pressure lamp n. Engine temperature lamp o. Glow-plug operation lamp p. Water-in-fuel lamp q. Low coolant warning lamp r. Seat belt warning lamp s. Emergency brake lever
1-3.	FUNCTIONAL DESCRIPTION
1-3-1.	Describe how the CUCV (TYPE A) works (functional operation). Include methods of control, signal flow, operation, and indications. a. Engine b. Transmission c. NP208 transfer case d. NP205 transfer case e. Front axle f. Rear axle g. Electrical system h. Wheels/tires i. Frame

D542-4

FIGURE 5-3-4. Example equipment PPP table. (Sheet 3 of 9)

TABLE D542. Commercial utility cargo vehicle (TYPE A), utility (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-3-1, (Cont.)	j. Body k. Painting/rustproofing
1-3-2.	Describe the functions of each control and indicator in each position, condition, and color. a. Steering wheel b. Gear shift lever c. Brake pedal d. Foot throttle pedal e. Four wheel drive selector f. Heater/defroster g. Inside rear-view mirror h. Key-operated ignition i. Fuel gauge j. Speedometer/odometer k. Lighted transmission dials l. Generator output lamp m. Oil Pressure lamp n. Engine temperature lamp o. Glow-plug operation lamp p. Water-in-fuel lamp q. Low coolant warning lamp r. Seat belt warning lamp s. Emergency brake lever
1-4.	INTERFACE DESCRIPTION
1-4-1.	Describe physical interface between CUCV (TYPE A) and related external equipments. Include name, physical appearance, reference designators, and locations, a. Multi-purpose tow hooks b. Pintle c. Exterior mirrors d. Brush guards e. Blackout lights f. Slave receptacle g. Trailer wiring h. Diagnostic connector assembly i. Tailgate j. Bumpers k. Seating/passenger restraint

D542-5

FIGURE 5-3-4. Example equipment PPP table. (Sheet 4 of 9)

TABLE D542. Commercial utility cargo vehicles (TYPE A), utility (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-4-1. (Cont.)	l. VRC-43 radio m. VRC-46 radio n. AS-1729 antenna o. Nuclear, Biological, and Chemical (NBC) kit p. Weapons holder q. AN/USQ-70
1-4-2.	Describe functional interface between the CUCV (TYPE A) and related external equipments. a. Electrical (power sources) b. Electronic (input, output, and control signals) c. Pneumatic d. Hydraulic (hydraulic oil, lube oil, water, etc.) e. Mechanical (1) Structural (2) Shafts, gears, springs
1-5.	OPERATIONAL DESCRIPTION
1-5-1.	Describe authority and regulations pertaining to the operation of the CUCV (TYPE A) including external equipments which interface with it.
1-5-2.	Describe operational tasks for CUCV (TYPE A). a. Pre-operational procedures (1) Routine (go/no-go, self test, etc.) b. Operational procedures c. Post-Operational procedures
1-5-3.	Describe indications which may occur during operation of the CUCV (TYPE A). Include alarms, indicators, displays, and readouts.
1-5-4.	Describe casualty/degraded/abnormal/not full mission capable mode(s) of operation for the CUCV (TYPE A).
1-5-5.	Describe data logging requirements for the CUCV (TYPE A). Include logging method, types of data logged, and disposition,
1-5-6.	Describe all acceptance tests for the CUCV (TYPE A).

D542-6

FIGURE 5-3-4. Example equipment PPP table. (Sheet 5 of 9)

TABLE D542. Commercial utility cargo vehicle (TYPE A), utility Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-5-/.	Describe personnel and equipment safety precautions which are to be observed during operation of the CUCV (TYPE A)
1-6.	MAINTENANCE DESCRIPTION
1-6-1.	Define the maintenance policy for the CUCV (TYPE A). a. Preventive maintenance - tile requirement for periodic performance of tasks to minimize system malfunctions by doing the following: (1) Servicing - scheduled or unscheduled inspections, cleaning, fueling, lubrication, corrosion control and any other function in support of maintaining any equipment full mission capable. (2) Operational checks (confidence or self test) (a) Premaintenance procedures (b) Performance checks (c) Degradation/deterioration checks (d) Quality assurance checks b. Corrective maintenance - checks and procedures used to locate and correct malfunctions as determined by the following guides: (1) Authorized repair responsibility to correct malfunctions to the authorized maintenance level, (2) Fault Isolation - location of faults to the level of available spares, and to the authorized repair level . (a) Equipment operation checks and tests (b) Fault isolation rests and procedures (3) Analytical procedures - isolation of faults using authorized techniques not contained in prescribed maintenance documentation. (4) Post-maintenance procedures - procedures performed after repair.
1-6-2.	Describe the use of special tools and test equipment required for maintenance for the CUCV (TYPE A) as prescribed in applicable documentation.
1-6-3.	Describe preventive maintenance procedures for the CUCV (TYPE A). Include recognition and interpretation of indications, records, reports, and instructions.

D542-7

FIGURE 5-3-4. Example equipment PPP table. (Sheet 6 of 9)

TABLE D542. Commercial utility cargo vehicle (TYPE A), utility Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-6-4.	Describe alignment, adjustment, and calibration procedures for the CUCV (TYPE A).
1-6-5.	Describe operational tests used for maintenance of the CUCV (TYPE A). Include tests' names, uses, and the procedures.
1-6-6.	Describe the recognition and interpretation of all malfunction indications for the CUCV (TYPE A).
1-6-7.	Describe the systematic fault isolation procedures contained in the prescribed maintenance documentation for the CUCV (TYPE A).
1-6-8.	Describe authorized methods to isolate faults which cannot be located using procedures contained in the prescribed documentation.
1-6-9.	Describe the procedures to disassemble, repair, and reassemble the CUCV (TYPE A) to the authorized maintenance level.
1-6-10.	Describe the post-repair procedures for the CUCV (TYPE A).
1-6-11.	Describe personnel and equipment safety precautions which are to be observed while performing maintenance on the CUCV (TYPE A).
1-7.	DOCUMENTATION
1-7-1.	Describe the organization, content, and use of all technical documentation provided for use with the CUCV (TYPE A).
2.	EQUIPMENT SKILLS
2-1.	OPERATION
2-1-1.	Perform tasks for operation of the CUCV (TYPE A). a. Pre-Operational procedures (1) Routine b. Operational procedures c. Post-Operational procedures

D542-8

FIGURE 5-3-4. Example equipment PPP table. (Sheet 7 of 9)

TABLE D542. Commercial utility cargo vehicle (TYPE A), utility (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
2-1-2.	Recognize and interpret all indications occurring during performance of the operating procedures, and perform appropriate operator actions in proper sequences on the CUCV (TYPE A).
2-1-3.	Perform tasks and casualty/degraded/abnormal/not full mission capable modes of operation of the CUCV (TYPE A).
2-1-4.	Perform data logging requirements fot the CUCV (TYPE A).
2-1-5.	Perform acceptance tests for the CUCV (TYPE A).
2-1-6.	Adhere to personnel and equipment safety precautions during operational procedures of the CUCV (TYPE A).
2-2.	MAINTENANCE
2-2-1.	Use special tools and test equipment required for maintenance of the CUCV (TYPE A) as prescribed in applicable documentation.
2-2-2.	Perform preventive maintenance procedures, including quality assurance procedures, on the CUCV (TYPE A) as scheduled by the Planned Maintenance System (PMS).
2-2-3.	Perform alignment, adjustment, and calibration procedures on the CUCV (TYPE A).
2-2-4.	Perform operational tests used for maintenance of the CUCV (TYPE A).
2-2-5.	Recognize and interpret all malfunction indications for the CUCV (TYPE A).
2-2-6.	Perform systematic fault isolation procedures contained in prescribed maintenance documentation.
2-2-7.	Use authorized methods to isolate faults which cannot be located using the procedures in the prescribed maintenance documentation.

D542-9

FIGURE 5-3-4. Example equipment PPP table. (Sheet 8 of 9)

TABLE D542. Commercial utility cargo vehicle (TYPE A), utility (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
2-2-8.	Disassemble, repair, and reassemble the CUCV (TYPE A) to the authorized maintenance level.
2-2-9.	Perform post-repair procedures, including quality assurance procedures, on the CUCV (TYPE A).
2-2-10.	Adhere to personnel and equipment safety precautions when performing maintenance on the CUCV (TYPE A).

D542-10

FIGURE 5-3-4. Example equipment PPP table. (Sheet 9 of 9)

PERSONNEL PERFORMANCE PROFILE

TABLE B076

TASK\FUNCTION

MOTORIZED VEHICLES DRIVING REQUIREMENTS

1 MARCH 1986

EQUIPMENT MODIFICATION RECORD

None

B076-1/B076-2

FIGURE 5-3-5. Example task/function PPP table. (Sheet 1 of 8)

TABLE B076. Motorized vehicles driving requirements (Task/Function).

ITEM NO.	KNOWLEDGE/SKILL
1.	KNOWLEDGE
1-1.	BASIC DRIVING
1-1-1.	Describe vehicle inspection points and criteria. a. bumpers b. headlights c. safety glass d. windshield wipers e. brakes (foot and parking) f. muffler and exhaust system g. signal lights h. tires i. license plate and light j. brake and tail lights k. horn l. restraint devices (seat belts, shoulder harness, child restraints) m. mirror(s)
1-1-2.	Describe driving maneuvers and safety precautions. a. negotiating intersections b. left and right turns c. reversing directions (U-turn) d. starting and stopping including quick stop e. signaling (hand, arm, automatic) f. selecting proper lane g. parallel parking h. backing i. following a vehicle j. speed control k. highway hypnosis l. night driving m. winter driving n. driving in rain/fog o. interstate driving p. skidding

FIGURE 5-3-5. Example task/function PPP table. (Sheet 2 of 8)

TABLE B076. Motorized vehicles driving requirements (Task/Function) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-1-3.	Describe rules of the road. a. obeying officers b. changing lanes c. slow moving vehicles d. coasting e. use of headlights f. throwing material from vehicles g. speed limits and adjusting speed to conditions h. passing i. yielding to emergency vehicles and school buses j. railroad crossings k. right of way l. turns and signaling m. traffic signs and signals (1) color (2) shape n. highway markings o. interstate procedures p. night driving and headlight courtesy q. winter driving r. driving in rain/fog
1-1-4.	List recommended safety and emergency equipment.
1-1-5.	Describe procedures when involved in an accident,
1-1-6.	Describe procedures when first on the scene of an accident.
1-1-7.	Describe initial procedures for emergency conditions, a. flooded engine (stall) b. accelerator jammed c. brake failure (including wet brakes) d. tire blowout e. right wheels off pavement f. car approaching in your lane g. fire
1-1-8.	Describe the effect of alcohol on driving behavior and ability.

B076-4

FIGURE 5-3-5. Example task/function PPP table. (Sheet 3 of 8)

TABLE B076. Motorized vehicles driving requirements (Task/Function) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-1-9.	Describe the Implied Consent Law and the consequences of arrest for Driving While Intoxicated (DWI).
1-2.	EMERGENCY DRIVING
1-2-1.	Describe operation to include authority and regulations for collision avoidance equipment. a. horn b. siren c. lights d. bell
1-2-2.	Describe accident prevention maneuvers including: occasions for use, hazards involved, and procedures. a. swerving to avoid stationary objects b. swerving to avoid moving objects c. controlled skid
1-2-3.	Describe transiting, braking/stopping maneuvers including: occasions for use, hazards involved, and procedures. a. wet pavement b. icy pavement c. sand d. gravel e. mud f. snow g. rain h. fog
1-2-4.	Describe high speed maneuvers including: applicable regulations, occasions for use, hazards involved, and procedures. a. passing b. turning c. going through intersections d. reversing directions

B076-5

FIGURE 5-3-5. Example task/function PPP table. (Sheet 4 of 8)

TABLE B076. Motorized vehicles driving requirements (Task/Function) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-2-5.	Describe emergency escort procedures including: applicable regulations, occasions for use, hazards involved, and procedures. **a**. leading **b**. following
1-2-6.	Describe abbreviations, terms, and symbols associated with emergency driving. **a**. hydroplaning **b**. fishtailing
1-2-7.	Describe the organization, content, and use of all documentation applicable to emergency driving.
1-2-8.	Describe situations which require emergency driving, including applicable regulations. **a**. medical emergencies **b**. law enforcement emergencies **c**. fire/natural disasters **d**. courier/message delivery
1-2-9.	Describe the effects of environmental conditions on emergency driving, include visibility, speed constraints, and traction effects. **a**. rain **b**. snow **c**. ice **d**. sand **e**. gravel **f**. mud **g**. oil/lubricants **h**. fog
1-2-10.	Describe the personnel and equipment safety precautions applicable to emergency driving.

B076-6

FIGURE 5-3-5. Example task/function PPP table. (Sheet 5 of 8)

TABLE B076. Motorized vehicles driving requirements (Task/Function) - Continued.

ITEM NO,	KNOWLEDGE/SKILL
2.	SKILLS
2-1.	BASIC DRIVING
2-1-1.	Perform vehicle inspection. a. bumper b. headlights c. safety glass d. windshield wipers e. brakes (foot and parking) f. muffler and exhaust system g. signal lights h. tires i. license plate and light j. brake and tail lights k. mirror(s) l. horn m. restraint devices (seat belts, shoulder harness, child restraints)
2-1-2.	Perform driving maneuvers. a. intersection negotiating b. left and right turns c. reversing directions (U-turn) d. starting and stopping including quick stop e. use of hand and arm or turn signals f. selecting proper lane g. parallel parking h. backing i. following a vehicle j. speed control k. night driving l. winter driving m. interstate driving n. driving in rain/fog o. skidding
2-1-3.	Adhere to personnel and equipment safety precautions and the rules of the road applicable to basic driving.

B076-7

FIGURE 5-3-5. Example task/function PPP table. (Sheet 6 of 8)

TABLE B076. Motorized vehicles driving requirements (Task/Function) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
2-1-4.	Perform emergency procedures for: a. flooded engine (stall) b. accelerator jammed c. brake failure (including wet brakes) d. tire blowout e. right wheels off pavement f. car approaching in your lane g. fire
2-2.	EMERGENCY DRIVING
2-2-1.	Operate collision avoidance equipment. a. horn b. siren c. lights d. bell
2-2-2.	Perform accident preventing maneuvers. a. swerving to avoid stationary object b. swerving to avoid moving object c. controlled skid
2-2-3.	Perform braking/stopping maneuvers. a. wet pavement b. icy pavement c. sand d. gravel e. mud f. snow
2-2-4.	Perform high speed maneuvers. a. passing b. turning c. going through intersections d. reversing directions
2-2-5.	Perform emergency escort procedures. a. leading b. following

B076-8

FIGURE 5-3-5. Example task/function PPP table. (Sheet 7 of 8)

TABLE B076. Motorized vehicles driving requirements (Task/Function). - Continued.

ITEM NO.	KNOWLEDGE/SKILL
2-2-6.	Transit various hazardous surfaces. a. wet pavement b. icy pavement c. sand d. gravel e. mud f. snow
2-2-7.	Adhere to personnel and equipment safety precautions applicable to emergency driving.
2-2-8.	Adhere to applicable laws and rules of the road while performing emergency driving.

B076-9/B076-10

FIGURE 5-3-5. Example task/function PPP table. (Sheet 8 of 8)

5.3.2.1 PPP knowledge and skill items. PPP tables consist of PPP items which list the knowledge and skills required to operate and maintain a system, subsystem, or equipment or to perform a task or function. The items are written in general statement form to eliminate the need for repetitive PPP table items which show the various individual knowledge and skill levels. PPP items must not include more than three levels of subitems. The content and detail of a PPP table includes applicable knowledge and skill items in subject areas as defined in the following paragraphs.

(a) Purpose of background PPPs. A background PPP is developed to identify the knowledge and skills which are prerequisite to further training. It lists the prerequisite knowledge and skills which are common to all (or at least more than one) of the equipment items. These knowledge and skill statements identify basic abilities not directly related to any specific equipment. However, they do represent the prerequisite principles, concepts, and theories required to understand the operation and maintenance of the equipment. They may also include skills, such as the use of common test equipment, This profile is developed following systematic procedures. Table 5-3-I shows the content requirements for this PPP.

TABLE 5-3-I. Content requirements of a background PPP table.

Knowledge Knowledge items are required to understand or recognize principles, rules, concepts, phenomena, symbology, and terminology. These knowledge items support the skill tasks. Skills Skill items are required to perform specific tasks within a subject area. These skill items cover both mental and physical tasks.

(b) Purpose of system PPPs. A system PPP is developed to identify the interrelationship of subsystem functions within the system and the requirements for system operation and maintenance. Each system PPP contains, in the sequence given, the applicable knowledge and skill items for the categories described in table 5-3-II.

TABLE 5-3-II. System, subsystem, and equipment personnel performance profile item definitions.

ITEMS	KNOWLEDGE/SKILLS
1. (System, Subsystem, Equipment) Knowledge	Knowledge items required to operate and maintain a system, subsystem, or equipment.
1-1. General	Items covering the system, subsystem, or equipment purposes, subsystem or equipment components and functions, abbreviations, terms, and symbols, operational characteristics and capabilities, model differences, (when applicable), security (when applicable), and other items not appropriate for inclusion within subsequent equipment knowledge subcategories.
1-2. Physical Description	Itemns covering the significant physical features of the (system, including subsystem) or (subsystem, including equipment) or (equipment, including components) identification, location, construction features, and location and description of controls, displays, and indicators .
1-3. Functional Description	Items covering knowledge required to understand the functional operation of the system, subsystem, or equipment including the logical functional breakdown, control, sequential modes of operation, functional loops, function controls and indicators, and programing.
1-4. Interface Description	Items covering knowledge required to understand the physical and functional interface between the (system and subsystem) (subsystem and equipment) (equipment). This includes signal source and destination, signal characteristics, and power requirements and characteristics.
1-5. Operational Description	Items covering the knowledge required to understand operation authority and regulations, all conditions, modes of operation, and sequential operations, analysis of displays, alarms,

TABLE 5-3-II. System, subsystem, and equipment personnel performance profile item definitions - Continued.

ITEMS		KNOWLEDGE/SKILLS
		readouts, printouts, tapes, etc., resulting during all conditions and modes of operation, data reduction techniqtes, data logging requirements, and operation safety precautions. If there are no operation tasks associated with the subject system, subsystem, or equipment the statement "No operation involved" will follow the heading.
1-6.	Maintenance Description	Items covering tile knowledge required to understand the system, subsystem, or equipment maintenance policy, tests and procedures, malfunction indications , fault isolation procedures, repair procedures, assembly procedures, and maintenance safety precautions.
1-7.	Documentation	Items listing system, subsystem, or equipment level technical documentation required for operation and maintenance.
2.	(System, Subsystem, Equipment) Skills	Skills required to operate and maintain a system, subsystem, or equipment.
2-1.	Operation	Items covering all skills required for operation, which include procedures for preoperation, operation, post-operation, and safety precautions. If there are no operation tasks associated with the system, subsystem, or equipment, the statement "NO operation involved" will follow the heading.
2-2.	Maintenance	Items covering all skills required for maintenance of a system, subsystem, or equipment, which includes procedures for use of special tools and test equipment, preventive and corrective maintenance, and safety precautions.

(c) Purpose of subsystem PPPs. A subsystem PPP is developed to provide a list of subsystem level knowledge and skills in sufficient detail to allow the user to identify the equipment integration and the requirements for subsystem operation and maintenance. Each subsystem PPP contains, in the sequence given, the applicable' knowledge and skill items for the categories described in table 5-3-II.

(d) Purpose of equipment PPPs. An equipment PPP is developed to provide a list of knowledge and skills required to operate and maintain the particular equipment, including software-related activitities. Each equipment PPP contains, in the sequence given, the applicable knowledge and skill items for the categories described in table 5-3-II.

(e) Purpose of task/function PPPs. A task/function PPP is developed whenever there is a task or function to be performed which is not unique to the operation and maintenance of a particular equipment, subsystem, or system, (such as basic and emergency driving). A task\function PPP is developed following systematic procedures. The depth to which the PPP is developed depends upon the extent and adequacy of technical documentation for the subject - the poorer the technical documentation is, the more detailed the task/function PPP must be. The better the technical documentation is, the less in depth a task/function PPP can be. The applicable knowledge and skill items are described in table 5-3-III. The critical concepts pertaining to the development of task/function PPPs are:

(1) Emphasis is on the skill not the person performing the skill.
(2) Task/function PPPs are not developed around a specific job.
(3) Words describing primary skills which require a task/function PPP usually end with the suffixes: "ing", "ion", "ment"; and not “or”, or “er” (e.g., Company Commanding, not company Commander; Navy Instruction, not Navy Instructor; Tactical Weapons Employment, not Tactical Weapons Officer; Navigation, not Navigator).
(4) Management documentation, programs, and procedures are commonly referred to as “Systems” (e.g., Supply System, Equipment Tag Out System, Physical Distribution System, Maintenance Data System). These titles, which describe primary skills, are sometimes used as titles of task/function PPPs. In situations where “Systems” do not support actual hardware, the primary skill and title of task/function PPPs should end in “Management” (e.g., supply System Management, Equipment Tag Out System Management, physical Distribution System Management, Maintenance Data System Management).

TABLE: 5-3-III. Content requirements of a task/function PPP table.

Knowledge Items required to understand and perform the discrete skill components identified in the Skills section of the PPP under development. These items should include the purpose of the task or function; associated abbreviations, terms, and symbols; desired characteristics of the completed task or function, official policies affecting the completion of the task or function; description of approved procedures ; physical and functional description appropriate to the subject; safety precautions and security procedures; use of any special tools and test equipment; organization, content, regulations and authority; use of data, logs, and records; and other items appropriate to the task or function to be performed. Skills Items required to perform specific tasks or functions within the chosen subject area. These skill items are discrete components of the task or function for which the PPP table is being developed, and include safety and security items when required. Skill items may be physical or mental, but" should be written in terms of observable/measurable performance such as use of special tools and test equipment, performance of approved procedures, observance of approved policies and precautions, and proper use of documentation, etc.

5.3.3 General PPP table development. PPP items are developed from a comprehensive task analysis and are written without regard to the person who will perform that task or function. PPPs are developed at the equipment level initially. Once the requirements for each individual equipment are determined, the subsystem level knowledge and skill requirements can be determined. After the subsystem requirements have been identified, the same process is used to determine system requirements.

(a) Determining whether the device is an equipment, subsystem, or system. These three categories of devices may be directly related to one another, An equipment may be part of a subsystem, and a subsystem part of a system. Also, two or more related equipments may comprise a subsystem, Just as two or more related subsystems may comprise a system. Their definitions are:

(1) System. Any grouping of subsystems or equipment that exists to meet a tactical or strategic purpose. Systems may be single or multi-purpose.

(2) Subsystem. Any collection of equipment which, when taken as a whole, supports a system in meeting the tactical or strategic requirements.

(3) Equipment. Any device that supports any system or subsystem. Equipments are made up of various components.

(b) Categories. When applied to a specific hardware, the categories of system, subsystem, and equipment are not necessarily fixed. If the hardware is of sufficient size and complexity, it may conceivably be designated as a system, subsystem, or equipment, depending upon the developer's intent and eventual usage. Multi-purpose system diagram and single purpose system diagram illustrate these concepts. Figure 5-3-6 shows the system as the weapons platform. Figure 5-3-7 shows the system as a major functional area of the weapons platform.

(c) Expert requirement. An expert's knowledge of the hardware, its utilization and location in the total training pipeline is required to determine the most appropriate category description. This decision will have an effect on curriculum, personnel, and resources. One project engineer may decide to designate the AN/SQS-53B Sonar in Figures 5-3-6 and 5-3-7 as an equipment; however, another project engineer may just as logically designate the AN/SQS-53B Sonar as a subsystem. Neither engineer is necessarily wrong.

NOTE: The AN/SQS-53B Sonar consists of seven functional groupings (e.g., power distribution, transmitter, display) and 49 separate cabinets, or units, at various locations within the CG-47 class ship. In this case, using the multi-purpose system development of 49 equipment level PPP tables is avoided, as might occur if the AN/SQS-53B Sonar was designated a subsystem. Either approach may produce a quality curriculum for operation and maintenance of the AN/SQS-53B Sonar.

(d) Generic equipment. Equipment may also be "generic" and the model statement is used to develop a PPP table for this generic equipment. An example of a generic PPP table for microcomputers is when a number of different makes and models of minicomputers are discussed. Generic PPP tables are especially useful for replacement/conversion courses when it is known the graduate will be operating or monitoring a specific type of equipment, such as microcomputers, but the exact equipment is not known.

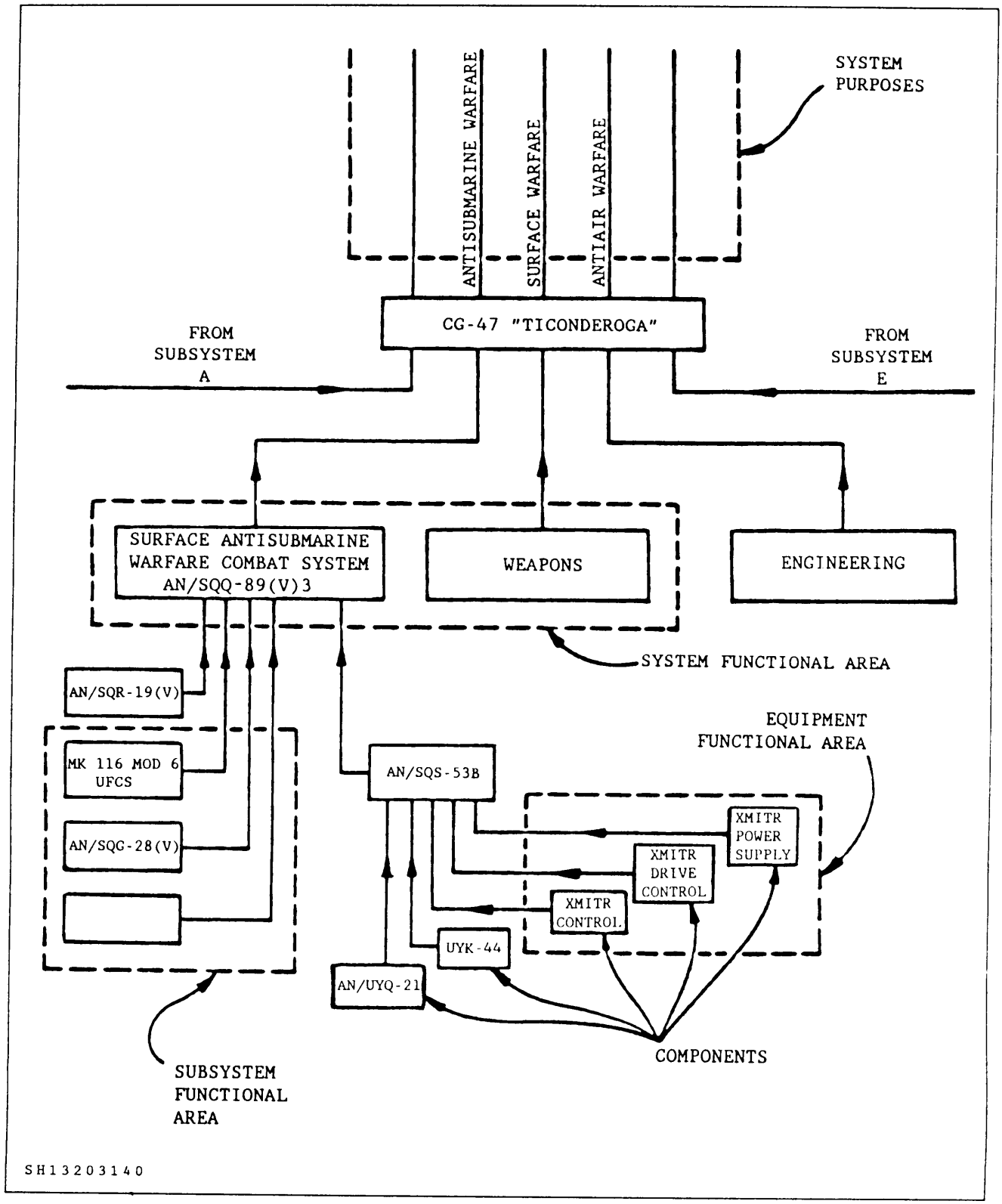
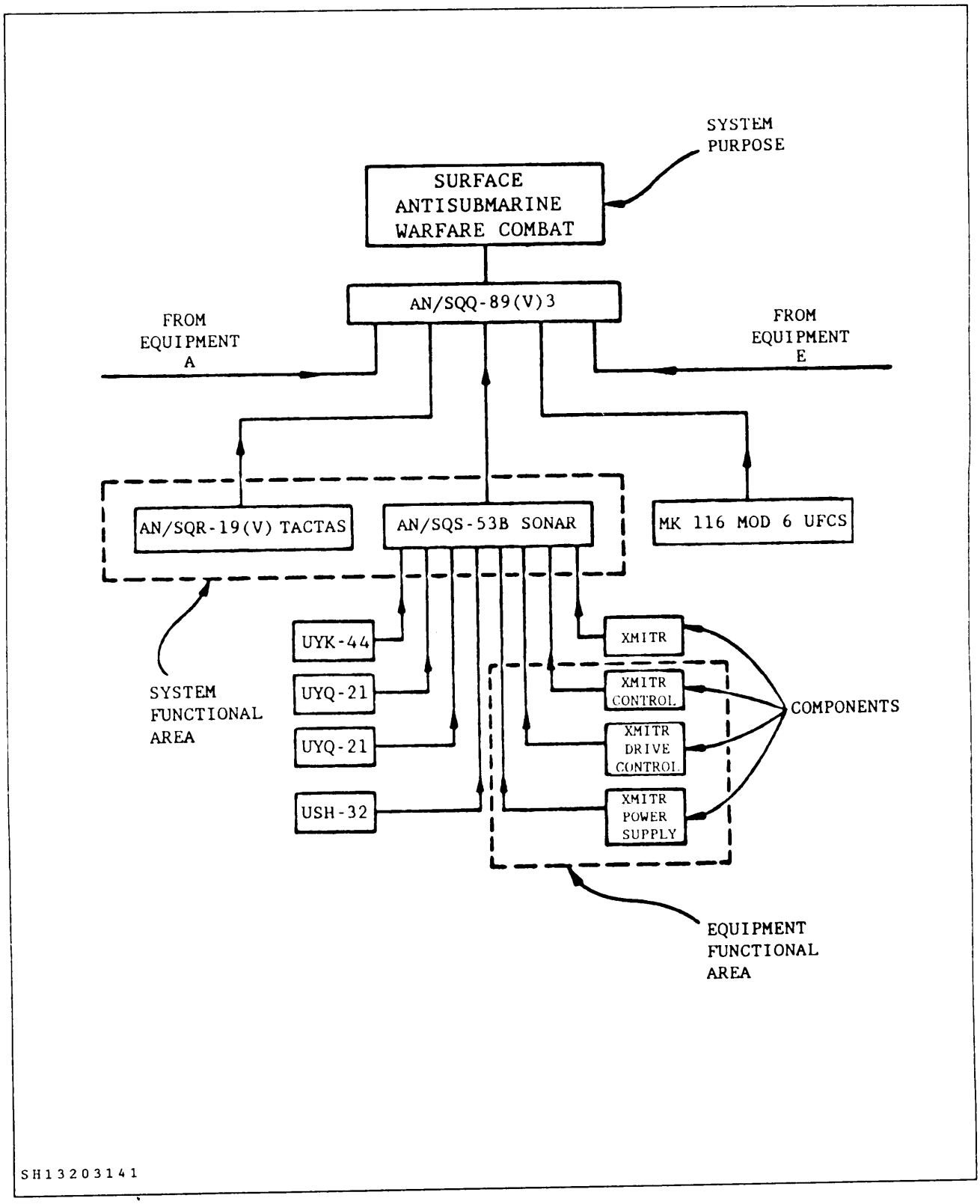


FIGURE 5-3-6. Example system as a weapons platform.



5-3-7. Example system as a major functional area of the weapons platform.

(e) Defining equipment, subsystem, and system PPP tables. A PPP table is a minimum requirements listing of all knowledge and skills required to operate and maintain an equipment, subsystem, or system. The definitions of each PPP table are:

(1) Equipment. A list of the knowledge and skills required to operate and maintain an equipment.
(2) Subsystem. A list of the knowledge and skills required to operate and maintain a subsystem.
(3) System. A list of the knowledge and skills required to operate and maintain a system.

(f) Importance of PPP tables in curriculum development. PPP tables are the foundations upon which all curricula are developed. Therefore, PPP tables are the single most critical element of curriculum development. Furthermore, it is impossible to develop curriculum without first having developed the PPP table(s). Specific PPP line items from a PPP table will appear throughout the curriculum, designated as Course Learning Objectives (CLO), TLOs, discussion points in the Instructor Guide (IG), or TLOS in the Trainee Guide (TG), as well as in the development of test items. The specific PPP line item numbers are listed in the Profile Item-to-Topic Objective Chart (OAC) which is structured to correlate PPP item coverage to specific TLOS within a curriculum.

5.3.3.1 Quality PPP development. Paragraphs 5.3.3.1. (a) through 5.3.3.1.(1) portray the elements which are critical to the development of quality PPPs.

(a) Generality of PPPs. A PPP table for a particular equipment, subsystem, or system must be usable for training all categories of personnel on the hardware (or software), literally from the military recruit to the Commanding Officer. The most serious, and perhaps most frequent, error in PPP table development occurs when the developer has in mind a specific course for which the PPP table is being developed. That is, the developer is thinking of those specific operation or maintenance skills necessary for one particular course of instruction. This approach narrows the scope of the PPP tables , reducing their usability perhaps only to the one course, or to just one skill category. As a result, a reduced list of PPP line items is developed, and the PPP line items lose their general quality.
(b) Thoroughness of PPPs. The PPP table must identify and list, in specific format, all knowledge and skills required for the operation and maintenance of the equipment, subsystem, or system. This is the only type of table which will support the development of all training material in support of hardware, tasks or functions,
(c) Skill requirements are always developed first and knowledge second.

The precept applies throughout this system of curriculum development. Only knowledge supporting or prerequisite to the skills is included.

(d) Skills. Developing skills first, and knowledge last, ensures that the thrust of training is always on performance, on being able to operate/maintain the hardware/software, or perform the task or function. Where hardware/software or a specific task or function is concerned, the focus must always be on performance of the skill(s).

(e) Job sheets. Job sheet development commences as soon as the skill PPP line items have been selected for a particular course, and their training levels determined. A job sheet programs the skills or tasks a trainee must be able to perform on the job after graduation. Thus , the required skills will drive, or force, the content of the curriculum.

(f) Use of data resources during PPP table development. The purpose is to ensure accuracy and completeness of the PPP table. Data resources are described in the 5.3.3.1. (g) through 5.3.3.1. (j).

(g) Job task inventory. A job task inventory is frequently the most valuable data resource in developing a hardware or task/function PPP table . It is particularly useful in determining the skills for operation and maintenance, though not so useful for determining the supporting knowledge. Examples of job task inventory sources include the Logistics Support Analysis Report, Training and Training Equipment Report, and Military Manpower/Hardware Integration (HARDMAN) Program Reports (Manpower, Personnel, and Training Concept Document and Manpower, Personnel, and Training Resource Requirements). Prior versions of curriculum development systems assume that a valid job task inventory is developed and available before beginning PPP t-able development. If available, a job task inventory should certainly be consulted during PPP table development. If not available, the job task inventory development guidelines are discussed in the Manpower, Personnel, and Training Analysis Report.

(h) Procedural and technical documentation. Procedural and technical documentation are also especially valuable data resources. The technical documentation is usually a good source for determining knowledge requirements as well as the skills for operation and maintenance. Most have the same format and content as a PPP table.

(i) Engineers and other Professionals. Consultation with engineers and those from other professional disciplines is usually necessary when the hardware, task/function is still in the developmental phase. Procedural and technical documentation is seldom available, or is incomplete, at this time.

(j) Subject matter expert. A subject matter expert skilled in the operation and maintenance of the hardware, or performance of the task or function, is the most valuable asset of all during PPP table development. Development of the PPP table may be impossible without the help of this expert.

(k) Job specific behaviors in PPP tables. Words which exactly describe the skill should be used. If knowledge is being considered, action

verbs such as "locate", "extract" and "explain" are used because this is the action the person will take on the job when operating or maintaining the particular device.

(1) Hierarchal order. Within equipment, subsystem, and system PPP tables, the sequence of the seven knowledge categories and the two skill categories, is hierarchal proceeding from the general to the more specific, from the simple to the more complex, and from the easy to perform to the most difficult to perform. This sequence also reflects the preferred organization of the technical documentation. It is also the most logical sequence in which to arrange and present a curriculum for an equipment, subsystem, or system, Figure 5-3-8 illustrates this hierarchy.

5.3.3.2 Specific PPP table development guidelines. The following paragraphs are common to the development of each type of PPP table.

(a) PPP cover. The cover identifies this document as a PPP document and specifies the date of issue. Figure 5-3-9 is an Example Cover.

(1) Security requirements. Each PPP table must bear the highest security classification demanded by its contents. Classification must be in accordance with the effective edition of DoD Instruction 5220.22-M, the OPNAVINST 5510.1, and applicable contracting activity instructions.

(b) PPP table listing. When the work effort involves the development of several related PPP tables, a PPP table listing must be approved by the contracting activity prior to development. The PPP table listing identifies the new tables to be developed, and the activity responsible for developing the PPP Table(s) (see table 5-3-IV). The tables to be developed are listed in hierarchal order; i.e., the system table, followed by all subsystem tables, followed by the equipment tables. Task/function tables must be listed where they most appropriately fit in, and background tables are always listed last. Functionally related equipments must be grouped together as much as possible. PPP tables are identified by placing in parentheses following the title, as appropriate, (system), (subsystem), (equipment), (background), or (task/function). If more than one activity is developing the PPP table, the lead activity is listed first under Activity column.

(c) PPP table title page. The PPP Table Title Page must identify the PPP table title and PPP number, and as required the Equipment Modification Record and New Design-drawing number.

(d) PPP table title. The PPP table titles reflect the exact equipment, subsystem, system, background, or task/function name. MK and MOD numbers are included, if applicable.

5.3,3.3 Equipment PPP development. One of the tools required for PPP development is a list of action verbs (see table 5-3-V). The sequence for an equip-

ment PPP table development is described in the following paragraphs utilizing table 5-3-VI and table 5-3-VII. The development model statements, provided by table 5-3-VI, are "models" only. The statements may be modified, as required, to support PPP development. Refer to table 5-3-VII, sheet 1. The first step in developing equipment PPP table drafts is to analyze the tasks listed in the job task inventories to determine the specific skills and knowledge required to perform each task. Some tasks are similar enough to be grouped under one skill statement. Other tasks are complex and require further breakdown into a set of different skills. When PPPs are developed, the skill requirements are determined first and then the knowledge required to support the skills is determined. While analyzing the skills for knowledge requirements, it may become apparent that, in addition to knowledge, other skills are required to support the initial skill. All skill requirements must be thoroughly analyzed to ensure that all supporting knowledge and skills are identified.

(a) Skill and knowledge statement. A skill statement is a concise description of a human ability. It may encompass a whole category of tasks, or it may be a unique element of one or more complex tasks. A knowledge statement not only describes what the trainee must know but also identifies how he would demonstrate (communicate) this knowledge. The knowledge communication action verbs that are listed in table 5-3-V may be used to describe how knowledge can be communicated. Each knowledge statement must begin with a knowledge communication action verb. Each skill statement must identify what the trainee must be able to do in order to demonstrate his skill ability and must also identify the information the trainee must be able to communicate in order to demonstrate his knowledge, The resulting list of knowledge statements must correlate with the list of skill statements which are grouped into operation and maintenance (preventive and corrective) categories.

NOTE: Before the identified equipment knowledge and skill statements are organized into an equipment PPP table, any background knowledge and skill statements must be removed. Incorporate any background knowledge and skill statements into existing background tables as appropriate. If appropriate line items do not exist, add the statements to the existing background table, or, if necessary, new statements are organized into a set of background knowledge and skill tables (see 5.3.3.6.1.).

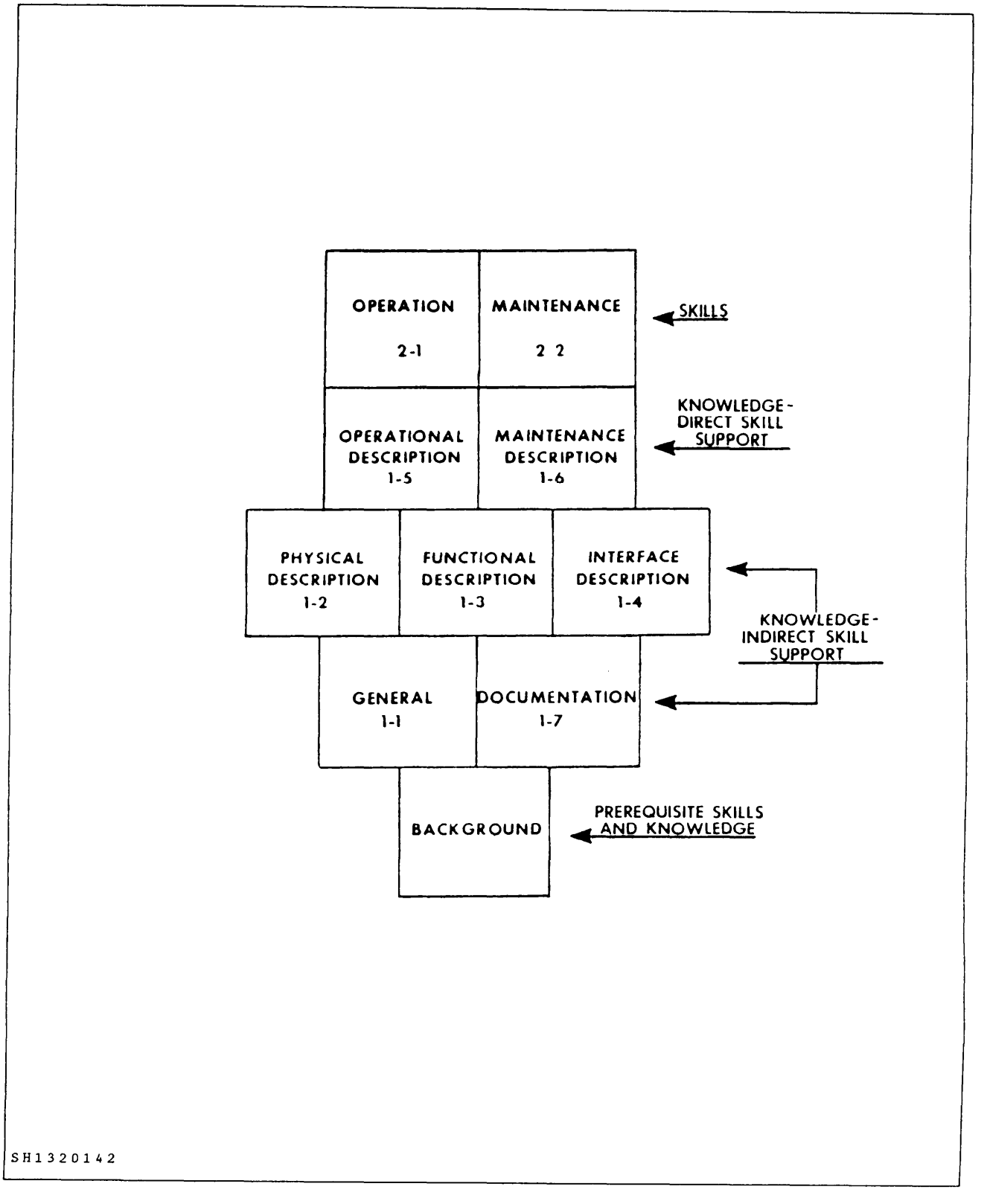


FIGURE 5-3-8. Hierarchal order - PPP table structure.

PERSONNEL PERFORMANCE PROFILE

FOR

GENERAL UTILITY VEHICLES

TABLE D542

COMMERCIAL UTILITY CARGO VEHICLE (TYPE A), UTILITY

30 MARCH 1986

EQUIPMENT MODIFICATION RECORD

None

NEW DESIGN - DRAWING NUMBER

None

D542-1/D542-2

FIGURE 5-3-9. Example PPP table cover.

TABLE 5-3-IV. Sample PPP table listing.

PPP TABLE LISTING

TABLE TITLE	ACTIVITY
Mobile Construction Battalion -Deployed - Vehicles (System)	Naval Construction Training Center, Port Hueneme
General Utility Vehicles (Subsystem)	Naval Construction Training Center, Gulfport
Tanked Vehicles (Subsystem)	Naval Construction Training Center, Gulfport
Earthmoving Vehicles (Subsystem)	Naval Construction Training Center, Port Hueneme
Ancillary Vehicles (Subsystem)	Naval Construction Training Center, Port Hueneme
Accessory Equipments (Subsystem)	Naval Construction Training Center, Gulfport
Commercial Utility Cargo Vehicle (TYPE A), Utility Vehicle (Equipment)	Naval Construction Training Center, Port Hueneme
Commercial, Utility Cargo Vehicle (TYPE B), Cargo Vehicle (Equipment)	Naval Construction Training Center, Gulfport
Commercial Utility Cargo Vehicle (TYPE C), Ambulance (Equipment)	Naval Construction Training Center, Gulfport
Motorized Vehicles Driving Requirements (Task\Function)	Naval Construction Training Center, Gulfport
Bearings and Lubrication (Background)	Chief of Naval Technical Training, Millington

(b) Supporting skills and knowledge identification. Supporting skills and knowledge must be identified for each equipment skill. The process is repeated for each level of supporting skills until all the basic skills and knowledge necessary to support the equipment skills have been identified. Care must be taken to include only skills and knowledge that are actually needed to support the equipment skills and knowledge. For example, the maintenance policy may dictate replacement of modules as the lowest authorized level of repair. While it may be necessary for the technician to understand input/output relationships to isolate malfunctions, it may not be necessary for him to understand the detailed theory of the circuit. The cutoff level for prerequisite skills and knowledge must never be below the academic entry point defined for replacement training or that level normally expected of a high school graduate. These listings then become very detailed compilations of skills and knowledge for each separate equipment skill.

(c) Developing PPP tables that are minimum requirements listings. PPP tables are the minimum training requirements listings. This means that a minimum number of PPP line items are written to describe all skills and knowledge required to operate and maintain the equipment, subsystem, or system, or to perform the task or function.

(d) Developing a minimum requirements list. A minimum requirements list is developed because the complete list of procedures and tasks may be found in the associated technical documentation. Generally, if the information is contained in the technical documentation it should not be repeated in the PPP table. However, if the technical documentation is poor, or nonexistent, a given PPP line item may have to be expanded to list all the procedures and tasks.

(e) Minimum requirements listing. The following example illustrates the concept of a minimum requirements listing and shows how one, or a few PPP line items may include numerous tables:

Example:

List tasks for braking on dry surfaces.

1. Place both hands on the steering wheel.
2. Lighten grip on steering wheel.
3. Back off on acceleration slowly.
4. Ease into next lower gear, if possible.
5. Modulate (pump) brakes gently and briefly.
6. Avoid sudden turns of the steering wheel.
7. Steer in direction of skid, if necessary.

TABLE 5-3-V. Skill/knowledge action verbs.

Skills

accomplish	employ	perform
adjust	energize	plot
align	enter	polish
apply	exchange	position
assemble	fabricate	remove
balance	find	repair
blend	inject	replace
build	insert	show
calibrate	inspect	solder
change	install	start
check	isolate	stop
clean	load	synchronize
complete	locate	test
construct	manipulate	tie
correct	measure	trace
deenergize	mix	troubleshoot
demonstrate	move	use
	operate	utilize

Knowledge

achieve	differentiate	name
administer	distinguish	observe
analyze	divide	recite
calculate	draw	recognize
choose	eliminate	repeat
coordinate	evaluate	report
communicate	explain	select
compare	express	solve
compute	fill out	spell
condense	identify	state
decide	illustrate	submit
define	instruct	summarize
deliver	interpret	synthesize
derive	list	tell
describe	manage	translate
determine	match	write
diagnose	monitor	

The corresponding minimized PPP line item reads as follows:

1. Perform braking/stopping maneuvers.
   a. wet pavement
   b. icy pavement
   c. sand
   d. gravel
   e. mud
   f. snow

A significant advantage to this format is that as the hardware or technical documentation changes, the PPP table usually remains static. Whenever possible, the PPP line item should be stated in sufficient terms to avoid changing as the hardware or technical documentation changes. This is further explained in 5.3.3.3.(h).

(f) Writing PPP line items. PPP line items can be general or specific in terms of their content and usage, to the extent shown by the following example from the Motorized Vehicle Driving Requirements (task/function) PPP table (see figure 5-3-5).

Example:

1-2-2. Describe accident prevention maneuvers including: occasions for use, hazards involved, and procedures.

1-2-6. Describe abbreviations, terms, and symbols associated with emergency driving.

2-2-1. Operate collision avoidance equipment.

2-2-3. Perform braking/stopping maneuvers.

(g) Mode specific PPP line items. The preceding line items in paragraph 5.3.3.2.(f), and all others in a particular PPP table, are made specific by adding the name of the specific skill/knowledge to that line item. With the required information added, the PPP line item is specific because it applies to specific knowledge and skills for a particular equipment, subsystem, or system. The following example from the Motorized Vehicle Driving Requirements (task/function) PPP table, (see figure 5-3-5), shows how PPP line items become specific by including the skill in the line item:

Example:

1-2-2. Describe accident prevention maneuvers including: occasions for use, hazards involved, and procedures.

   a. swerving to avoid stationary objects

b. swerving to avoid moving objects
c. controlled skid

1-2-6. Describe abbreviations, terms, and symbols associated with emergency driving.

a. hydroplaning
b. fishtailing

2-2-1. Operate collision avoidance equipment.

a. horn
b. siren
c. lights
d. bell

2-2-3. Perform braking/stopping maneuvers.

a. wet pavement
b. icy pavement
c. sand
d. gravel
e. mud
f. snow

(h) Generality of PPP line items, The PPP line items are also general because of their flexibility to accommodate changes to the system, subsystem, equipment, or task/function. Generality enables the PPP table to remain static as the device or task/function changes (with some exceptions). Generality is obtained by use of phrases such as “Describe the effects of environmental conditions”, “Describe personnel and equipment safety precautions”, or “Transit various hazardous surfaces.” This is done instead of listing by name all environmental conditions, all safety precautions, or hazardous surfaces. When specific skills are called out it is done by referring to them in broad terms (e.g., “rain”, “snow”, "icy pavement", “wet pavement”, etc.). If still greater specificity is desired (e.g., snow becoming “light snowfall”, “blizzard”, or “whiteout”), then qualifying phrases such as “including:”, “including, but not limited to” are used to preserve generality.

(i) Determining characteristics common to all PPP tables. Every PPP table has two major subdivisions, knowledge and skills. The knowledge category and line items are always identified and prefaced by the numeral 1. The skills category and line items are always identified and prefaced by the numeral 2.

(j) Sequential numbering. The preface number, indicating knowledge or skill and the line item, is followed by another number showing sequence. If required, additional numbers and letters are used to

show that a particular statement has been subdivided into component statements. See figures 5-3-1 through 5-3-5 for example numbering sequences.

(k) Relationship between skill and knowledge numbers. A numbering system must be used which enables a primary skill to be traced to the corresponding number directly supporting the knowledge item. For example on figure 5-3-1, "Perform a lubricating oil sample using the Gerin diesel lube oil sample kit." (item 2-1) is traceable to "Describe lubricant sample utilizing the Gerin diesel sample kit." (item 1-12). While highly desirable, it is not a mandatory requirement that discrete skill line items be directly traceable, by PPP line item numbers, to the corresponding knowledge line item numbers.

(l) Directly and indirectly supporting knowledge PPP line items. Knowledge PPP line items for system, subsystem, equipment, task/function, and background PPP tables are directly and indirectly supporting. As a minimum, every skill PPP line item, or group thereof, must have a corresponding directly supporting knowledge PPP line item. Common directly supporting action verbs include "describe", "explain", and "recognize". Indirectly supporting PPP line items will be used as necessary. "State" is a frequently used indirectly supporting action verb. "State the purpose of (name of task/function/primary/discrete skill)" is a commonly used indirectly supporting PPP line item.

(m) Use of direct and indirect supporting system, subsystem, or equipment PPP line items. Within each system, subsystem, or equipment PPP table there are seven knowledge and two skill categories. They are always numbered and sequenced as follows:

1.	KNOWLEDGE
1-1.	GENERAL
1-2.	PHYSICAL DESCRIPTION
1-3.	FUNCTIONAL DESCRIPTION
1-4.	INTERFACE DESCRIPTION
1-5.	OPERATIONAL DESCRIPTION
1-6.	MAINTENANCE DESCRIPTION
1-7.	DOCUMENTATION
2.	SKILLS
2-1.	OPERATION
2-2.	MAINTENANCE

(1) Direct support explained. 1-5. OPERATIONAL DESCRIPTION and 1-6. MAINTENANCE DESCRIPTION directly support the 2-1. OPERATION and 2-2. MAINTENANCE skills. For each skill PPP line item, or group of PPP line items, there is a corresponding knowledge PPP line item, or group of knowledge PPP line items, as shown by the following example:

1.	KNOWLEDGE	2.	SKILLS
1-5.	OPERATION DESCRIPTION	2-1.	OPERATION
1-5-X.	Describe operation task to perform	2-1-X.	Perform tasks for operation
1-6.	MAINTENANCE DESCRIPTION	2-2.	MAINTENANCE
1-6-X.	Describe preventive maintenance procedures	2-2-X.	Perform preventive maintenance procedures

(2) Indirect support explained. The remaining knowledge categories, 1-1. GENERAL, 1-2. PHYSICAL DESCRIPTION, 1-3. FUNCTIONAL DESCRIPTION, 1-4. INTERFACE DESCRIPTION, AND 1-7. DOCUMENTATION indirectly support the 2-1. OPERATION and 2-2. MAINTENANCE skills. This knowledge is required to comprehend the skill but may not necessarily be required for its performance.

(n) Organizing skill and knowledge statements. The final steps in the preparation of PPPs involve organizing knowledge and skill statements into the proper PPP format (see figure 5-3-4). The PPP model statement describes content requirements and must be used to ensure no knowledge or skill is overlooked (see table 5-3-VI).

5.3.3.4 Subsystem and system PPP development. After the PPP tables are prepared for all equipment comprising the subsystem, the subsystem level PPP table is developed in essentially the same manner as described in paragraphs 5,3.3.2 through 5.3.3.3.(m). Following are a few guidelines which must be taken into consideration when generating the subsystem level PPP table. The development model is table 5-3-VI. Refer to table 5-3-VII, sheet 1.

(a) Only a minimum of equipment table duplication is allowed.
(b) Subsystem PPPs involve descriptions of equipment operation when the equipment is functioning as a part of the subsystem.
(c) PPPs on maintenance of the subsystem cover isolation of malfunctions to an equipment, but must preclude isolation below that level.

The system level PPP table is then generated in the same manner as the subsystem table, using the preceding subsystem guidelines as they apply to the system level.

The final steps in the preparation of PPPs involve organizing knowledge and skill statements in to the proper PPP format (see figures 5-3-2, and 5-3-3). The PPP model statement describes content requirements and must be used to ensure no knowledge or skill is overlooked (see table 5-3-VI).

5.3.3.5 PPP line item audit trail. All elements of the curriculum materials are traceable back to the original PPP line item (see figure 5-3-10).

TABLE 5-3-VI. Equipment, subsystem, or system PPP model statements,

2.	(EQUIPMENT, SUBSYSTEM. OR SYSTEM) SKILLS
2-1.	OPERATION
	No operation involved. (Inserted when the equipment, subsystem, or system requires no operator action).
	-Or-
2-1-1.	Perform tasks for operation of the _____ including:
	a. Preoperational procedures
	(1) Routine (2) Installation (3) Assembly
	b. Operational Procedures
	c. Post-operational Procedures
2-1-2.	Recognize and interpret all indications occurring during the performance of the operating procedures and perform appropriate operator actions in the proper sequence on the _____.
2-1-3.	Perform tasks in the (i) casualty/(ii) degraded/(iii) abnormal/(iv) not full mission capable modes of operation for the _____.
2-1-4.	Recognize and interpret the format of tapes punched under computer control of the _____
2-1-5.	Perform data logging requirements for the _____
2-1-6.	Perform acceptance tests for the _____
2-1-7.	Adhere to personnel and equipment safety precautions during operational procedures for the _____
2-2.	MAINTENANCE
2-2-1.	Use special (i) tools and (ii) test equipment required

TABLE 5-3-VI. Equipment, subsystem, or system PPP model statements - Continued.

2-2-1. (Cont)	for maintenance of the _____ as prescribed in applicable documentation.
2-2-2.	(i) Perform preventive maintenance procedures, including quality assurance procedures, on the _____ as scheduled by the (ii) Preventive Maintenance Management Program (PMMP), (iii) Planned Maintenance System (PMS), and (iv) Naval Aviation Maintenance Program (NAMP).
2-2-3.	Perform (i) alignment, (ii) adjustment, and (iii) calibration procedures on the _____.
2-2-4.	Perform the (i) operational tests and (ii) diagnostic programs, as applicable, for maintenance of the _____.
2-2-5.	Recognize and interpret all malfunction indications for the _____.
2-2-6.	Perform systematic fault isolation procedures contained in prescribed maintenance documentation.
2-2-7.	Use authorized methods to isolate faults which cannot be located using procedures contained in prescribed maintenance documentation.
2-2-8.	(i) Disassemble, (ii) repair, and (iii) reassemble the _____ to the authorized maintenance level. (Not applicable to the subsystem and system PPP model statements.)
2-2-9.	Perform post-repair procedures, including quality assurance procedures, on the _____.
2-2-10.	Adhere to personnel when performing maintenance procedures on the _____.
1.	(EQUIPMENT, SUBSYSTEM, OR SYSTEM) KNOWLEDGE
1-5.	OPERATIONAL DESCRIPTION No operation involved. (Inserted when the equipment,

TABLE 5-3-VI. Equipment, subsystem, or system PPP model statements - Continued.

1-5. (Cont.)	subsystem, or system requires no operator action)
	-or-
1-5-1.	Describe the authority and regulations pertaining to the operation of the _____ including external equipments which interface with it.
1-5-2.	Describe operational tasks to perform on the _____.
	a. Pre-operational procedures.
	(1) Routine (GO/NO-GO, Self tests, etc.) (2) Installation (3) Assembly
	b. Operational procedures
	c. Post-operational procedures
1-5-3.	(i) Describe indications which should or may occur during operation of the _____ Include (ii) alarms, (iii) indicators, (iv) displays, (v) readouts, and (vi) printouts/typeouts.
1-5-4.	Describe (i) casualty/ degraded/(iii) abnormal/ not full mission capable modes of operation of the _____.
1-5-5.	Describe (i) interpretation, (ii) function, (iii) use, and (iv) format of tapes punched under computer control of the _____
1-5-6.	(i) Describe the data logging requirements for the _____. Include (ii) logging method, (iii) type of data logged, and (iv) disposition.
1-5-7.	Describe all acceptance tests for the _____
1-5-8.	Describe personnel and equipment safety precautions which are to be observed during operation of the _____

TABLE 5-3-VI. Equipment, subsystem or system PPP model statements Continued.

1-6.	MAINTENANCE DESCRIPTION
1-6-1.	Define the maintenance policy for the _____
	a. Preventive maintenance - the requirement for periodic performance of tasks to minimize equipment malfunctions.
	(1) Servicing - scheduled or unscheduled inspections, cleaning, fueling, lubrication, corrosion control and any other function in support of maintaining any equipment full mission capable.
	(2) Operational checks (confidence or self tests)
	(a) Pre-maintenance procedures (b) Performance checks (c) Degradation/deterioration checks (d) Quality Assurance checks
	(3) Progressive maintenance (if applicable) periodic refurbishment of components or assemblies in order to maintain levels of performance or reliability.
	b. Corrective maintenance - checks and procedures used to locate and correct malfunctions.
	(1) Authorized repair responsibility - correction of malfunctions to the authorized maintenance level.
	(2) Fault isolation - location of faults to the level of available spares and authorized repair level.
	(a) Equipment operational checks and tests (b) Fault isolation tests and procedures
	(3) Analytical Procedures - isolation of faults using authorized methods not contained in prescribed maintenance documentation.

TABLE 5-3-VI. Equipment, subsystem, or system PPP model statements - Continued.

1-6-1. (Cont.)	(4) Post-maintenance procedures - procedures performed after repair including quality assurance checks.
1-6-2.	Describe the use of (i) special tools and (ii) test equipment required for maintenance of the _____ as prescribed in applicable maintenance documentation.
1-6-3.	(i) Describe preventive maintenance procedures for the _____. Include recognition and interpretation of all indications, (ii) records, (iii) reports, and instructions.
1-6-4.	Describe (i) alignment, (i) adjustment, and (iii) calibration procedures for the _____.
1-6-5.	Describe the (i) operational tests and (ii) diagnostic programs, as applicable, for maintenance of the _____. (iii) Include the tests' names, uses and procedures.
1-6-6.	Describe the recognition and interpretation of all malfunction indications for the _____.
1-6-7.	Describe the systematic fault isolation procedures contained in prescribed maintenance documentation for the _____.
1-6-8.	Describe authorized methods to isolate faults which cannot be located using procedures contained in prescribed documentation.
1-6-9.	Describe the procedures to (i) disassemble, (ii) repair, and (iii) reassemble the _____ to the authorized maintenance level. (Not applicable to the subsystem and system PPP model statements.)
1-6-10.	Describe the post-repair procedures for the _____.
1-6-11.	Describe the personnel and equipment safety precautions which are to be observed when performing maintenance on the _____.

TABLE 5-3-VI. Equipment, subsystem, or system PPP mode statements - Continued.

1-1.	GENERAL
1-1-1.	State the function(s) of the _____.
1-1-2.	State that the _____ consists of the following (Equipment, use "major functional areas") (Subsystem, use "equipment") (System, use "subsystems"). Include the function of each. a. (Equipment - list the major functional areas) (Subsystem - list the equipment) (System - list subsystems)
1-1-3.	Define the (i) abbreviations, (ii) terms, and (iii) symbols used with the _____.
1-1-4.	State the operational characteristics and capabilities of the _____. a. Power, logic levels, capacity, emergency, tolerances and accuracies when applicable.
1-1-5.	Describe the differences between models of the _____.
1-1-6.	State the security requirements for the _____.
1-2.	PHYSICAL DESCRIPTION
1-2-1.	(i) Describe all major and associated components of the _____. Include name, (ii) nomenclature, (iii) physical appearance, (iv) reference designators, (v) location, and (vi) construction features. a. (Equipment - list major components, subassemblies, and functional areas) (Subsystem - list the equipment) (System - list subsystem)
1-2-2.	Describe the (i) displays, (ii) controls, and (iii) indicators, directly associated with the _____. Include name, (iv) reference designators, (v) positions, (vi) colors, and (vii) location.

TABLE 5-3-VI. Equipment, subsystem or system PPP model statements - Continued.

1-3.	FUNCTIONAL DESCRIPTION
1-3-1.	(i) Describe how the _____ works (functional operation) . Include (ii) methods of control, (iii) signal flow, (iv) sequential operation, and (v) indications. a. (Equipment - list major components, subassemblies, and functional areas.) (Subsystem - list equipment) (System - List subsystems) -Or-
1-3-2.	(i) Describe how the _____ works (functional operation) . (ii) Include (as applicable): types of signals, signal flow, sequential operation, coding, indication, frequencies, modes , inputs and outputs , signal exchange, signal generation, timing relationship of signals, sequence of events, logic elements, circuits and registers involved, integration of circuits or elements to perform loop functions, signal/data format, power supplies, and protective devices.
1-3-3.	(i) Describe how loops within the _____ work (functional operation). (ii) Include (as applicable): method of control, signal flow, sequential operation, indications, types of signals, coding, frequencies , modes, inputs and outputs, signal exchange, signal generation, timing relationship of signals, sequence of events, phase-lock loops, logic elements, circuits and registers involved, integration of circuits or elements to perform loop functions, signal/data format, power supplies, and protective devices.
1-3-4.	Describe the functions of each (i) control and (ii) indicator in each (iii) position, (iv) condition, and (v) color.
1-3-5.	(i) Describe each program, subprogram, routine, command, instruction, code, option, etc. used with the _____. Include name, (ii) program number, and (iii) assumptions and constraints imposed,

TABLE 5-3-VI. Equipment, subsystem, or system PPP model statements Continued.

i-4.	INTERFACE DESCRIPTION
1-4-1.	(i) Describe the physical interface between the _____ and related external equipments. Include name (ii) physical appearance, (iii) reference designators and (iv) locations.
	a. (List applicable electrical, hydraulic, mechanical or pneumatic connections).
1-4-2.	Describe functional interface between the _____ and related external equipments.
	a. Electrical (power sources)
	b. Electronic (input, output, and control signals)
	c. Pneumatic (gases of any type; e.g., nitrogen, freon, air, helium, etc.)
	d. Hydraulic (liquids of any type; e.g., water, hydraulic oil, lube oil, etc.)
	e. Mechanical
	(1) Structural or Hull (2) Shafts, gears, springs, etc.
1-7.	DOCUMENTATION
1-7-1.	Describe the organization, content, and use of all technical documentation provided for use with the _____.

TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 1 of 12)

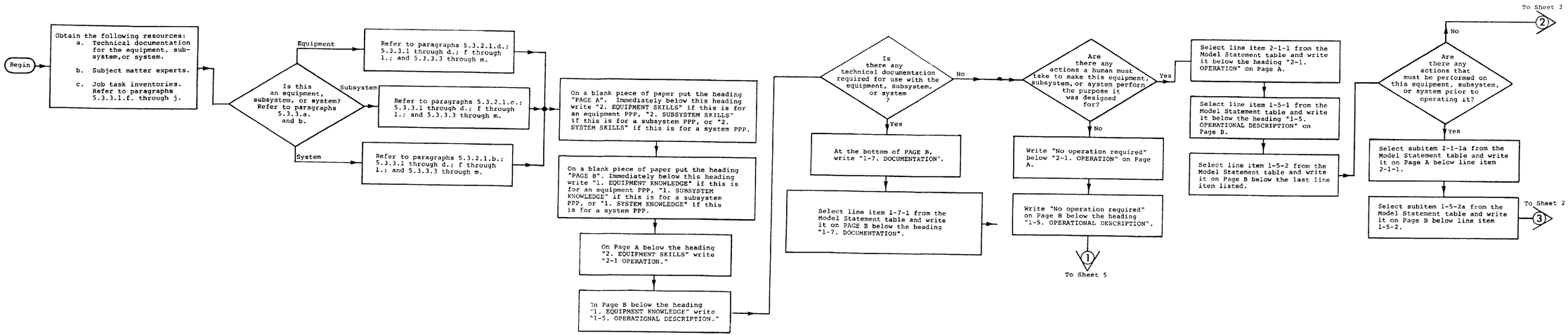


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 2 of 12)

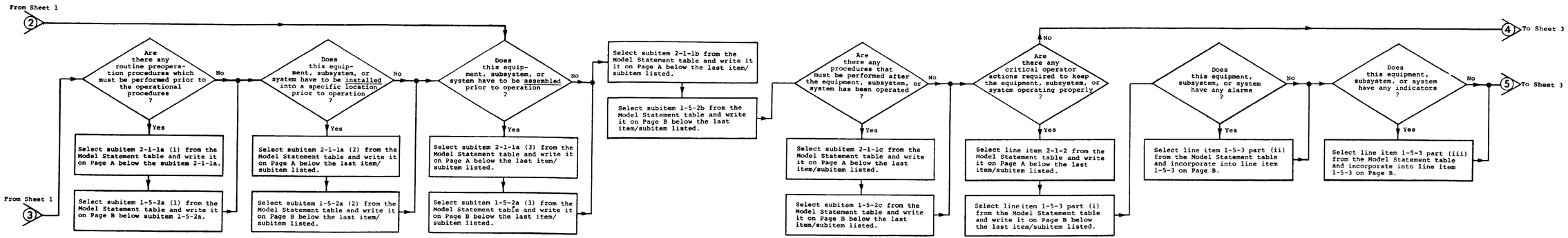


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 3 of 12)

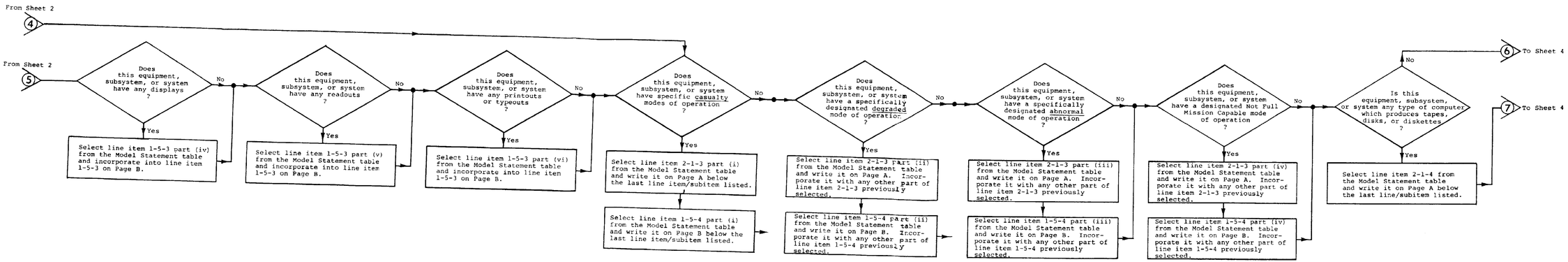


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 4 of 12)

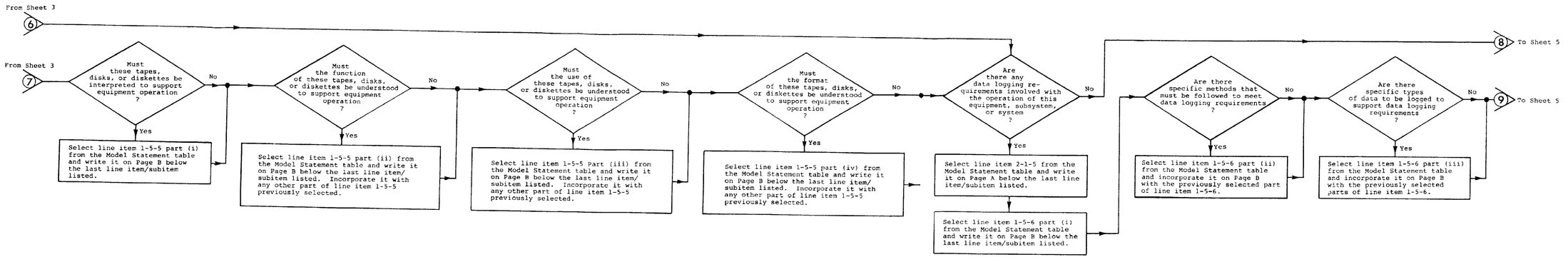


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 5 of 12)

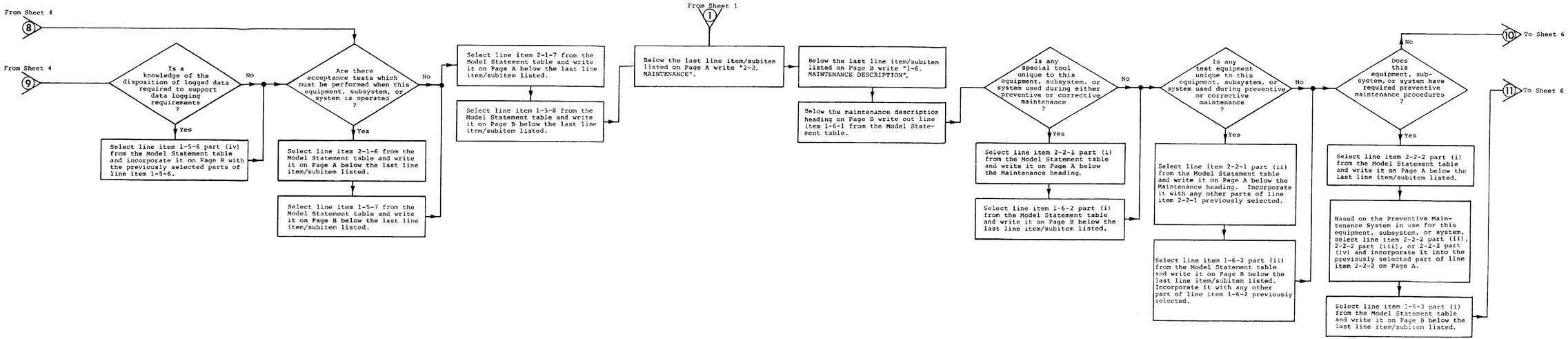


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 6 of 12)

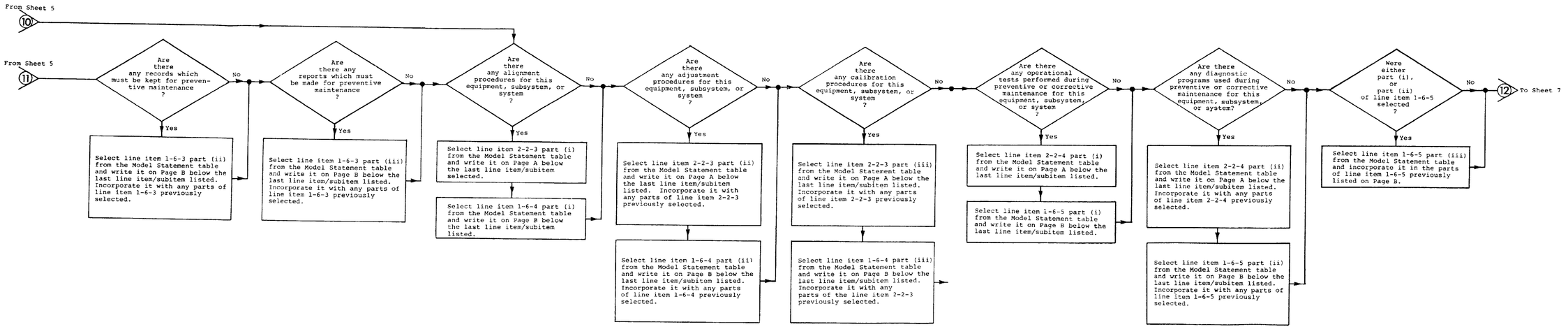


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 7 of 12)

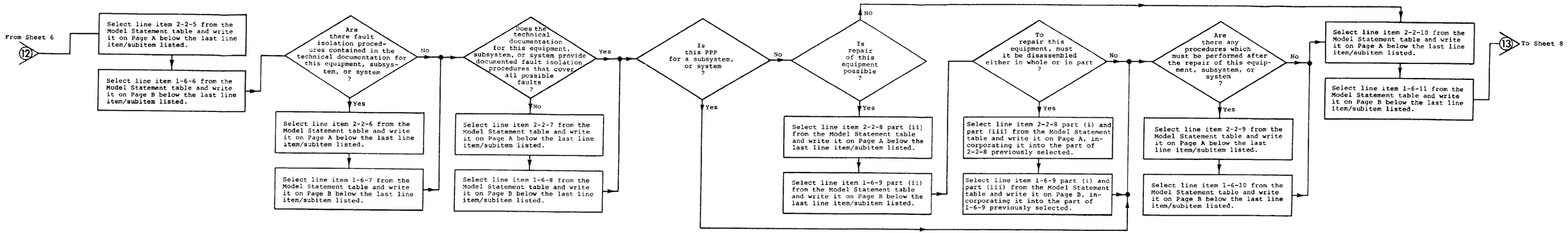


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 8 of 12)

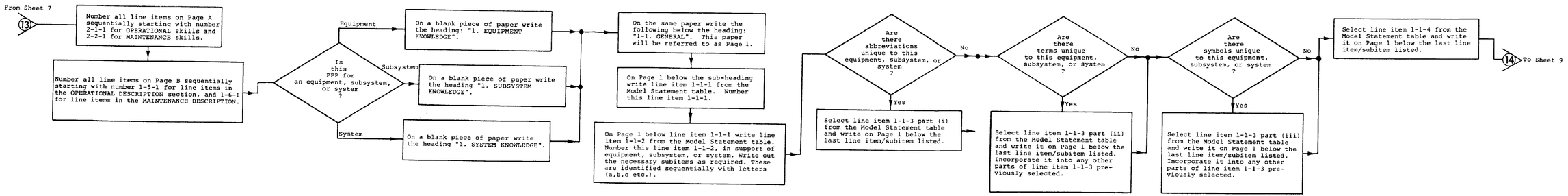


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 9 of 12)

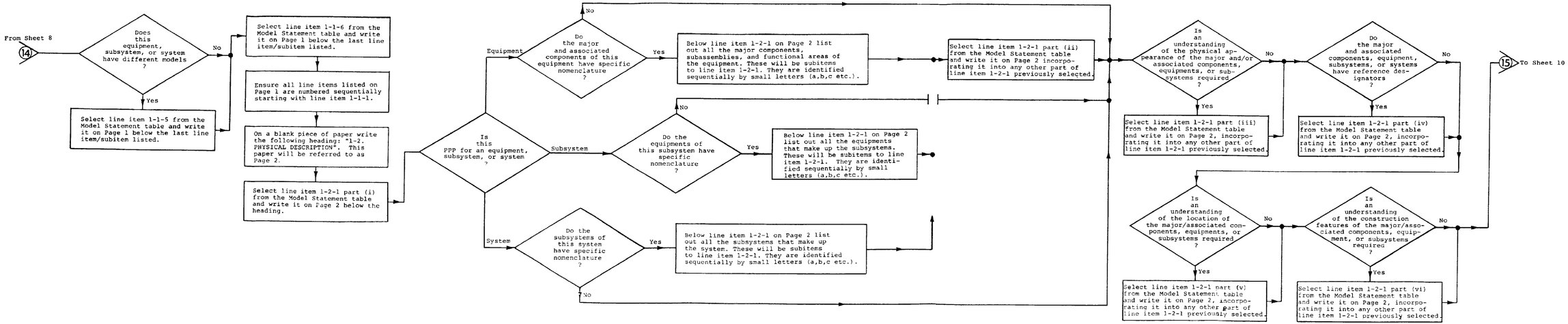


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 10 of 12)

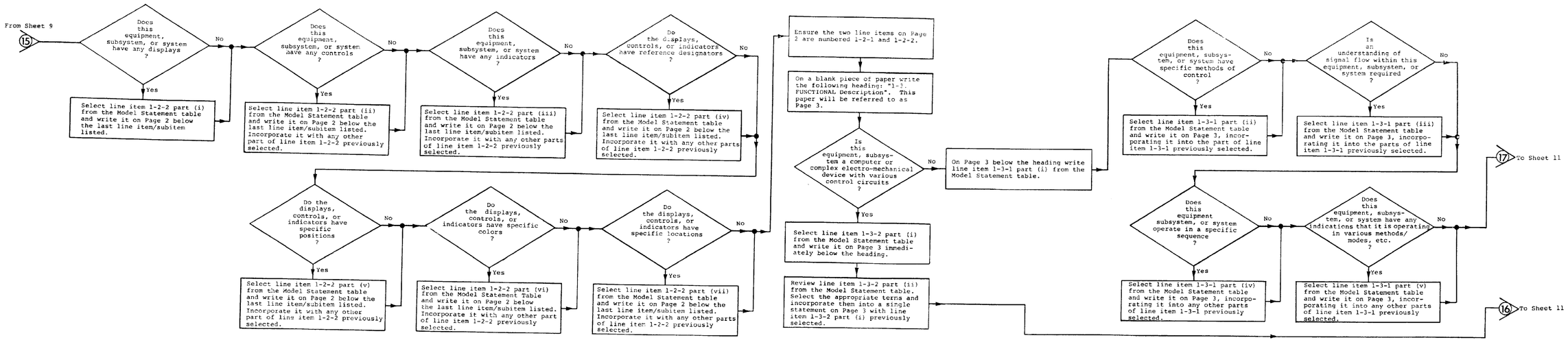


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 11 of 12)

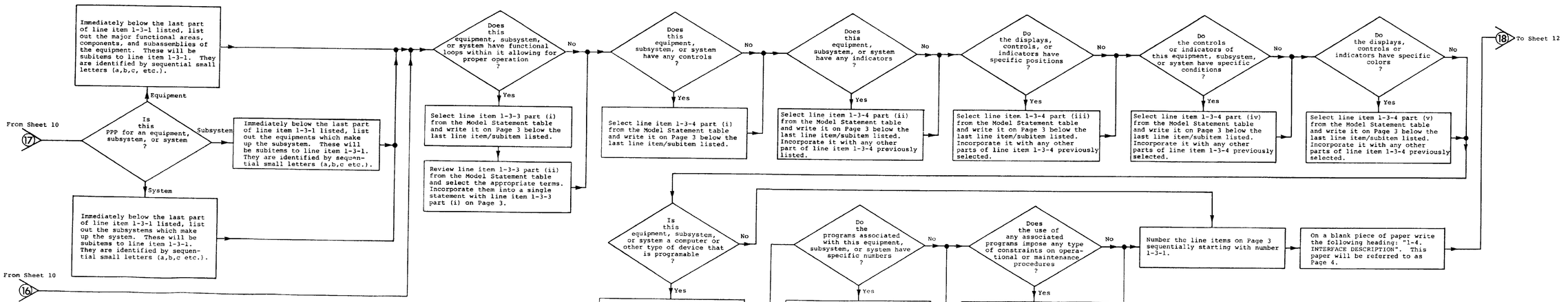
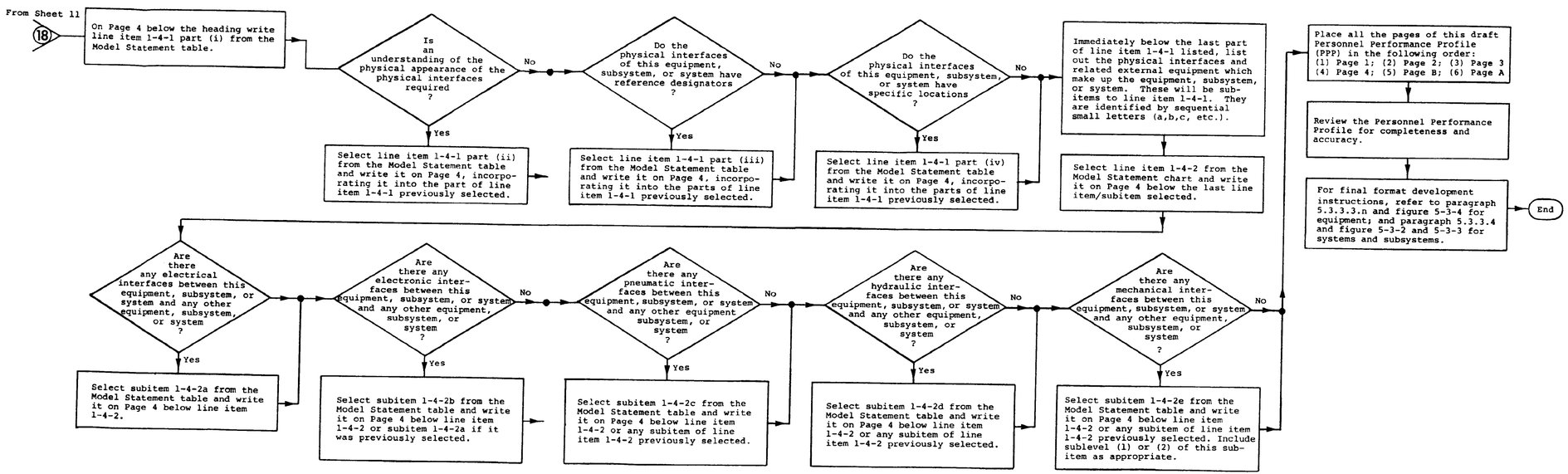


TABLE 5-3-VII. Equipment, subsystem, or system personnel performance profile development. (Sheet 12 of 12)



① A selected PPP line item.

TABLE D542. Commercial utility cargo vehicle (TYPE A), utility (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-5-2.	Describe operational tasks for CUCV (TYPE A). a. Pre-operational procedures (1) Routine (go/no-go, self test, etc.) b. Operational procedures c. Post-Operational procedures
1-5-3.	Describe indications which may occur during operation of the CUCV (TYPE A). Include alarms, indicators, displays, and readouts.
1-5-4.	Describe casualty/degraded/abnormal/not full mission capable mode(s) of operation for the CUCV (TYPE A).
1-5-5.	Describe data logging requirements for the CUCV (TYPE A). Include logging method, types of data logged, and disposition.
1-5-6.	Describe all acceptance tests for the CUCV (TYPE A).

② A Training Level Assignment chart provides positive identification of a PPP line item as a training requirement.

TABLE	D542									
ITEM	LEVEL									
	F1	I1	C1	F2	I2	C2	F3	I3	C3	C4
1-1-1	A	A								
1-1-2	A	A								
1-1-3	A	A								
1-1-4	A	A								
1-1-5	A	A								
1-4-2				A	A					
1-5-1				A	A					
1-5-2a				A						
1-5-2b				A						
1-5-2c				A	A					
1-5-3				A	A					

③ A cross-reference list providing training requirements and coverage within a curriculum.

INSTRUCTOR GUIDE

PROFILE ITEM-TO-TOPIC OBJECTIVE ASSIGNMENT CHART

TABLE	ITEM	TOS	VOL	PART	SECT	TOPIC	L.O.	TEST ITEM NO.
D542	1-4-2	T1			2	2	2	1
	1-4-2	T2			4	2	2	1
	1-5-1	T1			2	3	1	1
	1-5-1	T2			4	3	1	1
	1-5-2							
	a	T1			2	3	2	1-3
	b	T1			2	3	2	1-5
	c	T1			2	3	2	1
	d	T2			4	3	2	1
	1-5-3	T1			2	3	3	1
	1-5-3	T2			4	3	3	1

④ A PPP line item is supported by the various curriculum parts and is reflected in the CLOs, TLOs, and Discussion Points.

INSTRUCTOR GUIDE — A-234-5678 VOLUME 1

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PART 3542 COMMERCIAL UTILITY CARGO VEHICLE (TYPE A) (CUCV)	
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3. INTRODUCTION TO THE CUCV (TYPE A)	3542-2-3-1
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3. Operational Description of the CUCV (TYPE A)	3542-2-3-1
3. BASIC OPERATION OF THE CUCV (TYPE A)	3542-3-1-1
1. Basic Operation of the CUCV (TYPE A)	3542-3-1-1
4. THEORY OF THE CUCV (TYPE A)	3542-4-1-1
1. Functional Description of the CUCV (TYPE A)	3542-4-1-1
2. Interface Description of the CUCV (TYPE A)	3542-4-2-1
3. Operational Description of the CUCV (TYPE A)	3542-4-3-1
4. Maintenance Description of the CUCV (TYPE A)	3542-4-4-1
5. OPERATION OF THE CUCV (TYPE A)	3542-5-1
1. Operation of the CUCV (TYPE A)	3542-5-1-1

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INSTRUCTOR GUIDE — A-234-5678 VOLUME 1

COURSE LEARNING OBJECTIVES

Upon successful completion of this course, the trainees will have acquired the following knowledge and skills and be able to:

Knowledge:	Skills:
1. State the purpose, function, and describe the documentation of the CUCV (TYPE A).	1. Perform normal operational procedures with supervision on the CUCV (TYPE A).
2. Describe the theory necessary to support and understand the performance of normal operation without going into logic, circuits, program flow diagrams, or mechanical component breakdown of the CUCV (TYPE A).	2. Perform all operational procedures with supervision on the CUCV (TYPE A).
3. Describe the theory necessary to support and understand the performance of all operational and basic preventive and basic corrective maintenance without going into detailed logic, circuit analysis, individual flow diagrams, or detailed mechanical component breakdown of the CUCV (TYPE A).	3. Perform preventive maintenance procedures with supervision on the CUCV (TYPE A). 4. Perform documented fault isolation and repair procedures with supervision on the CUCV (TYPE A). 5. Perform approved, undocumented corrective maintenance procedures, with supervision, to the authorized repair level for the CUCV (TYPE A).

PART 3542

PART 3542

COMMERCIAL UTILITY CARGO VEHICLE (TYPE A)

(Information statement if required)

Section 1. FAMILIARIZATION WITH THE CUCV (TYPE A) (F1)
Section 2. INTRODUCTION TO THE CUCV (TYPE A) (I1)
Section 3. BASIC OPERATION OF THE CUCV (TYPE A) (C1)
Section 4. THEORY OF THE CUCV (TYPE A) (F2)
Section 5. OPERATION OF THE CUCV (TYPE A) (I2)
Section 6. PREVENTIVE MAINTENANCE OF THE CUCV (TYPE A) (F3)
Section 7. BASIC CORRECTIVE MAINTENANCE OF THE CUCV (TYPE A) (C2)

A-234-5678 VOLUME 1

INSTRUCTOR GUIDE

2-1 INTRODUCTION TO THE CUCV (TYPE A) — A-234-5678 VOLUME 1

TOPIC 3. OPERATIONAL DESCRIPTION OF THE CUCV (TYPE A)

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. Describe authority and regulations pertaining to the operation of the CUCV (TYPE A) including external equipments which interface with it.
2. Describe operational tasks for CUCV (TYPE A).
   a. Pre-operational procedures
      (1) Routine (go/no-go, self test, etc.)
   b. Operational procedures
   c. Post-operational procedures
3. Describe indications which may occur during operation of the CUCV (TYPE A). Include alarms, indicators, displays, and readouts.

INSTRUCTOR GUIDE

2-3 INTRODUCTION TO THE CUCV (TYPE A) — A-234-5678 VOLUME 1
Topic 3. OPERATION DESCRIPTION OF THE CUCV (TYPE A)

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
1. Authority and regulations	
a. TM 09 2320-289-103	a. Reference TM 09 2320-289-103 paragraphs 1 through 4.
2. Operational tasks	
a. Pre-operational procedures	a. Reference Information Sheet 2-3-1.
(1) Routine (go/no go)	
b. Operational procedures	
c. Post-operational procedures	

⑤ A PPP line item is supported by Instruction Sheets.

TRAINEE GUIDE — A-234-5678
Sheet 1 of 3

INFORMATION SHEET D542-2-3-1

DAILY PREOPERATIONAL PROCEDURES

A. INTRODUCTION

1. This information sheet will inform you of the pre-operational procedures that must be done daily before operating the CUCV (TYPE A).

B. REFERENCES

1. Operator's Manual for CUCV (TYPE A), Utility (TM 9-2320-289-10)

C. INFORMATION

1. The following PRE-OPERATIONAL PROCEDURES must be done each day before operating your UTILITY VEHICLE that day. Failure to perform these PRE-OPERATIONAL PROCEDURES daily may cause serious damage to your vehicle.
   a. CHECK OIL LEVEL. Operator's Manuals for all wheeled tracked vehicles stress performance of this procedure.

⑥ A PPP line item is the core for Test Design.

COURSE IDENTIFICATION NUMBER A-234-5678

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Skill Objective Identification Number	Knowledge Learning Objective	Skill Objective Element	Element Criticality Rating (1-3)	Knowledge Level (K)	Type of Test Item	No. of Test Items
D542-2-3-2	Describe operational tasks for CUCV (TYPE A): a. Pre-operational procedures (1) Routine (go/no-go, self test, etc.) b. Operational procedures	1. Documented Procedures 2. Safety Precautions 3. Diagrams and Charts 4. Equipment Configuration 5. Equipment Interface 6. Job Performance Conditions 7. Troubleshooting Sequence	3 3 3 3	K3,K4 K2 K3 K3	3 2 1 2	M,MC MC

1. Documented Procedures
2. Safety Precautions
3. Diagrams and Charts
4. Equipment Configuration
5.

TEST DESIGN WORKSHEET

FIGURE 5-3-10. Example PPP line item to curriculum material audit trail.

5.3.3.6 Task/function and backgroud PPP table development. Information, pertaining to the cover, PPP table listing, PPP table title page, and PPP table title is discussed in 5.3.3.1. (a). through (d). The sequence for a task/function or background PPP table development is described in the following paragraphs and in tables 5-3-VIII and 5-3-IX, (both are decision matrix flow charts located at the end of this development sequence).

5.3.3.6.1 Determine contact for task/function or background PPP table. Paragraphs 5.3.2.1. (a), (e); 5.3.3.(c), (d), (f); 5.3.3.1. (a) through (d); 5.3.3.1. (f) through (k); and 5.3.3.3. through (1) provide development guidelines applicable to the task/function and background PPP tables. The following paragraphs describe specific content requirements for task/function and background PPP tables. They provide additional information required for the development of task/function and background tables.

(a) Skill definition and characteristics. A skill is defined as the ability to perform a job-related activity which is required for the effective performance of a task or function. Skill performance requires the application of knowledge. A criterion of any skill is that it must be observable during the actual performance of the job-related activity (skill). It may be observed by an onlooker,

(b) Mental processes. Mental processes such as “calculate the square root of a number” are only indirectly observable. One can only observe the person performing the process of writing on paper the calculations necessary, or punching the required numbers into a calculator. Although these processes are not directly observable and are therefore, knowledge, development of a task/function PPP table should continue as in these cases the knowledge process is a task/function. When the task/function PPP table is completed it is quite possible that most or all of these types of behavior will be in the knowledge section of the table.

(c) Primary skills. Once the task/function or background requirement has been defined, the primary skills are identified. The primary skills are major segments of work which, when all are combined, equal the task/function or background material.

(d) Simple task\function, background, and subject matter expert. Some task/function or background material is so simple, or easy to perform, that no further break-down is necessary. In either case, the subject matter expert must decide whether a task/function or background requires a breakdown into the primary skills, before proceeding further with the analysis. On some task/function or background material there may not always be total agreement among experts.

(e) Primary skills identification. The task/function or background material must first be sub-divided into the primary skills which, when all are combined, equal the task/function or background material. Types of task/function or background material must not be confused with the skills comprising the task/function or background

material. For example: positive determination, best track determination, and chart navigation are primary skills of the navigation task/function; submarine navigation and aircraft navigation are types of the navigation task/function and do not belong in the list Of primary skills.

(f) Discrete skill identification. The discrete skills or tasks, which comprise each primary skill, are determined after all primary skills have been identified. The discrete skills will also include any general skill item required to provide a complete profile table (e.g., purpose, safety, security).

(g) Skill observation. Observing the task/function is the most reliable means of determining all the discrete skills which comprise the task/function. If this is not possible, asks the subject matter expert "What do you do when you are performing (name of primary skill)?" or "What steps are involved in performing (name of primary skill)?".

Note: In numerous instances the task/function is the subject of a Personnel Qualification Standard (PQS). The primary and discrete skills may be thus taken directly form the PQS and put in to task/function PPP table format.

(h) Primary/discrete skill development. The following list provides helpful hints for writing primary/discrete skill statements and the characteristics of discrete skills. If a discrete skill lacks one or more of these characteristics it probably is not a discrete skill.

(1) Hints for writing primary/discrete skills.

(a) Describe each skill in short, descriptive phrases.
(b) Most should consist only of an action verb and the object.
(c) The action verb precedes the object of the verb.
(d) Avoid use of modifiers.

(2) Characteristics of each primary/discrete skill

(a) Must be observable.
(b) Must have a definite beginning and end.
(c) Is independent of other actions.
(d) Is usually performed within a relatively short period of time (seconds, minutes, hours).
(e) Must be measurable so that it can be determined whether or not the skill has been correctly performed.

5.3.3.6.2 Organizing skill and knowledge statements. The final steps in the preparation of PPPs involve organizing knowledge and skill statements into the proper PPP format (see figures 5-3-1, and 5-3-5).

TABLE 5-3-VIII. Task/function personnel performance profile development. (Sheet 1 of 2)

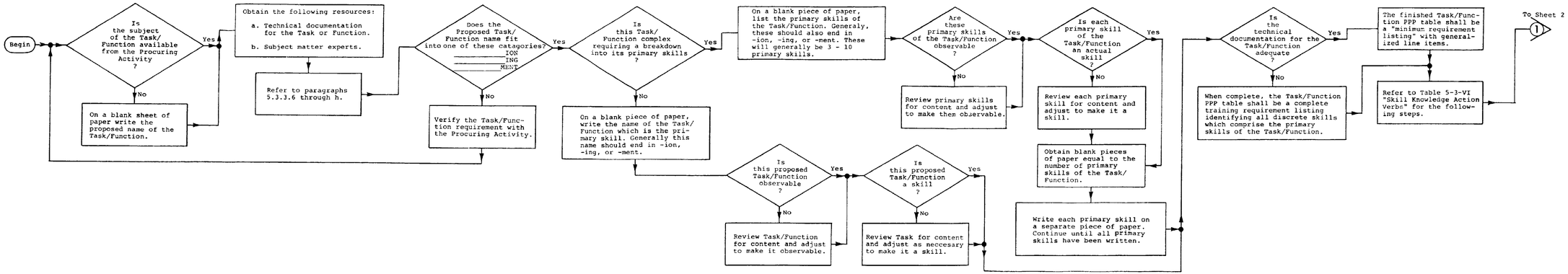


TABLE 5-3-VIII. Task/function personnel performance profile development. (Sheet 2 of 2)

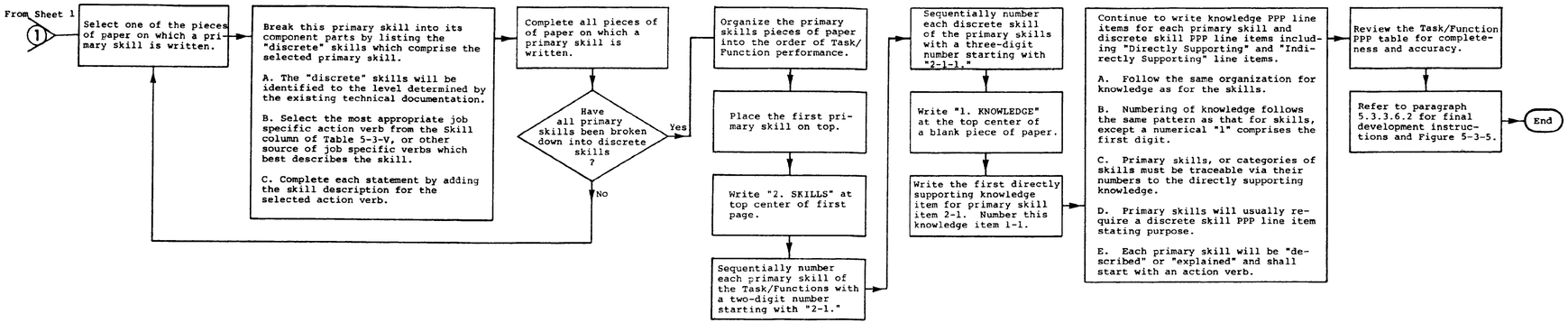


TABLE 5-3-IX. Background personnel performance profile development. (Sheet 1 of 2)

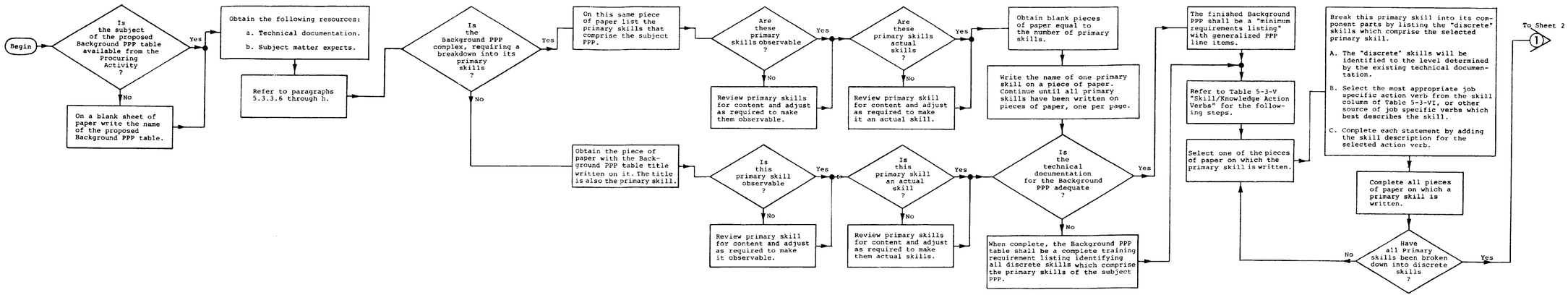
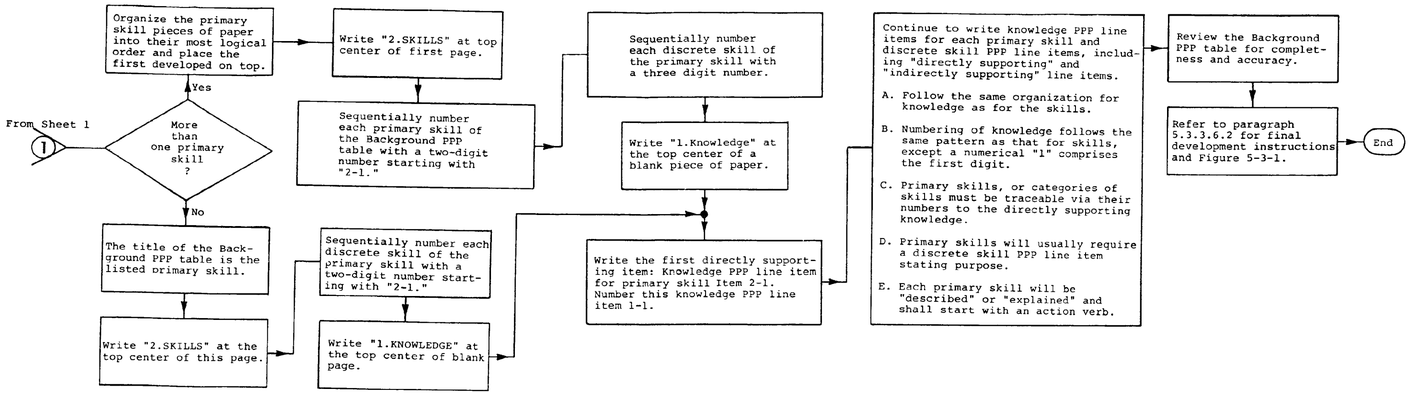


TABLE 5-3-IX. Background personnel performance profile development. (Sheet 2 of 2)



5.4 TRAINING PATH SYSTEM

5.4 Training path system. The TPS is a coordinated system for identifying the training requirements for all categories of personnel in each training pipeline of a training program. This section describes the form, content, and development guidelines for TPSs prepared to support curricula as specified in the military standard and in DI-ILSS-80079.

5.4.1 Use. The TPS provides elements that define the knowledge and skills necessary for each category of personnel to coordinate, direct, or perform operation and maintenance of a system, subsystem, and equipment (e.g., a weapon system, its subsystems, and equipment) or to perform a required task or function. The TPS is based upon knowledge and skill items set forth in the PPP which is discussed in 5.3.

5.4.2 Elements. The elements of the TPS are the Training Objective Statements, Training Path Charts, and Training Level Assignments.

(a) Training objective statements. The TOS describe knowledge and skills to be obtained and define the depth of coverage required for each PPP line item selected.

(b) Training path chart. The TPC reflect the degree of training required for each category of personnel. It lists and indexes all PPPs used and graphically depicts a complete training pipeline for a specific category of personnel. A TPC consists of three components:

(1) The TAM dictates the training requirements based on the application of the TOS to each of the PPPs.

(2) The PPP table index lists all the PPPs covered within a particular TPC.

(3) The TAC graphically represents a complete training pipeline for a category of personnel. The TAC identifies the knowledge and skills personnel should acquire during their training by grouping PPP table numbers within courses. It lists all course identification numbers, titles of formal curricula, and Instructional Media Material Identification numbers covered by a particular TAC. The applicable TOS codes are also listed besides each PPP table listed.

(c) Training level assigments. The TLA consists of a tabular listing of specific PPP line items on which training levels are imposed.

5.4.3 TPS development overview. The TPS is developed in stages with each stage dependent on the information developed in the previous stage(s). The TPS for each category of personnel is developed in the following sequence:

(a) TOS
(b) TAM
(c) PPP table index

(d) TLAs
(e) TAC

Upon completion of the individual TPS elements in support of specific categories of personnel, assemble the TPS, which consists of TOS sets, TPC sets, and a corresponding set of TLAs, into a volume or volumes, as required to support the training program.

5.4.3.1 TPS development. TPS development is discussed in the following paragraphs.

(a) Development of the cover page. The cover page identifies the document as the TPS. It consists of the title "(WEAPONS SYSTEM TRAINING PROGRAM) TRAINING PATH SYSTEM" and the date of publication (see figure 5-4-1). The TPS must be developed as unclassified material, if possible. If TPS development requires classification, then each TPS volume or part must bear the highest security classification required by its content. Classification of the contents of the TPS must be in accordance with the provisions of the effective edition of DoD Instruction 5520.22-M or OPNAVINST 5510.1, and applicable contracting activity instructions. Whenever possible, required classified information must be prepared as a classified supplement to the unclassified publication.

b. TPS introduction. This section provides the user with an explanation of the elements that comprise the TPS. It must be located after the cover page of a single volume TPS and after the cover page of the first volume of a multivolume TPS (see figure 5-4-2).

(c) TOS development. TOSS are statements which describe skill levels to be attained in support of coordinating, directing, or performing operation and maintenance of an equipment, subsystem, or system, or the performance of a task function. They define the level of training to be achieved for PPP line items. These statements are different for each task set (coordinate, direct, and perform) and are identified by a unique alphanumeric code. The contracting activity must inform the TPS developer whether the operation skills to be learned include casualty/degraded/abnormal/not full mission capable operation, and normal operation which requires advanced analysis. The maintenance skills must be further defined as preventive and corrective maintenance skills. The corrective maintenance skills may be documented or undocumented. The specific skills to be described will apply to the entire training path.

(CLASSIFICATION)

(WEAPONS SYSTEM TRAINING PROGRAM)
TRAINING PATH SYSTEM

14 April 1986

(CLASSIFICATION)

FIGURE 5-4-1. Example TPS cover.

TRAINING PATH SYSTEM
INTRODUCTION

INTRODUCTION

The Training Program's Training Path System (TPS) is contained in this publication. The TPS was prepared to assign the knowledge and skill items of the Training Program's Personnel Performance Profiles to specific military personnel in a logical order and to a defined depth or knowledge and level of skill.

The TPS consists of the following three elements:

a. Training Objective Statements (TOS) - define the depth and level of training coverage for knowledge and skill items of the PPP for specific military personnel.

b. Training Path Charts (TPC) - present graphically and in tabulated form, the PPP coverage required for training specified Navy personnel. A TPC presents a basic flow of training to a specified depth and level of coverage and indicates alternate paths, if applicable, which can be followed to allow greater flexibility in the training environment.

c. Training Level Assignments (TLA) - a tabulated listing, in PPP table number sequence, of the PPP items required with a TOS alphanumeric code applicability indicator assigned to specific PPP items. The TOS and applicability indicator impose the limits of training for the PPP items and identify the training environment for each PPP item.

TRAINING OBJECTIVE STATEMENTS (TOS)

The TOS, the first element of the TPS, uses alphanumeric codes to identify knowledge and skill categories. The alphabetic portion of the code is defined as follows:

a. Knowledge:

F - Familiarization Theory

T - Theory

1

FIGURE 5-4-2. Example TPS introduction (Sheet 1 of 6)

b. Skill:

O - Operation

P - Preventive Maintenance

C - Corrective Maintenance

M - Maintenance

The numeric portion of the code indicates the level of coverage with high numbers indicating greater detail (that is, T2 indicates more detailed theory than T1).

Statement TO includes skill as well as knowledge. TO is defined as prerequisite background knowledge and skills.

The TOS for knowledge and skills are grouped according to three types of personnel: CO/XO, Officers (other than CO/XO), and Technicians.

a. Coordinate task set.

The TOS for the CO/XO consist for four statements relating to particular levels of training:

1. Knowledge statements TO, F1, and T1: The TO statement includes prerequisite background or task/function knowledge and skills; the F1 statement is a familiarity depth of theory coverage; and the T1 statement is a depth of theory coverage.

2. Operation/Maintenance statement 01: The 01 statement is a level of operation/maintenance skill coverage.

b. Direct task set.

The TOS for the Officers (except CO/XO) consists of seven statements relating to particular depths and levels of training.

FIGURE 5-4-2. Example TPS introduction. (Sheet 2 of 6)

1. Knowledge statements TO, F1, T1, and T2: The TO statement includes prerequisite background or task/function knowledge and skills; the F1 statement is a familiarity depth of theory coverage; and the T1 and T2 statements are increasing depths of theory coverage.

2. Operation statements 01 and 02: The 01 and 02 statements are increasing levels of operation skill coverage.

3. Maintenance statement Ml: The Ml statement is a level of preventive and corrective maintenance skill coverage.

c. Perform task set.

The TOSS for Technicians consist of 10 statements relating to particular depths and levels of training:

1. Knowledge statements TO, F1, T1, T2, and T3: The TO statement includes prerequisite background and task/function knowledge and skills; the F1 statement is a familiarity depth of theory coverage; and the T1, T2, and T3 statements are increasing depths of theory coverage.

2. Operation statements 01 and 02: The 01 and 02 statements are increasing levels of operation skill coverage.

3. Preventive Maintenance statement P1: The P1 statement is the level of preventive maintenance skill coverage.

4. Corrective Maintenance statements C1 and C2: The Cl and C2 statements are increasing levels of corrective maintenance skill coverage.

The TOS should be read as task set groups to more clearly understand each of the statements, the increasing coverage, and the differentiation between statements.

FIGURE 5-4-2. Example TPS introduction. (Sheet 3 of 6)

TRAINING PATH CHARTS (TPC)

The TPC, the second element of the TPS, consists of three parts. The first part is a Table Assignment Matrix Structured to reflect the level of training required to produce personnel qualified to coordinate/direct/perform operation and maintenance of the system/subsystem/equipment. The training requirements dictated by the matrix are based on the application of the TOS to each of the PPP tables and a knowledge of the overall training concept for the system/subsystem/equipment. The Table Assignment Matrix lists all PPP tables that represent the training requirement for particular personnel. The PPP tables are listed in numerical sequence in a vertical column with the TOS alphanumeric codes placed across the top of the matrix. An X is placed in the appropriate vertical column opposite each PPP table to define the depth(s) and/or levels(s) of training to be provided for that PPP table.

The second part of the TPC is a PPP Table Index which lists all the PPP table numbers and titles covered within a TPC.

The third part of the TPC is a Table Assignment Chart (TAC) which provides a graphical representation of a complete training pipeline for particular personnel. The TAC identifies, by means of PPP table numbers, the areas of skill and/or knowledge that particular personnel acquire during their training life at an identifiable location such as on board training or formal training courses. The TAC is arranged horizontally into four sections separated by a dotted line. The first three sections indicates, by block, the phases of instruction for Background, Replacement/Conversion, and Advanced training. Each block represents a separate course of study with an identifying NAVTECHTRA number and title for each block. Each block contains the PPP table numbers to be taught as part of that curriculum. the TOS levels to be covered by each curriculum are also listed. The table numbers are listed, top-to-bottom in the sequence of presentation.

When more than one block is required, the blocks are arranged vertically, one block below the other in the sequence of instruction. When several courses are interrelated and require a sequence of instruction, the blocks are arranged vertically in the required sequence reading top-to-bottom.

FIGURE 5-4-2. Example TPS introduction. (Sheet 4 of 6)

The right portion of the TAC indicates On Board Training with one block representing all Instructional Media Material. Each Instruction Media Material will be indicated by its identification number. PPP table numbers and TOS levels, which are to be covered, will be placed inside the block along side the corresponding Instructional Media Material

TRAINING LEVEL ASSIGNMENTS (TLA)

The TLA, the third element of the TPS, indicates those required PPP items (knowledge and skills) and their assigned depths or levels of training for each group of system officers and each system technician NEC. the groups of officers and technicians NECs are the same as those described for the TPC; therefore, for each TPC there is a corresponding group of TLAs.

The TLA further indicates the relationship of the PPP table items to the TOS codes. The PPP table knowledge categories 1-1 through 1-7 are directly related to the TOS codes F and T, and the skill categories 2-1 and 2-2 are directly related to the TOS codes O, P, C, and M.

Each TPC and TLA is identified with a full definitive title and code which relate the TPC and TLA to a specific officer or technician .

The TLA is a tabular presentation by PPP table number which consists of a left-hand column containing PPP item numbers and right-hand columns headed by TOS codes. The placement of TOS code applicability indicator in the TOS column opposite a PPP table item denotes the knowledge depth or skill level required of that item for specific personnel and defines the environment of the training required for the PPP item. The characters R, A, B, 0, 1, 2, 3, 4, or 5 are used as the PPP item number to TOS code(s) applicability indicators. The characters are defined as follows:

R Replacement/Conversion/ILM Training Courses

A Advanced Training Course

B Both Replacement and Advanced Training Course

FIGURE 5-4-2. Example TPS introduction. (Sheet 5 of 6)

0 Training hardware does not exist at the appropriate facility and operational constraints preclude on board training.

1 Experience is the only means to accomplish training at the specified training level.

2 Training hardware does not exist to accomplish training at the appropriate facility and on board training is permitted.

3 Training hardware exists to accomplish training at a facility; on board training is permitted; and training is accomplished on board.

4 Training is received by the individual outside of the cognizant Training Program.

5 Background training is received by the individual as a part of the Navy Training Program.

All PPP items are assigned within the TLA by PPP line item number and line subitem number, where required.

6

FIGURE 5-4-2. Example TPS introduction. (Sheet 6 of 6)

(1) TOS alphanumeric codes. TOS alphanumeric codes identify the skills and knowledge to be covered. The alphabetic portion of the code indicates the general knowledge and skill category:

(a) Knowledge:

F - Familiarization
- Theory

(b) Skill:

O - Operation
P - Preventive maintenance
C - Corrective maintenance
M - Direction of maintenance

The numeric portion of the code indicates the level of skill and knowledge coverage.

(2) TOS relationship. The TOSS should be read as task set groups to more clearly understand each of the statements; they are not easily understood when taken out of context. Additionally, the prerequisite relationship of the statements within each task set must be carefully considered when the TOS are applied to the development of the other TPS elements or the other training material. It should be understood that a lesser depth of knowledge supports a greater depth of knowledge. The user of the TOS must be constantly aware of which task set is in use since any statement derives its meaning from the appropriate task set. Each skill statement describes a discrete operation or maintenance skill and is directly supported by a knowledge statement. The numeric portion of the TOS codes indicates the specific levels of skill and knowledge coverage. They do not indicate sequence or priority. A higher number does not necessarily indicate greater detail, complexity or difficulty. The nature of the skills and knowledge required by the operation and maintenance of a particular equipment, subsystem, or system will determine the priority or order of the skills, not the numerical sequence of the TOS alphanumeric codes.

(a) Figure 5-4-3 details the relationship between the TOS in the Coordinate Task Set. The Coordinate Task Set is assigned to personnel required to coordinate operational and maintenance procedures or a task/function.
(b) Figure 5-4-4 details the relationship between the TOS in the Direct Task Set. The Direct Task Set is assigned to personnel who supervise operational and maintenance procedures or a task/function.

(c) Figure 5-4-5 details the relationship among the TOS in the Perform Task Set. The Direct Task Set is assigned to personnel required to perform operational and maintenance procedures or a task/function.

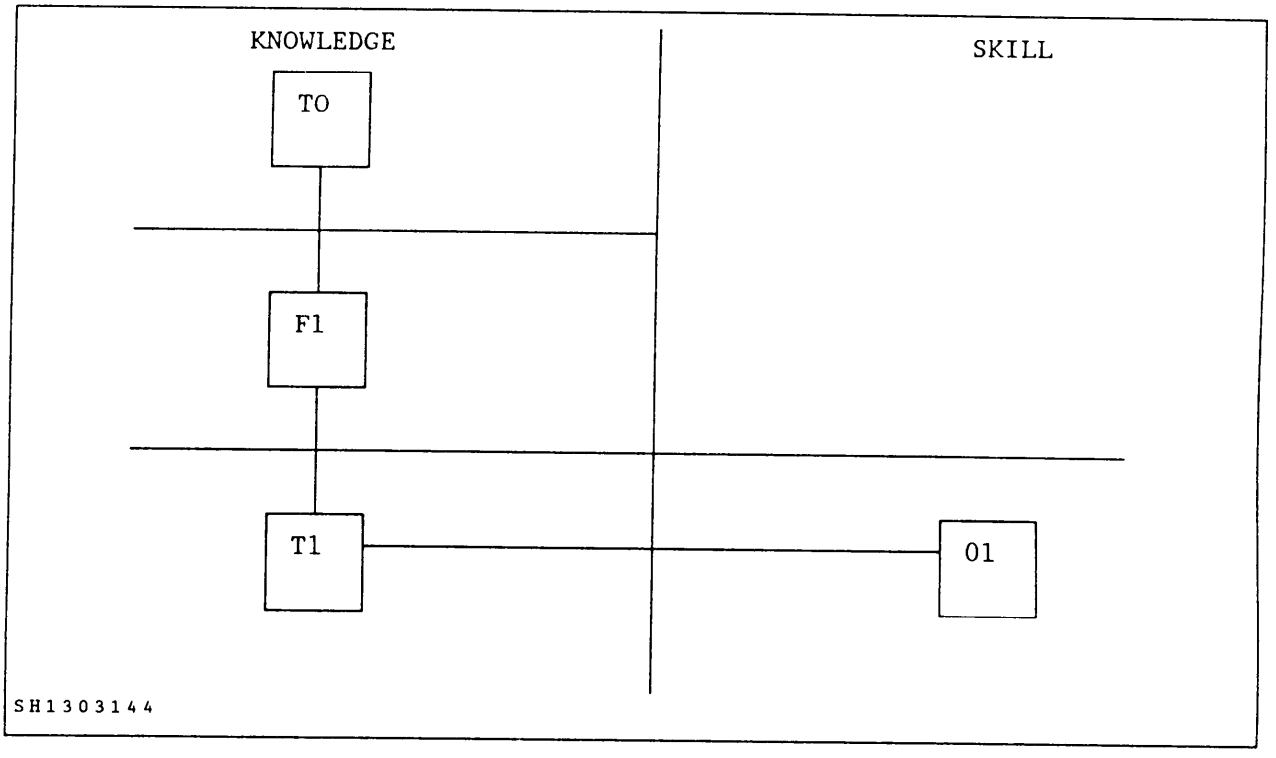


FIGURE 5-4-3. Coordinate task TOS set.

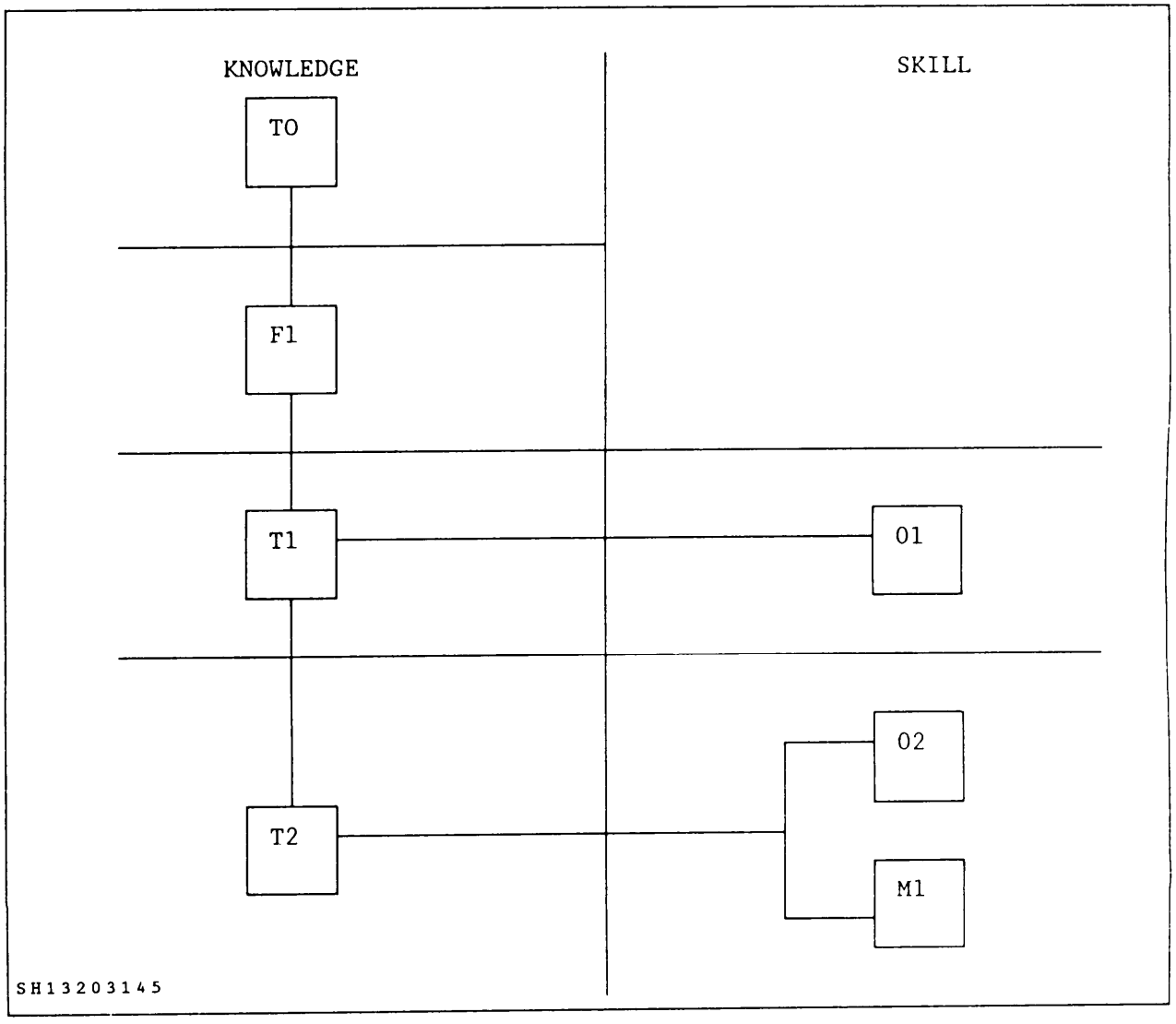


FIGURE 5-4-4. Direct task TOS set.

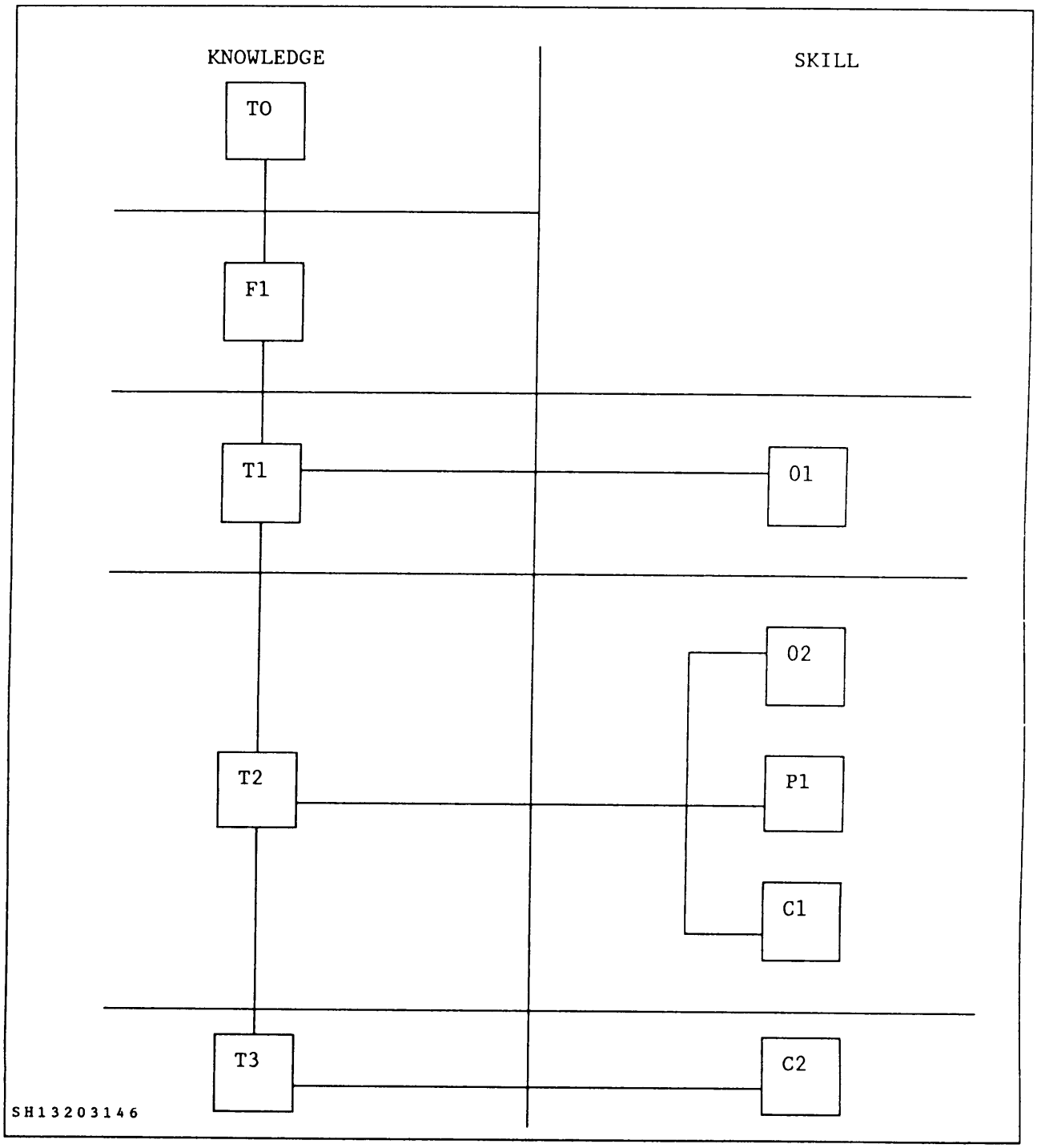


FIGURE 5-4-5. Perform task TOS set.

(d) The description of an operational skill as a casualty/degraded/ abnormal/not full mission capable skill is best determined by the technical documentation. The equipment/subsystem/system technical documentation normally identifies such skills clearly and distinctly from normal operational skills. In those cases where the technical documentation is unclear, the operational policies used by the appropriate authority are to be used as guidance. These skills are designated 02. The key concept is that 02 skills represent quite different skills from 01. The skills are not necessarily harder or more complex, although they often will be, but they apply to operational states or procedures that are out of the ordinary and are not expected of the normal operator. For example, those procedures performed by a junior watchstander after initial replacement/conversion training will represent normal operational procedures and are designated as 01 skills. Procedures performed only by senior or experienced watchstanders , usually after some type of advanced training, will represent operational skills that require advanced analysis and are often applicable to casualty/degraded/ abnormal/not full mission capable operation.

(e) The requirement for advanced analysis in the Perform Task Set is another factor affecting the types of skills and knowledge described. Advanced analysis is the process of determining additional steps in mental evaluation that must be performed to obtain a known or desired condition. Advanced analysis will apply to undocumented procedures and to complex documented procedures.

(3) Task sets. TOSS are grouped into functional categories called task sets. The task sets describe the different applications of the operation and maintenance skills and knowledge required by specific categories of personnel. The task sets are coordinate, direct, and perform.

(a) The Coordinate Task Set is normally assigned to Commanding Officers and Executive Officers. The Direct Task Set is assigned to supervisors, normally officers other than CO/XO, and senior enlisted personnel. The Perform Task Set is assigned to technical operators and maintenance personnel. The nature of the skill determines the appropriate task set. Sometimes an enlisted person requires training to perform duties in the Direct or Coordinate Task Sets. For example, a Chief Petty Officer may be assigned as the Craftmaster of a tug. Officers may require training in the Perform Task Set. For example, an officer assigned as a Radar Intercept officer performs operational procedures.

(b) At times the operational maintenance duties for a specific category of personnel are vague or poorly defined. The contracting activity must provide more definition of the duties and responsibilities of a specific category of personnel to allow for the use of only one task set.

(4) Task set identification and TOS selection. The levelized training statements are found in tables 5-4-I, 5-4-II, and 5-4-III.

Step 1. Identify the task set appropriate to the TPS under development. Refer to table 5-4-IV.

Step 2. Select the appropriate TOS. Refer to tables 5-4-V, 5-4-VI, 5-4-VII and 5-4-VIII.

(5) TOS organization. The final step in the preparation of the TOS involves organizing the statements into the proper format (see to figure 5-4-6, sheets 1 through 4). These examples show modified/tailored TOS statements in support of a particular TPS. The completed TOS page is placed in front of its respective TPC.

TABLE 5-4-I. Coordinate task set TOS.

a. TO Theory

"TO. Completion of training includes:

(1) The background skill and knowledge which are prerequisite to the understanding of the operation and maintenance of the system/subsystem/equipment.

(2) Those tasks or functions which are not unique to the operation or maintenance of a particular equipment, subsystem, or system.

(3) This level of training includes the basic knowledge (B) and skill (S). The following TOS levels support background and tasks or functions:

(a) B1 Completion of training provides the level of knowledge necessary to recognize or recall ideas, phenomena, symbology, and terminology which are prerequisite to the comprehension of a task or function.

(b) B2 Completion of t-raining provides the comprehension of principles, rules, and concepts necessary to solve given problems and situations and performance of assigned tasks or functions.

(c) S Completion of training provides the ability and knowledge to apply principles, rules, or concepts in the solution of given problems and performance of assigned tasks or functions."

The TO level of training provides background skills and knowledge that may be required by the CO/XO as prerequisites to higher learning. These prerequisite skills and knowledge must not be system, subsystem, or equipment oriented but will be directly related to the understanding of fundamental principles (e.g., basic digital theory, basic hydraulics, basic electricity and electronics, etc.). Skill and knowledge related to these fundamental principles will provide the ability to understand system, subsystem, or equipment operation and maintenance ccncepts. TO also applies to those skills and knowledge that are not unique to the operation and maintenance of a specific equipment/subsystem/system. These are the skills and knowledge. contained in Task/Function PPPs.

TABLE 5-4-I. Coordinate task set TOS - Continued.

b. F1 Theory

"F1. Completion of training provides familiarity with documentation, and the capabilities and limitations of a subsystem/equipment required to understand the system/subsystem."

The F1 level of training will provide the Coordinator (normally CO/XO) with introductory information required for a basic understanding of the system/subsystem/equipment. This knowledge may be applied to general shipboard coordination duties and preparation for further training. F1 theory may include, but is not limited to, familiarization with the purpose, function, and location of system/subsystem/equipment and familiarization with supporting documentation.

c. T1 Theory

"T1. Completion of training provides the knowledge necessary to understand and support the coordination of all operation and all maintenance procedures."

The T1 level of training provides the knowledge required for the coordinator (CO/XO) to understand overall system, subsystem, and equipment operation and maintenance. This knowledge will support the coordination responsibilities. The T1 level theory may include, but is not limited to, the following:

(1) Purpose, function, and location of system/subsystem/equipment/software package.

(2) All applicable security requirements.

(3) All applicable safety precautions.

(4) Capabilities and limitations of the system/subsystem/equipment.

(5) Reference data such as weights, dimensions, and nomenclature.

(6) Description of the manner in which the system/~ub~Ystem/equipment/software package performs to the functional level, including modes of operation, operational sequences and input and output requirements and interface without coverage of functional circuit details, or program flow diagrams.

TABLE 5-4-I. Coordinate task set TOS - Continued.

(7) Normal and casualty/degraded/abnormal/not full mission capable operational procedures.

(8) Maintenance policy and procedures.

(9) Knowledge of documentation.

(10) System/subsystem/equipment interface definition.

(11) Description of the effect of subsystem malfunctions on system operation.

(12) Knowledge of procedural discipline.

(13) Knowledge of the administration of management programs.

d. 01 Skill

"01. Completion of training provides the ability to coordinate all operational and maintenance procedures."

The skills related to the duties of the coordinator are identified within this TOS set as 01. These skills are primarily mental exercises and are implemented through the coordination of shipboard exercises, operations, and system level crew (team) training. During these coordination efforts, the coordinator is required to determine the effects that related subsystem and equipment operation, maintenance, or casualties may have on system operation and to ensure adherence to applicable security requirements and safety precautions. The 01 skill level may include, but is not limited to, the following:

(1) All applicable security requirements.

(2) All applicable safety precautions.

(3) Familiarity with normal and casualty/degraded/abnormal/not full mission capable operation and maintenance procedures.

(4) Use of applicable publications, data sheets, and records.

(5) Recognition of the effect of subsystem malfunctions on system operation.

TABLE 5-4-II. Direct task set TOS.

a. TO Theory

"TO. Completion of training includes:

(1) The background skill and knowledge which is prerequisite to the understanding of the operation and maintenance of the system/subsystem/equipment.

(2) Those tasks or functions which are not unique to the operation or maintenance of a particular equipment, subsystem, or system.

(3) This level of training includes the basic knowledge (B) and skill (S). The following TOS levels support background and tasks or functions:

(a) B1 Completion of training provides the level of knowledge necessary to recognize or recall ideas, phenomena, symbology, and terminology which are prerequisite to the comprehension of a task or function.

(b) B2 Completion of training provides the comprehension of principles, rules, and concepts necessary to solve given problems and situations and performance of assigned tasks or functions.

(c) S Completion of training provides the ability and knowledge to apply principles, rules, or concepts in the solution of given problems and performance of assigned tasks or functions."

The TO level of training provides background skills and knowledge that may be required by the supervisor (normally officers except CO/XO) as prerequisites to higher learning. These prerequisite skills and knowledge must not be system, subsystem, or equipment oriented but will be directly related to the understanding of fundamental principles (e.g., basic digital theory, basic hydraulics, basic electricity and electronics, etc.). Skills and knowledge related to these fundamental principles will provide the ability to understand system, subsystem, or equipment operation or maintenance concepts, TO also applies to those skills and knowledge that are not unique to the operation and maintenance of a specific equipment/subsystem/system. These are the skills and knowledge contained in Task/Function PPPs.

TABLE 5-4-II. Direct task set TOS - Continued.

b. F1 Theory

"F1. Completion of training provides familiarity with documentation, purpose, function, and location of specific system/subsystem/equipment required to understand the capabilities and limitations of a subsystem within a system."

The F1 level of training will provide the supervisor (normally officers except CO/XO with introductory information required for a basic understanding of the system, subsystem, or equipment. This knowledge may be applied to general shipboard responsibilities and preparation for further training. F1 theory may include, but is not limited to, familiarization with the purpose, function, and location of system/subsystem/equipment supporting documentation.

c. T1 Theory

"T1. Completion of training provides the knowledge necessary to understand and direct normal operational tasks."

The T1 level of training is defined by the requirements of 01 level skill and T2 level knowledge. In supporting 01, T1 will provide the knowledge to understand all normal operational tasks. In supporting T2, T1 will provide the basic knowledge required to understand the theory of casualty operation and maintenance. The T1 level may include, but is not limited to, the following:

(1) Purpose, function, and location of system/subsystem/equipment/software package.

(2) All safety requirements applicable to normal. operation.

(3) All applicable security requirements.

(4) Capabilities and limitations.

(5) Reference data such as weights, dimensions, and nomenclature.

(6) Description of the manner in which the system/subsystem/equipment/software package performs to the functional level, including input and output requirements and interface without coverage of logic, circuits, or program flow diagrams.

TABLE 5-4-II. Direct task set TOS - Continued.

(7) Modes of operation and operational sequences.

(8) Knowledge of documentation applicable to normal operation.

(9) System/subsystem/equipment interface definitions.

d. 01 Skill

"01. Completion of training provides the ability to direct normal operational procedures."

The 01 level of training will provide the supervisor (normally officer except CO/XO) with the basic skills required to direct normal operation of the system, subsystem, and equipment. The 01 level may include, but is not limited to, the following:

(1) Location and function of system/subsystem/equipment controls and indicators related to directing normal operation.

(2) All applicable security requirements.

(3) All applicable safety precautions.

(4) Familiarity with normal operating procedures.

(5) Use of applicable publications, data sheets, and records.

e. T2 Theory

"T2. Completion of training provides the knowledge necessary to understand and direct all operational tasks:

(1) Casualty/degraded/abnormal/not full mission capable.

(2) Normal operations requiring advanced analysis.

(3) All maintenance procedures,"

The T2 level of training is defined by the requirements for 02, and M1 level skills. In support of 02, T2 must provide the knowledge required to understand casualty/degraded/abnormal/not full mission capable operational tasks and normal operational tasks requiring advanced analysis. In support of M1, T2 must provide the knowledge required to understand all maintenance procedures. The T2 level may include, but is not limited to, the following:

TABLE 5-4-II. Direct task set TOS - Continued.

(1) Purpose, function, and location of system/subsystem/equipment/software package.

(2) All applicable security requirements.

(3) A11 applicable safety precautions.

(4) Capabilities and limitations of the system/subsystem/equipment software package.

(5) Reference data unique to casualty operation.

(6) Description of the manner in which the system/subsystem/equipment/software package performs to the functional level, including input and output requirements and interface without coverage of logic circuits, or individual program flow diagrams.

(7) Casualty/degraded/abnormal/not full mission capable operation and operational sequences requiring adanced analysis.

(8) Maintenance policy and procedures.

(9) Detailed operational and functional sequences to the extent required to direct diagnosis of malfunctions.

(10) Knowledge of documentation.

(11) System/subsystem/equipment/software package interface definition.

(12) Alignment, adjustment, and calibration procedures, contained in publications, data sheets, and records.

f. 02 Skill

"02. Completion of training provides the skills to direct:

(1) Casualty/degraded/abnormal/not full mission capable operational procedures.

(2) Normal operations requiring advanced analysis."

TABLE 5-4-11. Direct task set TOS - Continued.

The 02 level of training provides the ability to direct casualty/degraded/abnormal/not full mission capable and normal operational procedures requiring advanced analysis. The 02 skill level is supported by T2 level knowledge. The 02 level may include, but is not limited to, the following:

(1) Location and function of all system/subsystem/equipment controls and indicators related to casualty/degraded/abnorreal/not full mission capable operation and normal operational procedures requiring advanced analysis.

(2) All applicable security requirements.

(3) All applicable safety precautions.

(4) Familiarity with all casualty/degraded/abnormal/not full mission capable operation procedures and all normal operating procedures requiring advanced analysis.

(5) Use of applicable publications, data sheets, and records.

g. Ml Skill

"M1. Completion of training provides the ability to direct all maintenance."

The M1 level of training will provide the ability to direct all system, subsystem, and equipment maintenance tasks. This skill level is supported by T2 level knowledge. The M1 skill level may include, but is not limited to, the following:

(1) All applicable security requirements.

(2) All applicable safety precautions.

(3) Special tools, test equipment, and accessory equipment.

(4) Familiarity with preventive and corrective maintenance procedures.

(5) Applicable publications, data sheets, and records.

TABLE 5-4-III. Perform task set TOS.

a. TO Theory

"TO. Completion of training includes:

(1) The background skill and knowledge which are prerequisite to the understanding of the operation and maintenance of the system/subsystem/equipment

(2) Those tasks or functions which are not unique to the operation or maintenance of a particular equipment, subsystem, or system.

(3) This level of training includes the basic knowledge (B) and skill (S). The following TOS levels support background and tasks or functions:

(a) B1 Completion of training provides the level of knowledge necessary to recognize or recall ideas, phenomena, symbology, and terminology which are prerequisite to the comprehension of task or function.

(b) B2 Completion of training provides the comprehension of principles, rules, and concepts neccessary to solve given problems and situations and performance of assigned tasks or functions.

(c) S Completion of training provides the ability and knowledge to apply principles, rules, or concepts in the solution of given problems and performance of assigned tasks or functions."

The TO level of training provides background skills and knowledge that may be required by the technician as prerequisites to higher learning. These prerequisite skills and knowledge must not be system, subsystem, or equipment oriented but will be directly related to the understanding of fundamental principles (e.g., basic digital theory, basic hydraulics, basic electricity and electronics, etc.), Skills and knowledge related to these fundamental principles will provide the ability to understand system, subsystem, or equipment operation and maintenance concepts, TO also applies to those skills and knowledge that are not unique to the operation and maintenance of a specific equipment, subsystem, or system. These are the skills and knowledge contained in Task/Function PPPs,

TABLE 5-4-III. Perform task set TOS - Continued.

b. F1 Theory

"F1. Completion of training provides familiarity with the purpose, function, and location of a specific system/subsystem/equipment, on a subsystem/equipment level, and with supporting documentation, required to safely perform general watchstanding duties within the _____ system."

The F1 level of training will provide the technician with introductory information required for basic system/subsystem/equipment understanding. This knowledge may be applied to general watchstanding duties and preparation for further training. F1 theory may include, but is not limited to, familiarization with the purpose, function, and location of system/subsystem/equipment and familiarization with the name, number, content, and purpose of supporting documentation.

c. T1 Theory

"T1. Completion of training provides the knowledge to understand functional operation and to support performance of normal operational tasks."

The T1 level of training is defined by the requirements for 01 level skill. In supporting 01, T1 shall provide the depth of knowledge required to support performance of normal operational tasks, including only that functional operation necessary to understand normal operation. In supporting T2, T1 shall provide the basic knowledge required to understand the theory of casualty operation and all maintenance. T1 level knowledge is normally taught in the replacement training environment. When applied to documentation, completion of training provides the level of knowledge required to use supporting documentation. The T1 level may include, but is not limited to, the following:

(1) Purpose, function, and location of system/subsystem/equipment/software package.

(2) All applicable security requirements.

(3) All applicable safety precautions.

(4) Capabilities and limitations.

TABLE 5-4-III. Perform task set TOS - Continued.

(5) Reference data such as weights, dimensions, and nomenclature .

(6) Description of the manner in which the system/subsystem/equipment/software package performs to the functional level, including input and output requirements and interface without coverage of logic, circuits, or program flow diagrams.

(7) Modes of operation and operational sequences.

(8) Applicable terminology and symbology.

(9) Normal operational tasks.

d. 01 Skill

"01. Completion of training provides the skill to perform, with supervision, normal operational procedures."

The 01 level of training provides the ability to perform, with supervision, normal operational procedures. 01 skills are performed using step by step procedures during the normal operational modes. These skills do not require advanced analysis. The 01 level of training is supported by T1 level knowledge and is normally taught in the replacement training environment. The 01 level may include, but is not limited to, the following:

(1) Location and function of all system/subsystem/equipment controls and indicators; including names and reference designators, control positions and indicator colors.

(2) Applicable security requirements.

(3) Applicable safety precautions.

(4) Power-on and shutdown procedures.

(5) Preparation, pre-operation, operation, and post-operation.

(6) Use of applicable publications, data sheets, and records.

TABLE 5-4-III. Perform task set TOS - Continued.

e. T2 Theory

"T2. Completion of training provides the knowledge to understand functional operation and to support performance of:

(1) Casualty/degraded/abnormal/not full mission capable operational tasks.

(2) Normal operational tasks requiring advanced analysis.

(3) All preventive maintenance.

(4) Documented fault isolation and repair."

The T2 level of training is defined by the requirements for 02, P1, and C1 level skills and T3 level knowledge. In supporting 02, T2 must provide the depth of knowledge required to support the performance of casualty/degraded/abnormal/not full mission capable operation tasks and normal operational tasks requiring advanced analysis. In supporting P1 and C1, T2 shall provide the depth of knowledge required to support the performance of all, routine preventive maintenance and documented fault isolation and repair. In supporting T3, T2 must provide the basic knowledge required to understand the theory of that corrective maintenance which is undocumented or requires advanced analysis. T2 level knowledge is normally taught in the replacement training environment. The T2 level may include, but is not limited to, the following:

(1) Purpose, function, and location of the major subdivisions of the system/subsystem/equipment/software package.

(2) Applicable security requirements.

(3) Applicable security precautions.

(4) Description of the manner in which the function of each major subdivision within the system/subsystem/equipment/software package is accomplished, including data flow and interfaces, without coverage of detailed logic, circuit analysis, or individual program flow diagrams.

(5) Mechanical, electrical, and electronic characteristics of the major subdivision of the system/subsystem/equipment or program concepts of the software concepts.

TABLE 5-4-III. Perform task set TOS - Continued.

(6) Modes of operation and operational sequences, including time or phase relationships.

(7) Procedures for casualty/degraded/abnormal/not full mission capable operation and normal operation requiring advanced analysis.

(8) System/subsystem/equipment interface definition.

(9) Preventive and corrective maintenance policy and procedures.

(10) Procedures for the use of built-in test equipment.

(11) Procedures for the use of automated test programs and Performance Monitoring/Fault Localization (PM/FL).

(12) Applicable terminology and symbology.

(13) Alignment, adjustment, and calibration procedures contained in publications, data sheets, and records.

f. 02 Skill

"02. Completion of training provides the skills to perform, with supervision:

(1) Casualty/degraded/abnormal/not full mission capable operation procedures.

(2) Normal operational procedures requiring advanced analysis."

The 02 level of training provides the ability to perform, with supervision, casualty operational procedure, operation under degraded, abnormal, or not full mission capability conditions, and normal operating procedures requiring advanced analysis. Advanced analysis related to operational tasks may require the operator to use related skills and knowledge to analyze data and anticipate the subsystem and equipment reactions in different operational modes. For example, certain operational conditions not supported by documented procedures will require advanced analysis. 02 advanced analysis, in general, applies to those complex operational procedures which require additional training. The 02 level may include, but is not limited to, the following:

TABLE 5-4-III. Perform task set TOS - Continued.

(1) Location and function of all system/subsystem/equipment controls and indicators, including names and reference designators, control positions, and indicator colors.

(2) Applicable security requirements.

(3) Applicable safety precautions.

(4) Power-on and shutdown procedures.

(5) preparation, pre-operation, operation, and post-operation.

(6) Casualty/degraded/abnormal/not full mission capable operational procedures.

(7) Use of applicable publications, data sheets, and records.

(8) Normal operational procedures requiring advanced analysis.

g. P1 Skill

"P1. Completion of training provides the skill to perform, with supervision, preventive maintenance procedures."

The P1 level of training is supported by T2 knowledge and provides the ability to perform, with supervision, preventive maintenance procedures. The P1 level is normally taught in the replacement training environment. The PI level may include, but is not limited to, the following:

(1) All applicable security requirements.

(2) All applicable safety precautions.

(3) Special tools, test equipment, and accessary equipment.

(4) preventive maintenance procedures contained in publications, data sheets, and records.

(5) Pre-maintenance and post-maintenance procedures.

(6) Alignment, adjustment, and calibration procedures contained in publications, data sheets, and records.

TABLE 5-4-III. Perform task set TOS - Continued.

(7) Those operational tests and procedures required to support preventive maintenance.

h. C1 Skill

"C1. Completion of training provides the skill to perform, with supervision and to the authorized maintenance level, documented fault isolation and repair procedures."

The C1 level of training is supported by T2 knowledge and provides the ability to perform, with supervision, basic fault isolation and repairs. Documented procedures associated with the C1 skill provide step by step procedures that do not require advanced analysis. This may include the use of functional block diagrams, built-in test equipment or test program and automated test programs such as PM/FL, or other maintenance aids not requiring the application of knowledge of detailed logic, circuit analysis, or detailed mechanical breakdown. The C1 level is normally taught in the replacement training environment. The Cl level may include, but is not limited to, the following:

(1) Recognizing and isolating malfunctions of the system/subsystem\equipment.

(2) All applicable security requirements.

(3) All applicable safety precautions.

(4) Lo/sting and replacing faulty components.

(5) Alignment, adjustment, and calibration procedures.

(6) Special tools, test equipment, and accessory equipment.

(7) Use of procedures contained in applicable publications, data sheets , and records, such as diagnostics, fault isolation trees, etc.

(8) Applicable operational tests and procedures required to support documented fault isolation and repair.

TABLE 5-4-III. Perform task set TOS - Continued.

i. T3 Theory

"T3. Completion of training provides the knowledge to support:

(1) Undocumented fault isolation and repair.

(2) Documented fault isolation and repair requiring advanced analysis."

The T3 level of training is defined by the requirements for C2 level skill. To identify and determine required T3 knowledge, the developer must always analyze the maintenance function. For example, adjustment of a power supply may be classified as C2 corrective maintenance due to a requirement for advanced analysis; therefore, the knowledge supporting that maintenance will be classified as T3 even though it may describe input/out signals and Potentiometer adjustments. The T3 level knowledge is normally taught in the advanced training environment. The T3 level may include, but is not limited to, the following:

(1) Purpose, function, and identification of logic elements, circuits, or programs.

(2) All applicable security requirements.

(3) All applicable safety precautions.

(4) Description of the manner in which the function of each block of logic, group of circuits, or program segment is accomplished, including individual logic elements, circuits of program steps, as applicable. T3 theory must not cover signal, electron flow, or computer instructions, except for those logic elements or circuits unique to the equipment or program whose understanding is essential to support of maintenance beyond automated test programs such as PM/FL (that is, those circuits not covered at the background theory level).

(5) Mechanical, electrical, and electronic characteristics of the logic elements or circuits.

(6) Detailed operational and functional sequences, utilizing applicable documentation to the extent that malfunctions can be diagnosed.

TABLE 5-4-III. Perform task set TOS - Continued.

(7) Maintenance policy and procedures, including emergency provisions.

(8) All applicable terminology and symbology.

(9) Authorized alignment, adjustment, and calibration procedures

j. C2 Skill

"C2. Completion of training provides the skill to perform, with supervision and to the authorized maintenance level:

(1) Repairs and isolation of faults that cannot be located using procedures contained in prescribed documentation.

(2) Repairs and isolation of faults that require advanced analysis.

The C2 level of training is supported by T3 knowledge. The C2 training level will provide the technician with the ability to perform, with supervision, corrective maintenance procedures that are not contained in prescribed documentation or documented procedures requiring advanced analysis, C2 advanced analysis may include documented maintenance procedures in which additional maintenance steps or diagnoses are required. The C2 training level is normally taught in the advanced training environment. This may include, but is not limited to, the following:

(1) Recognizing, diagnosing, and isolating malfunctions.

(2) All applicable security requirements.

(3) All applicable safety precautions.

(4) Locating and replacing faulty components.

(5) Alignment, adjustment, and calibration procedures.

(6) Special tools, test equipment, and accessory equipment.

(7) Use of procedures contained in applicable publications, data sheets, and records.

(8) Replacement of piece-part components to the level of onboard spares in systems/equipments whose primary maintenance policy is module or card replacement.

(9) Operational tests and procedures required to support undocumented faults isolation and repair and documented faults and isolation and repair requiring advanced analysis.

Training Objective Statements
for (Weapons System Training Program) CO/XO (Class of Ship,/Aircraft)

To Statement TO includes the background skill and knowledge which is prerequisite and those tasks or functions which are not unique to the understanding of the operation and maintenance of the system/subsystem/equipment. This level of training includes:

B1 Completion of training provides the level Of knowledge necessary to recognize or recall ideas, phenomena , symmbology, and terminology which are prerequisite to the comprehension of a task or function.

B2 Completion of training provides the comprehension of the principles, rules, and concepts necessary to solve given problems and situations and performance of assigned tasks or functions.

S Completion of training provides the ability and knowledge to apply principles, rules, or concepts in the solution of given problems and performance of assigned tasks or functions.

F1 Completion of training provides familiarity with documentation, and the capabilities and limitations of a subsystem/equipment required to understand the system/subsystem.

T1 Completion of training provides the depth of knowledge necessary to understand and support the coordination of all operation and all maintenance procedures.

01 Completion of training provides the ability and knowledge to coordinate all operational and maintenance procedures.

FIGURE 5-4-6. Example completed TOS for CO\XO. (Sheet 1 of 4)

Training Objective Statements
for (Weapons System Training Program) (Except CO/XO)
(Class of Ship/Aircraft)

TO Statement TO includes the background skill and knowledge which is prerequisite and those tasks or functions which are not unique to the understanding of the operation and maintenance of the system/subsystem/equipment. This level of training includes:

B1 Completion of training provides the level of knowledge necessary to recognize or recall ideas, phenomena, symbology, and terminology which are prerequisite to the comprehension of a task or function.

B2 Completion of training provides the comprehension of the principles, rules, and concepts necessary to solve given problems and situations and performance of assigned tasks or functions.

s Completion of training provides the ability and knowledge to apply principles, rules, or concepts in the solution of given problems and performance of assigned tasks or functions.

F1 Completion of training provides familiarity with documentation, and the purpose, function, and location of specific system/subsystem/equipment required to understand the capabilities and limitations of a subsystem within a system.

T1 Completion of training provides the depth of knowledge necessary to understand and direct normal operational tasks.

T2 Completion of training provides the depth of knowledge necessary to understand and direct all operation and all maintenance procedures.

01 Completion of training provides the ability and knowledge to direct normal operational procedures.

02 Completion of training provides the ability and knowledge to direct all operational procedures.

M1 Completion of training provides the ability and knowledge to direct all maintenance.

FIGURE 5-4-6. Example completed TOS for officers (except CO/XO).
(Sheet 2 of 4)

Training Objective Statements,
for (Weapons System Training Program) Technicians

TO Statement TO includes the background skill and knowledge which is prerequisite and those. tasks or functions which are not. unique to the understanding of the operation and maintenance of the system/subsystem/equipment. This level of training includes:

B1 Completion of training provides the level of knowledge necessary to recognize or recall ideas, phenomena, symbology, and terminology which are prerequisite to the comprehension of a task or function.

B2 Completion of training provides the comprehension of the principles, rules, and concepts necessary to solve given problems and situations and performance of assigned tasks or functions.

S Completion of training provides the ability and knowledge to apply principles, rules, or concepts in the solution of given problems and performance of assigned tasks or functions.

F1 Completion of training provides familiarity with the purpose, function, and location of a specific system/subsystem/equipment , on a system/subsystem level, and with supporting documentation, required to safely perform general duties with the (weapons system). When applied to Computer Software the following definitions shall apply: Completion of training provides familiarity with documentation, purpose and function of the software package on a level required to safely perform general duties within the (weapons system).

T1 Completion of training provides the depth of knowledge to understand functional operation and to support the performance Of normal operational tasks.

T2 Completion of training provides the depth of knowledge to understand functional operation and to support performance of all operational tasks and all preventive and basic corrective maintenance.

T3 Completion of training provides the depth of knowledge to support all corrective maintenance.

FIGURE 5-4-6. Example completed TOS for technicians. (Sheet 3 of 4)

01	Completion of training provides the skill and knowledge to perform, with supervision, normal operational procedures.
02	Completion of training provides the skills and knowledge to perform, with supervision, all operational procedures.
P1	Completion of training provides the skill and knowledge to perform, with supervision, preventive maintenance procedures.
C1	Completion of training provides the skill and knowledge to perform, with supervision and to the authorized maintenance level, documented fault isolation and repair procedures.
C2	Completion of training provides the skill and knowledge to perform, with supervision and to the authorized maintenance level, repairs and isolation of faults that cannot be located using procedures contained in prescribed documentation or that require advanced analysis to complete the procedure.

FIGURE 5-4-6. Example completed TOS for technicians. (Sheet 4 of 4)

TABLE 5-4-IV. Task set identification.

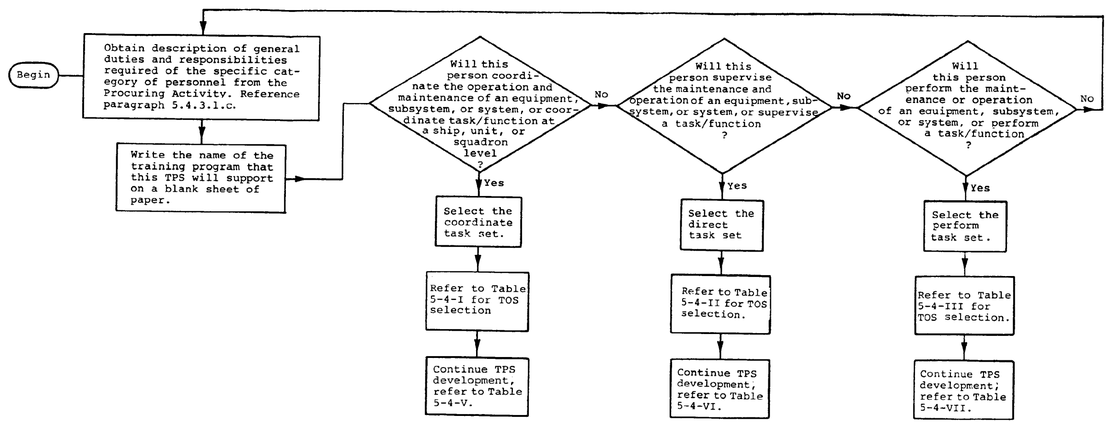


TABLE 5-4-V. Coordinate task set TOS selection.

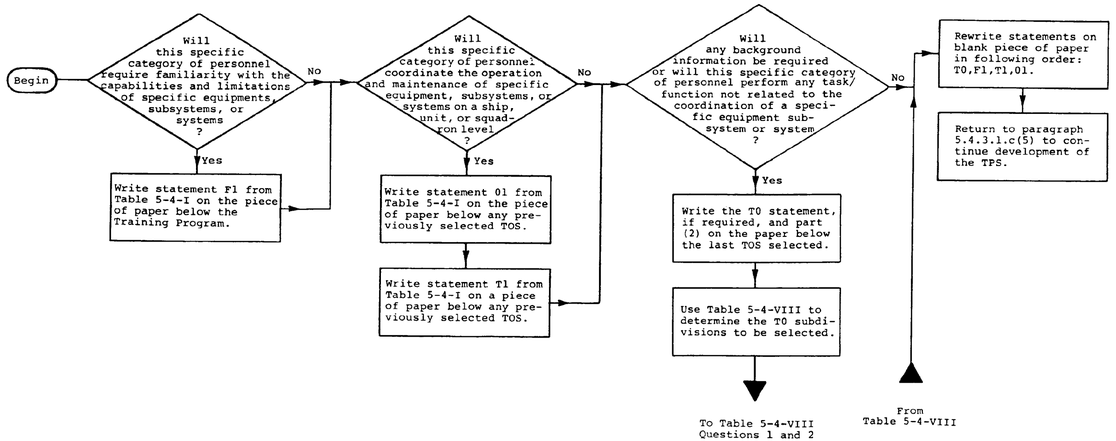


TABLE 5-4-VI. Direct task set TOS selection.

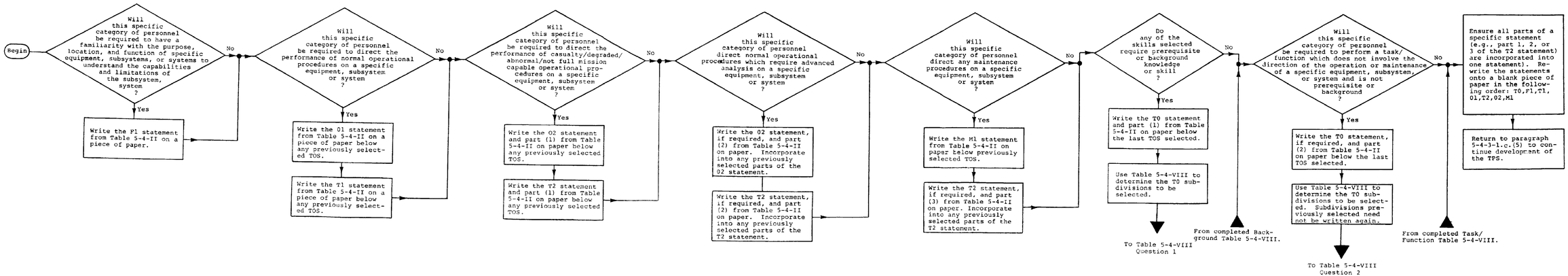


TABLE 5-4-VII. Perform task set TOS selection.

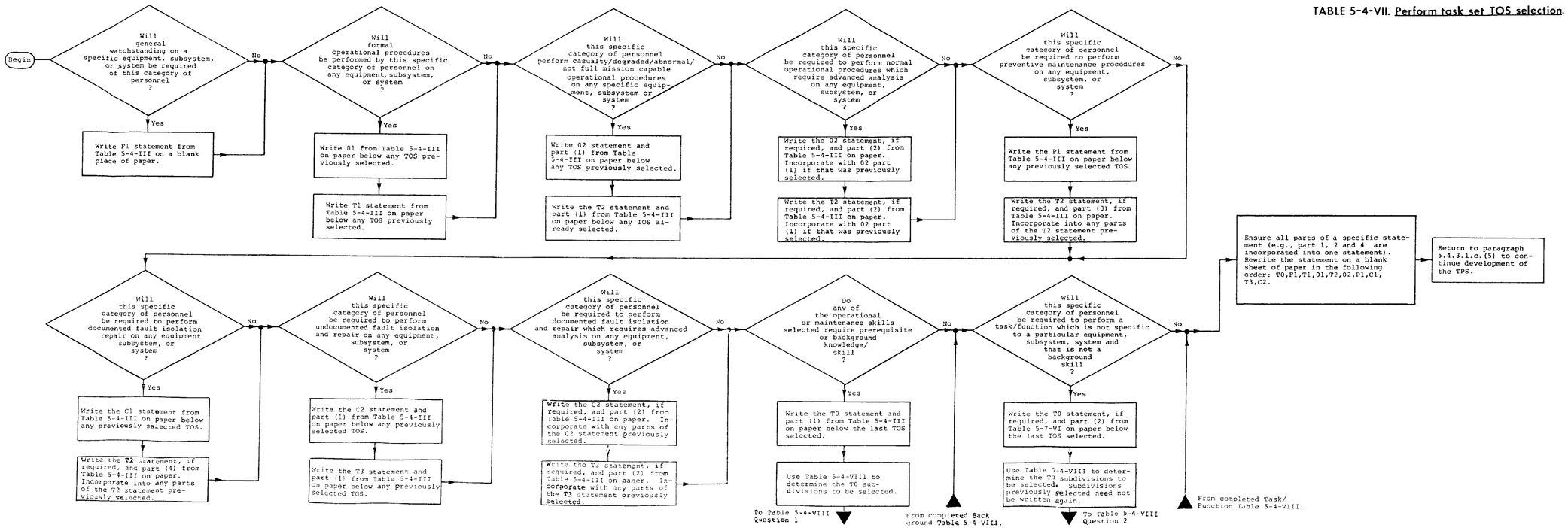
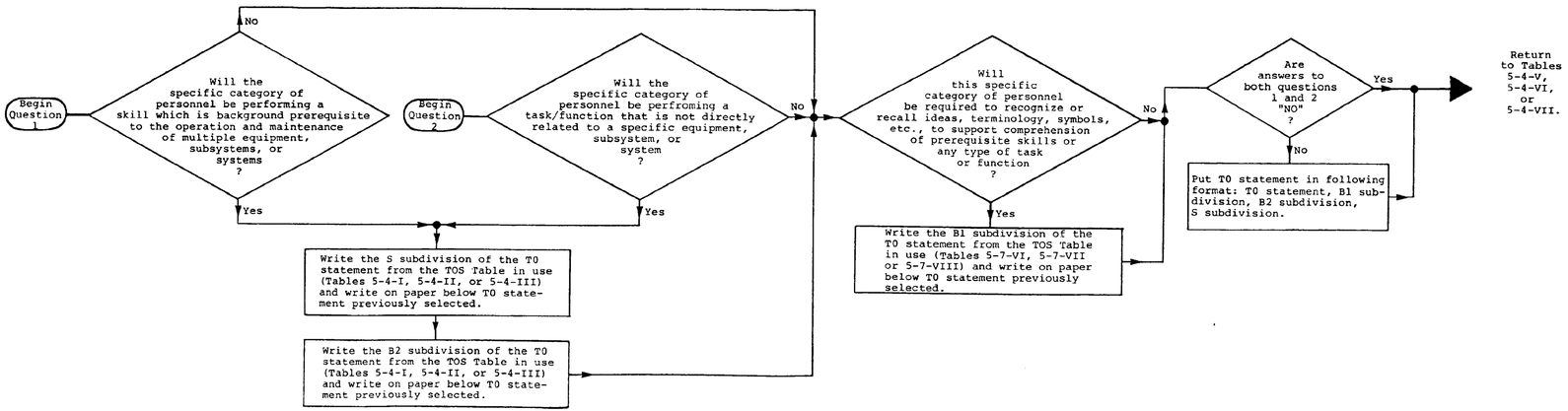


TABLE 5-4-VIII. TØ training level identification.



5.4.3.2 TPC development. The TPC development is discussed in the following paragraphs.

(a) TAM development. Each TAM lists all PPP tables that represent the training requirement for the particular personnel, Refer to tables 5-4-IX, 5-4-X, 5-4-XI, as appropriate to complete the following steps :

Step 1. Write the heading that provides a full definitive title and code which relates this TPC element to the others and the TLA for this particular personnel group to include NEC/NOBC.

Step 2. List the PPP tables in alphanumeric sequence.

Step 3. Place an "X" in the appropriate TGS column(s) (reference figures 5-4-7 through 5-4-27).

(b) TAM organization. The final step in the preparation of the TAM involves is to place the information in the proper format. Refer to Figure 5-4-28 for an example of a completed TAM.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT				
PPP TABLE	LEVEL			
	TO	F1	T1	O1
	TO	F1	T1	O1

TOS ASSIGNMENT (Cont)				
PPP TABLE	LEVEL			
	TO	F1	T1	O1
	TO	F1	T1	O1

SH132031547

FIGURE 5-4-7. Example coordinate task set TAM (blank).

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT				
PPP TABLE	LEVEL			
	TO	F1	T1	01
002				
B076				
D542				
3F12				

TOS ASSIGNMENT (Cont)				
PPP TABLE	LEVEL			
	TO	F1	T1	01

SH132031548

FIGURE 5-4-8. Example coordinate task set TAM with PPP tables.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT				
PPP TABLE	LEVEL			
	TO	F1	T1	01
002	X			
B076	X			
D542				
3F12				

TOS ASSIGNMENT (Cont)				
PPP TABLE	LEVEL			
	TO	F1	T1	01

SH132031549

FIGURE 5-4-9. Example coordinate task set TAM with background and task/function entries.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT				
PPP TABLE	LEVEL			
	TO	F1	T1	01
002	X			
B076	X			
D542		X		
3F12				

TOS ASSIGNMENT (Cont)				
PPP TABLE	LEVEL			
	TO	F1	T1	01

SH132031550

FIGURE 5-4-10. Example coordinate task set TAM with the familiarization entry.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT				
PPP TABLE	LEVEL			
	TO	F1	T1	01
002	X			
B076	X			
D542		X	X	X
3F12				

TOS ASSIGNMENT (Cont)				
PPP TABLE	LEVEL			
	TO	F1	T1	01

SH132031551

FIGURE 5-4-11. Example coordinate task set TAM with the theory and operation/maintenance coordination entries.

TABLE 5-4-IX. Coordinate task set table assignment matrix.

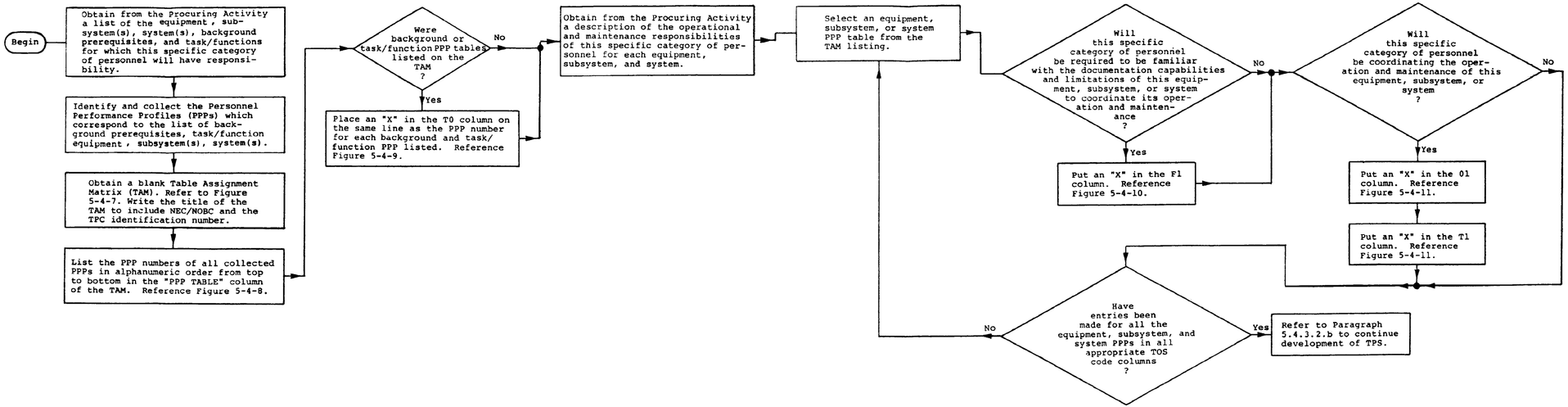


TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1
	TO	F1	T1	T2	01	02	M1

TOS ASSIGNMENT (Cont)							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1
	TO	F1	T1	T2	01	02	M1

SH132031552

FIGURE 5-4-12. Example direct task set TAM (blank).

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1
002							
B076							
D542							
H121							
3F12							
3Q10							

TOS ASSIGNMENT (Cont)							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1

SH1320315 53

FIGURE 5-4-13. Example direct task set TAM with PPP tables.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1
002	X						
B076	X						
D542							
H121							
3F12							
3Q10							

TOS ASSIGNMENT (Cont)							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1

SH1320315 54

FIGURE 5-4-14. Example direct task set TAM with background and task/function entries.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1
002	X						
B076	X						
D542		X					
H121							
3F12							
3Q10							

TOS ASSIGNMENT (Cont)							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1

SH132031555

FIGURE 5-4-15. Example direct task set TAM with the familiarization entries.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1
002	X						
B076	X						
D542		X	X		X		
H121							
3F12							
3Q10							

TOS ASSIGNMENT (Cont)							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1

SH132031556

FIGURE 5-4-16. Example direct task set TAM with the theory and normal operation entries.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1
002	X						
B076	X						
D542		X	X	X	X	X	
H121							
3F12							
3Q10							

TOS ASSIGNMENT (Cont)							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1

SH132031557

FIGURE 5-4-17. Example direct task set TAM with the theory and all operation entries.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1
002	X						
B076	X						
D542		X	X	X	X	X	X
H121							
3F12							
3Q10							

TOS ASSIGNMENT (Cont)							
PPP TABLE	LEVEL						
	TO	F1	T1	T2	01	02	M1

SH132031558

FIGURE 5-4-18. Example direct task set TAM with the theory and maintenance supervision entries.

TABLE 5-4-X. Direct task set table assignment matrix.

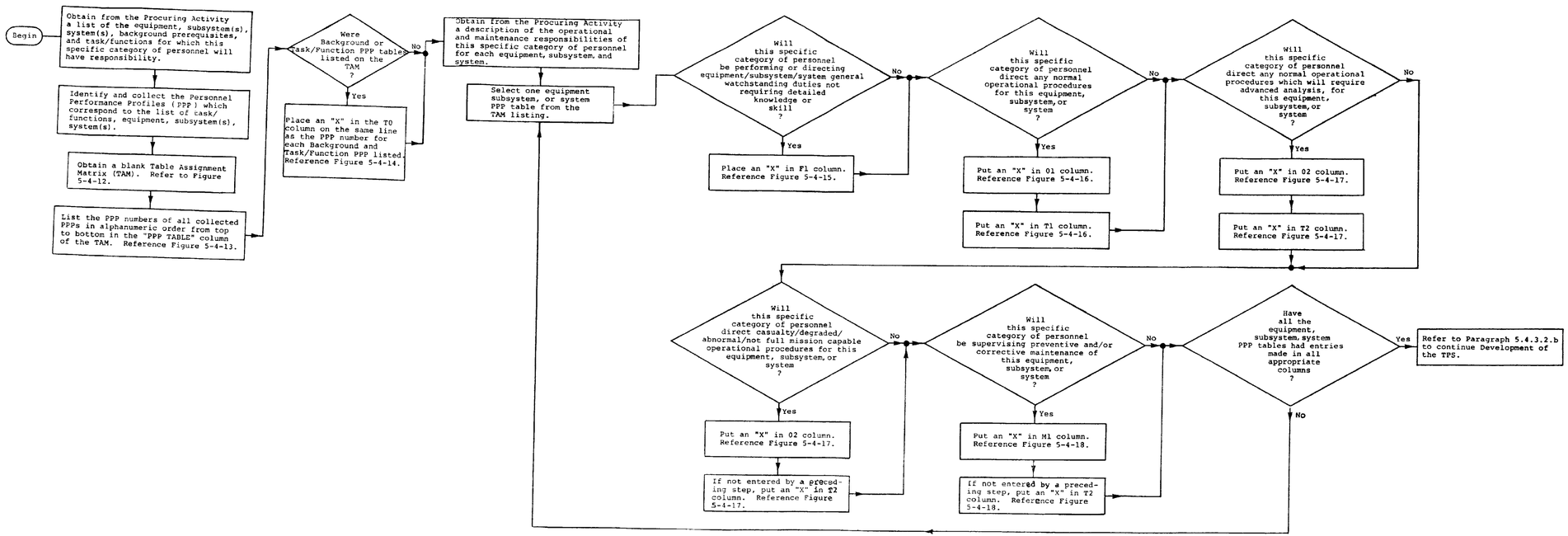


TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT										
PPP TABLE	LEVEL									
	TO	F1	T1	T2	T3	01	02	P1	C1	C2
	TO	F1	T1	T2	T3	01	02	P1	C1	C2

TOS ASSIGNMENT (Cont)										
PPP TABLE	LEVEL									
	TO	F1	T1	T2	T3	01	02	P1	C1	C2
	TO	F1	T1	T2	T3	01	02	P1	C1	C2

SH132031559

FIGURE 5-4-19. Example Perform task set TAM (blank)

TABLE ASSIGNMENT MATRIX

PPP TABLE	TOS ASSIGNMENT LEVEL									
	TO	F1	T1	T2	T3	O1	O2	P1	C1	C2
002										
A074										
B076										
D542										
D547										
D548										
H121										
H127										
3F12										
3L01										
3Q10										

PPP TABLE	TOS ASSIGNMENT (Cont) LEVEL									
	TO	F1	T1	T2	T3	O1	O2	P1	C1	C2

SH1320315 60

FIGURE 5-4-20. Example Perform task set TAM with PPP tables.

TABLE ASSIGNMENT MATRIX

PPP TABLE	TOS ASSIGNMENT LEVEL									
	TO	F1	T1	T2	T3	O1	O2	P1	C1	C2
002	X									
A074	X									
B076	X									
D542										
D547										
D548										
H121										
H127										
3F12										
3L01										
3Q10										

PPP TABLE	TOS ASSIGNMENT (Cont) LEVEL									
	TO	F1	T1	T2	T3	O1	O2	P1	C1	C2

SH1320315 61

FIGURE 5-4-21. Example perform task set TAM with background and task/function entries.

TABLE ASSIGNMENT MATRIX

PPP TABLE	TOS ASSIGNMENT LEVEL									
	TO	F1	T1	T2	T3	01	02	P1	C1	C2
002	X									
A074	X									
B076	X									
D542		X								
D547		X								
D548		X								
H121										
H127										
3F12		X								
3L01		X								
3Q10										

PPP TABLE	TOS ASSIGNMENT (Cont) LEVEL									
	TO	F1	T1	T2	T3	01	02	P1	C1	C2

SH132031562

FIGURE 5-4-22. Example perform task set TAM with the familiarization entries.

TABLE ASSIGNMENT MATRIX

PPP TABLE	TOS ASSIGNMENT LEVEL									
	TO	F1	T1	T2	T3	01	02	P1	C1	C2
002	X									
A074	X									
B076	X									
D542		X	X			X				
D547		X								
D548		X								
H121			X			X				
H127			X			X				
3F12		X								
3L01		X	X			X				
3Q10			X			X				

PPP TABLE	TOS ASSIGNMENT (Cont) LEVEL									
	TO	F1	T1	T2	T3	01	02	P1	C1	C2

SH132031563

FIGURE 5-4-23. Example perform task set TAM with the theory and normal operation entries.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT

PPP TABLE	LEVEL									
	TO	F1	T1	T2	T3	01	02	P1	C1	C2
002	X									
A074	X									
B076	X									
D542		X	X	X		X	X			
D547		X								
D548		X								
H121			X			X				
H127			X			X				
3F12		X								
3L01		X	X			X				
3Q10			X	X		X	X			

TOS ASSIGNMENT (Cont)

PPP TABLE	LEVEL									
	TO	F1	T1	T2	T3	01	02	P1	C1	C2

SH132031564

FIGURE 5-4-24. Example perform task set TAM with the theory and all operation entries.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT

PPP TABLE	LEVEL									
	TO	F1	T1	T2	T3	01	02	P1	C1	C2
002	X									
A074	X									
B076	X									
D542		X	X	X		X	X	X		
D547		X								
D548		X								
H121			X	X		X		X		
H127			X			X				
3F12		X								
3L01		X	X	X		X		X		
3Q10			X	X		X	X	X		

TOS ASSIGNMENT (Cont)

PPP TABLE	LEVEL									
	TO	F1	T1	T2	T3	01	02	P1	C1	C2

SH132031565

FIGURE 5-4-25. Example perform task set TAM with theory preventive maintenance entries.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT										
PPP TABLE	LEVEL									
	TO	F1	T1	T2	T3	O1	O2	P1	C1	C2
002	X									
A074	X									
B076	X									
D542		X	X	X		X	X	X	X	
D547		X								
D548		X								
H121			X	X		X		X		
H127			X			X				
3F12		X								
3L01		X	X	X		X		X	X	
3Q10			X	X		X	X	X		

TOS ASSIGNMENT (Cont)										
PPP TABLE	LEVEL									
	TO	F1	T1	T2	T3	O1	O2	P1	C1	C2

SH132031566

FIGURE 5-4-26. Example perform task set TAM with theory and basic corrective maintenance.

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT										
PPP TABLE	LEVEL									
	TO	F1	T1	T2	T3	O1	O2	P1	C1	C2
002	X									
A074	X									
B076	X									
D542		X	X	X	X	X	X	X	X	X
D547		X								
D548		X								
H121			X	X		X		X		
H127			X			X				
3F12		X								
3L01		X	X	X		X		X	X	
3Q10			X	X		X	X	X		

TOS ASSIGNMENT (Cont)										
PPP TABLE	LEVEL									
	TO	F1	T1	T2	T3	O1	O2	P1	C1	C2

SH132031567

FIGURE 5-4-27. Example perform task set TAM with theory all corrective maintenance.

Training Path Chart for the CONSTRUCTION MECHANIC (NEC CM-XXXX) (Page 1 of 2)

TABLE ASSIGNMENT MATRIX

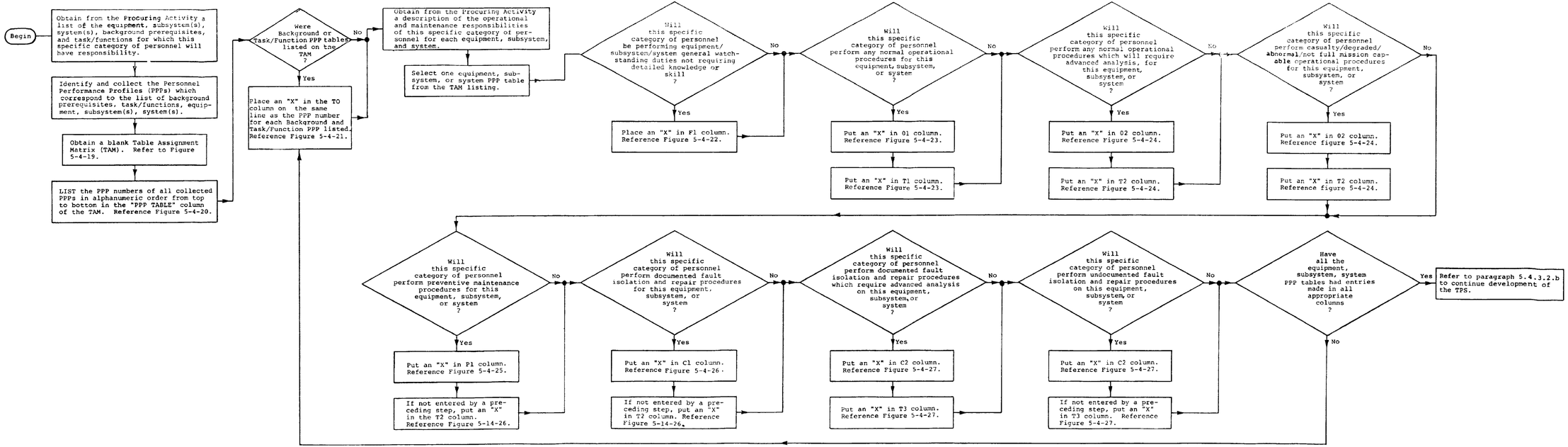
TPC-CM1

PPP TABLE	TOS ASSIGNMENT LEVEL									
	TD	F1	T1	T2	T3	O1	O2	P1	C1	C2
001	X									
002	X									
003	X									
004	X									
005	X									
A009	X									
A010	X									
A017	X									
A048	X									
A074	X									
B076	X									
D542		X	X	X	X	X	X	X	X	X
D547		X								
D548		X								
H121			X	X		X		X		
H127			X	X		X				
3F12		X	X	X						
3L01		X	X	X		X		X	X	
3Q10			X	X		X	X	X		
	TD	F1	T1	T2	T3	O1	O2	P1	C1	C2

SH132031568

FIGURE 5-4-28. Example completed TAM.

TABLE 5-4-XI. Perform task set table assignment matrix.



(c) PPP table index development. The PPP table index is a listing of all PPP tables covered within a particular TPC. The PPP table index lists the PPP tables by number, as they appear in the TAM, with the title of the PPP table provided to the right of each number. Refer to figure 5-4-29 when developing a PPP table index.

Step 1. Obtain a copy of the TAM in use for this TPS.

Step 2. List the PPPs contained in the TAM on the left side of the page in alphanumeric sequence.

Step 3. Write the PPP table title adjacent to the PPP table number. Clearly identify each system, subsystem, or equipment.

Step 4. Identify Background PPPs with the lead- in statement , “Background knowledge and skill ... “.

Step 5. Identify task/function PPPs with the lead-in statement, “task/function knowledge and skill ... “.

Step 6. The completed PPP table index shall be incorporated onto the TAC (see figure 5-4-41).

Step 7. Continue the development of the TPS, 5.4.3.2.(d).

PPP TABLE INDEX

002	Background Knowledge and Skill - Basic Electricity
A074	Background Knowledge and Skill - Bearings and Lubrication
B076	Task/Function Knowledge and Skill - Motorized Vehicles Driving Requirements
D542	Commercial Utility Cargo Vehicle (TYPE A), Utility
D547	Mobile Construction Battalion Vehicles - Deployed
D548	General Utility Vehicles
H121	Versa-Mill, Portable
H127	Fuel Gas Cutting, Welding, and Soldering equipment
3F12	Electric Motor
3L01	Diesel Engine
3Q10	Fire Extinguishers

FIGURE 5-4-29. Example PPP table index.

(d) TAC development. This portion of the TPS is developed after the TAM and TLA are developed. The prerequisite information for development of TACS consists of the following:

(1) A complete set of applicable PPP tables.
(2) A complete list of curricula identification information,
(3) The TAM and the applicable TLA drafts.

A separate TAC is prepared for each category of personnel; therefore, each TPC has a unique TAC. The TAC development is addressed after the TLA development discussion.

5.4.3.3 TLA development. The TLA is a tabular listing in PPP line item number sequence and is discussed in the following paragraphs. It imposes training levels for the PPP line item.

(a) Each TLA contains a columnar presentation of the following elements:

(1) PPP table numbers
(2) PPP item numbers
(3) TOS codes
(4) PPP item number to TOS code applicability indicators

(b) Development of the TIA is similar to that of the TAM except that a separate TLA is prepared for each PPP. The developer of a TLA must be familiar with the TOS Set that applies to the category of Personnel for which the TLA is being developed. Knowledge of the relationship of one TOS to another is required, The TOS of a task set must be accurately assigned in order to adequately prepare personnel to operate and maintain the designated equipment, subsystem or system or to perform the assigned task/function.

(c) The prerequisite information for the development of a TLA consists Of the PPP and the appropriate TOS task set. The TAM is also used.

(d) A PPP line item or subitem may support more than one skill and therefore have an indicator in more than one knowledge TOS column. For example, since all the 1-5-X line items and subitems support operation, no indicators should appear in the T3 column for the 1-5-X line item. For similar reasons no indicators should appear in the T1 column for a 1-6-X line item or subitem.

(e) The documentation line item, 1-7-1, is limited to the F1/T1 TOS coverage. This line item provides for the explanation of how a document is made up, what the sections are, and how and when these are used. This does not limit the use of any publication during operation or maintenance training. When teaching operation or maintenance, the instructor does not teach the document, but teaches the system, subsystem, or equipment operation procedures or maintenance techniques and how the document relates to operation and maintenance.

(f) When developing a TLA, the definitions in table 5-4-XII, must be applied when assigning the appropriate indicators:

(g) Refer to figures 5-4-30 through 5-4-33, 5-4-34 through 5-4-36, and tables 5-4-XIII, 5-4-XIV, as appropriate to complete the following steps:

Step 1. Write the heading that provides a full definitive title and code which relates the TLA and TPC elements for this particular personnel group to include NEC/NOBC.

Step 2. Write in the PPP table number and the appropriate line items and subitems.

Step 3. Identify the skill training requirements and insert the appropriate indicators.

Step 4. Identify the supporting knowledge training requirements and insert the appropriate indicators.

(h) Final TLA organization is to place the system, subsystem, or equipment TLA information into the proper format. Refer to figure 5-4-37 for an example of a completed system, subsystem, or equipment TLA.

(i) Final TLA organization is to place the background or task/function TLA information into the proper format. Refer to figure 5-4-38 for an example of a completed background and figure 5-4-39 for an example of a completed task/function TLA.

TABLE 5-4-XII. Training level assignment applicability indicators.

R - Replacement/Conversion/ILM training course
A - Advanced training course
B - Both replacement and advanced training course
0 - Training hardware does not exist at the appropriate facility and operational constraints preclude on board training.
1 - Experience is the only means to accomplish the specified training level.

TABLE 5-4-XII. Training level assignment applicability indicators - Condinued.

2 -	Training hardware does not exist to accomplish training at the appropriate facility and on board training is permitted.
3 -	Training hardware exists to accomplish training at a facility, on board training is permitted and the training is accomplished on board.
4 -	Training received by the individual outside of the cognizant training program.
5 -	Background training received by the individual as a part of the Navy System Training Program.

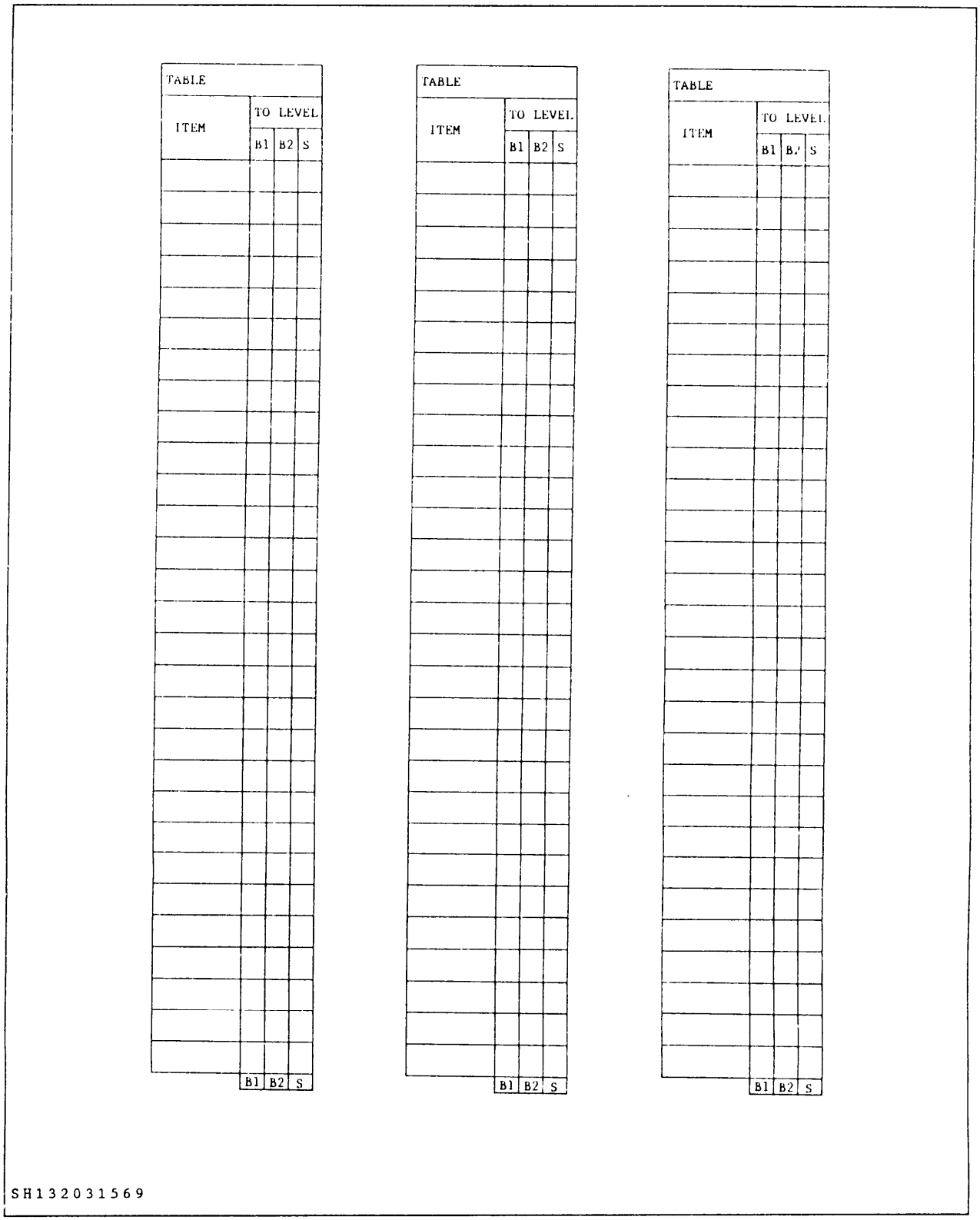


FIGURE 5-4-30. Example background or task/function TLA (blank).

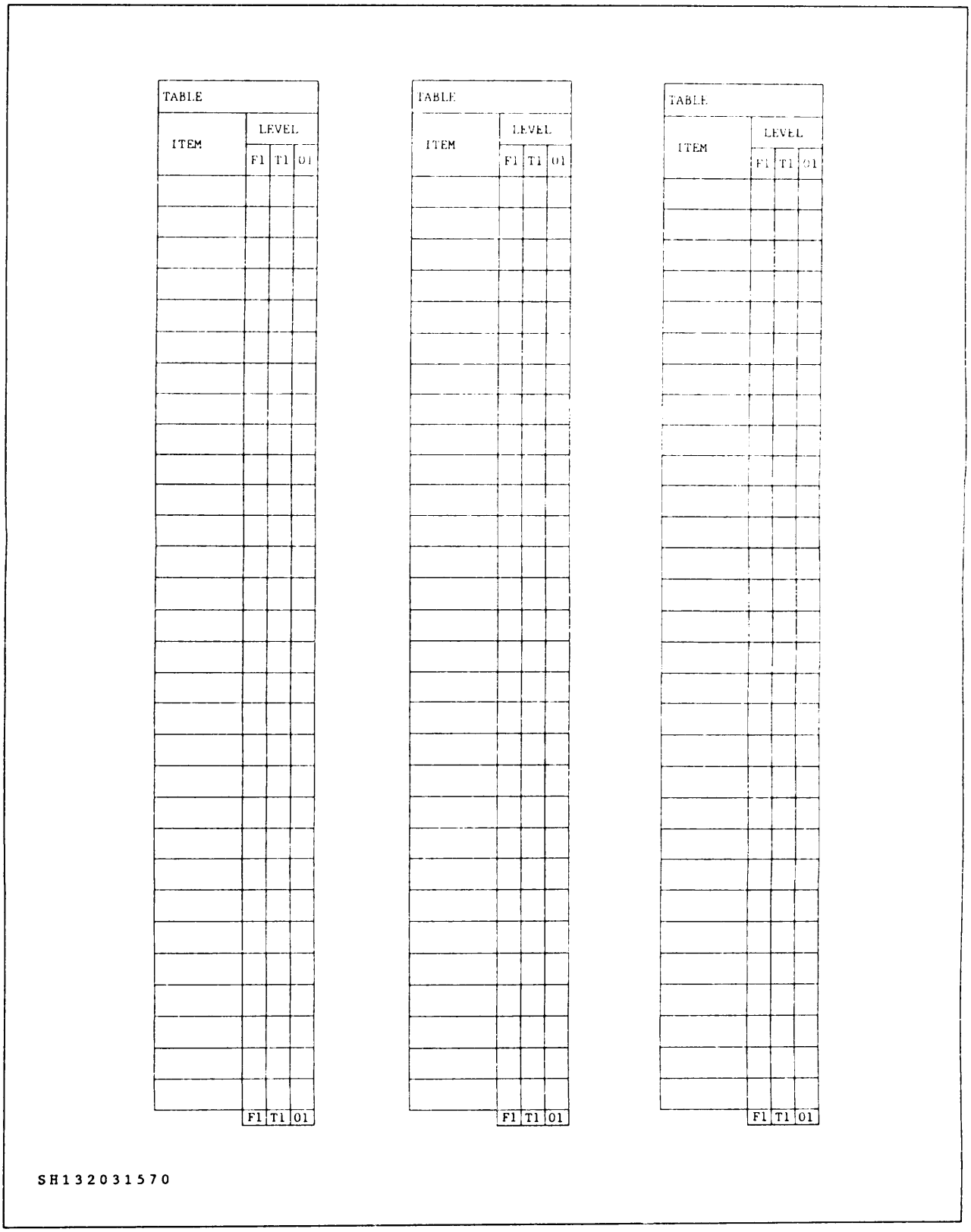


FIGURE 5-4-31. Example coordinate task set TLA (blank).

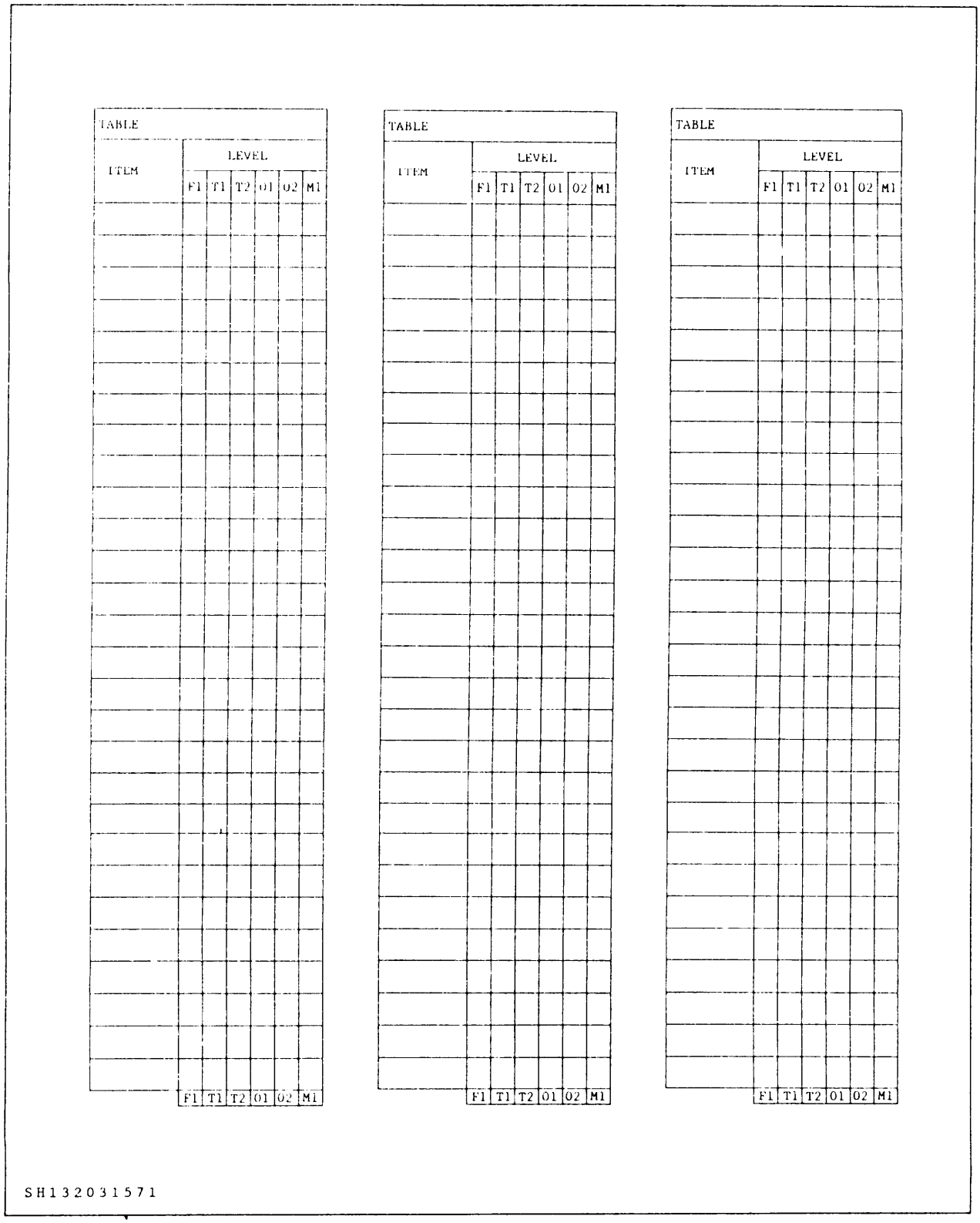


FIGURE 5-4-32. Example direct task set TLA (blank).

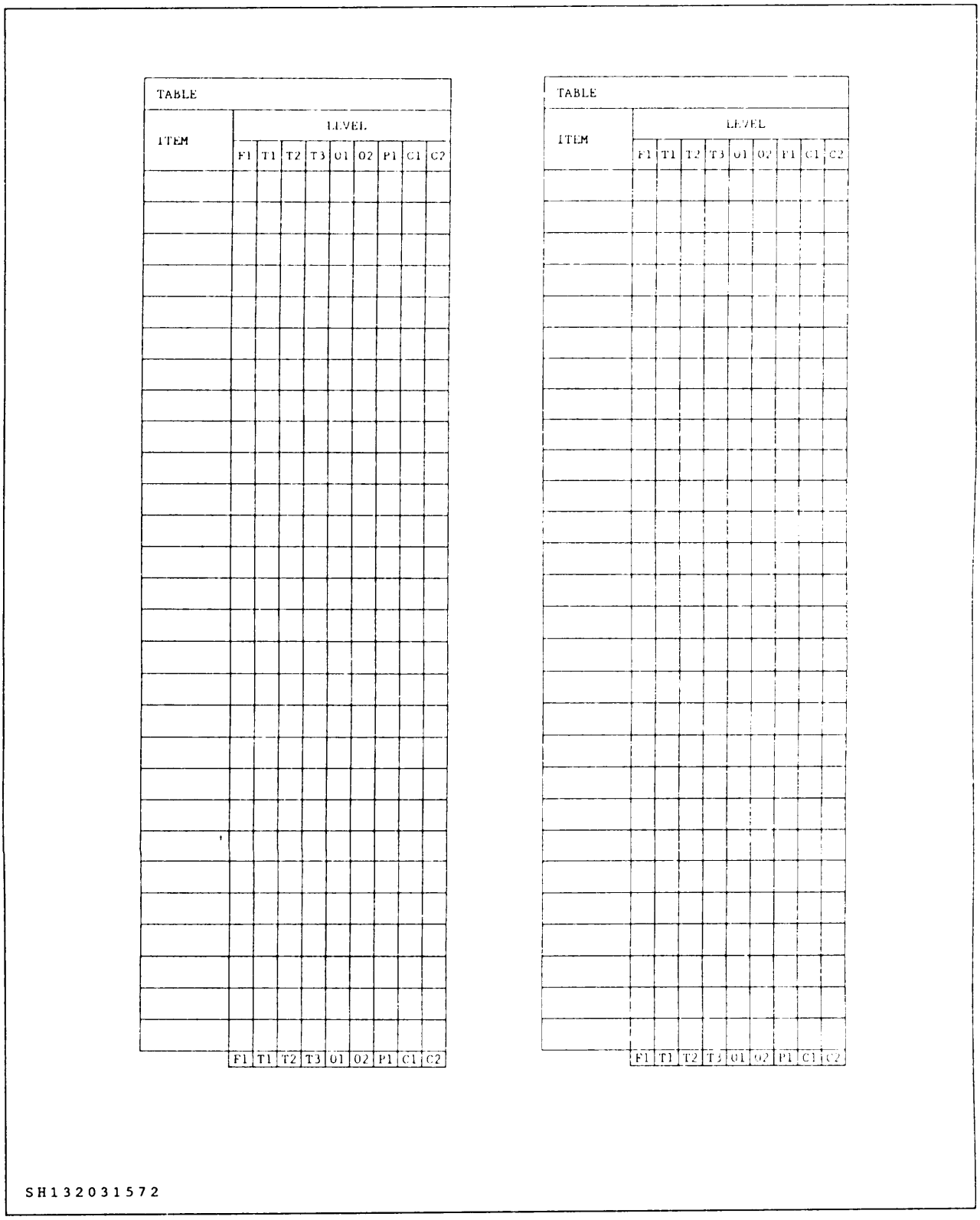


FIGURE 5-4-33. Example perform task set TLA (blank).

TRAINING LEVEL ASSIGNMENT FOR THE
CONSTRUCTION MECHANIC (NEC CM-XXXX) TLA-CM1

TABLE D542

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
	F1	T1	T2	T3	O1	O2	P1	C1	C2

TABLE

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
2-1-1a									
2-1-1b									
2-1-1c									
2-1-2									
2-1-3									
2-1-4									
2-1-5									
2-1-6									
2-2-1									
2-2-2									
2-2-3									
2-2-4									
2-2-5									
2-2-6									
2-2-7									
2-2-8									
2-2-9									
2-2-10									
	F1	T1	T2	T3	O1	O2	P1	C1	C2

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FIGURE 5-4-34. Example TLA (All the skill PPP line items and subitems have been listed).

TRAINING LEVEL ASSIGNMENT FOR THE
CONSTRUCTION MECHANIC (NEC CM-XXXX) TLA-CM1

TABLE D542

ITEM	LEVEL								
	F1	T1	T2	T3	01	02	P1	C1	C2
	F1	T1	T2	T3	01	02	P1	C1	C2

TABLE

ITEM	LEVEL								
	F1	T1	T2	T3	01	02	P1	C1	C2
2-1-1a					R				
2-1-1b					R				
2-1-1c					R	R			
2-1-2					R	R			
2-1-3						R			
2-1-4					R	R			
2-1-5					R				
2-1-6					R	R			
2-2-1							R	B	A
2-2-2							R		
2-2-3							R	B	
2-2-4							R	B	
2-2-5							R	B	A
2-2-6								B	
2-2-7									A
2-2-8								B	
2-2-9								B	
2-2-10							R	B	A
	F1	T1	T2	T3	01	02	P1	C1	C2

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FIGURE 5-4-35. Example TLA (All skill PPP items and subitems have the applicability indicators placed in the appropriate TOS columns).

TRAINING LEVEL ASSIGNMENT FOR THE
CONSTRUCTION MECHANIC (NEC CM-XXXX) TLA-CM 1

TABLE D542

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
1-1-1	R	R							
1-1-2a	R	R							
b	R	R							
c	R	R							
d	R	R							
e	R	R							
f	R	R							
g	R	R							
h	R	R							
i	R	R							
j	R	R							
k	R	R							
1-1-3	R	R	B	A					
1-1-4	R	R							
1-1-5	R	R							
1-2-1a	R	R	B	A					
b	R	R	B	A					
c	R	R	B	A					
d	R	R	B	A					
e	R	R	B	A					
f	R	R	B	A					
g	R	R	B	A					
h	R	R	B						
i	R	R	B						
j	R	R	B						
k	R	R	B						
1-2-2a	R	R	B						
b	R	R	B						
c	R	R	B						
d	R	R	B						
	F1	T1	T2	T3	O1	O2	P1	C1	C2

TABLE D542 (Cont)

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
e	R	R	B						
f	R	R	B	A					
g	R	R	B						
h	R	R	B	A					
i	R	R	B						
j	R	R	B						
k	R	R	B						
l	R	R	B						
m	R	R	B						
n	R	R	B						
o	R	R	B						
p	R	R	B						
q	R	R	B						
r	R	R	B						
s	R	R	B						
1-3-1a		R	B	A					
b		R	B	A					
c		R	B	A					
d		R	B	A					
e		R	B	A					
f		R	B	A					
g		R	B	A					
h		R	B						
i		R	B						
j		R	B						
k		R	B						
1-3-2a		R	B						
b		R	B						
c		R	B						
d		R	B						
	F1	T1	T2	T3	O1	O2	P1	C1	C2

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FIGURE 5-4-36. Example TLA (All knowledge items and subitems have the applicability indicators placed in the appropriate TOS columns). (Sheet 1 of 3)

TRAINING LEVEL ASSIGNMENT FOR THE
CONSTRUCTION MECHANIC (NEC CM-XXXX) TLA-CM 1

TABLE D542 (Cont)

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
e		R	B						
f		R	B	A					
g		R	B						
h		R	B	A					
i		R	B						
j		R	B						
k		R	B						
l		R	B						
m		R	B						
n		R	B						
o		R	B						
p		R	B						
q		R	B						
r		R	B						
s		R	B						
1-4-1a		R	B						
b		R	B						
c		R	B						
d		R	B						
e		R	B						
f		R	B						
g		R	B						
h		R	B						
i		R	B						
j		R	B						
k		R	B						
l		R	B						
m		R	B						
n		R	B						
o		R							
	F1	T1	T2	T3	O1	O2	P1	C1	C2

TABLE D542 (Cont)

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
p		R							
q		R	B						
1-4-2a		R	B						
b		R	B						
c		R	B						
d		R	B						
e(1)		R	B						
e(2)		R	B						
1-5-1		R	R						
1-5-2a		R							
a(1)		R							
b		R							
c		R	R						
1-5-3		R	R						
1-5-4			R						
1-5-5		R	R						
1-5-6		R							
1-5-7		R	R						
1-6-1a			R						
a(1)			R						
a(2)			R						
a(2)(a)			R						
a(2)(b)			R						
a(2)(c)			R						
a(2)(d)			R						
b			B	A					
b(1)			B	A					
b(2)			B	A					
b(2)(a)			B	A					
b(2)(b)			B	A					
	F1	T1	T2	T3	O1	O2	P1	C1	C2

FIGURE 5-4-36. Example TLA (All knowledge items and subitems have the applicability indicators placed in the appropriate TOS columns). (Sheet 2 of 3)

TRAINING LEVEL ASSIGNMENT FOR THE
CONSTRUCTION MECHANIC (NEC CM-XXXX) TLA-CM 1

TABLE D542 (Cont)

ITEM	LEVEL							
	P1	T1	T2	T3	O1	O2	P1	C1	C2
1-6-3			B	A					
1-6-4			B	A					
1-6-5			B	A					
1-6-6			B	A					
1-6-7			B						
1-6-8				A					
1-6-9			B	A					
1-6-10			B	A					
1-6-11			B	A					
1-7-1	R	R							
	P1	T1	T2	T3	O1	O2	P1	C1	C2

TABLE

ITEM	LEVEL							
	P1	T1	T2	T3	O1	O2	P1	C1	C2
	P1	T1	T2	T3	O1	O2	P1	C1	C2

FIGURE 5-4-36. Example TLA (All knowledge items and subitems have the applicability indicators placed in the appropriate TOS columns). (Sheet 3 of 3)

TRAINING LEVEL ASSIGNMENT FOR THE CONSTRUCTION MECHANIC (NEC CM-XXXX) TLA-CM 1

TABLE D542

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
1-1-1	R	R							
1-1-2	R	R							
1-1-3	R	R	B	A					
1-1-4	R	R							
1-1-5	R	R							
1-2-1a									
thru g	R	R	B	A					
1-2-1h									
thru k	R	R	B						
1-2-2a									
thru e	R	R	B						
1-2-2f	R	R	B	A					
1-2-2g	R	R	B						
1-2-2h	R	R	B	A					
1-2-2i									
thru s	R	R	B						
1-3-1a									
thru g		R	B	A					
1-3-1h									
thru k		R	B						
1-3-2a									
thru e		R	B						
1-3-2f		R	B	A					
1-3-2g		R	B						
1-3-2h		R	B	A					
1-3-2i									
thru s		R	B						
1-4-1a									
thru n		R	B						
1-4-1o		R							
	F1	T1	T2	T3	O1	O2	P1	C1	C2

TABLE D542 (Cont)

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
1-4-1p		R							
1-4-1q		R	B						
1-4-2		R	B						
1-5-1		R	R						
1-5-2a		R							
1-5-2b		R							
1-5-2c		R	R						
1-5-3		R	R						
1-5-4			R						
1-5-5		R	R						
1-5-6		R							
1-5-7		R	R						
1-6-1a			R						
1-6-1b			B	A					
1-6-2			B	A					
1-6-3			R						
1-6-4			B	A					
1-6-5			B	A					
1-6-6			B	A					
1-6-7			B						
1-6-8				A					
1-6-9			B	A					
1-6-10			B	A					
1-6-11			B	A					
1-7-1	R	R							
2-1-1a					R				
2-1-1b					R				
2-1-1c					R	R			
2-1-2					R	R			
2-1-3						R			
	F1	T1	T2	T3	O1	O2	P1	C1	C2

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FIGURE 5-4-37. Example completed TLA system, subsystem, or equipment. (Sheet 1 of 2)

TRAINING LEVEL ASSIGNMENT FOR THE
CONSTRUCTION MECHANIC (NEC CM-XXXX) TLA-CM 1

TABLE D542 (Cont)

ITEM	LEVEL								
	F1	T1	T2	T3	01	02	P1	C1	C2
2-1-4					R	R			
2-1-5					R				
2-1-6					R	R			
2-2-1							R	B	A
2-2-2							R		
2-2-3							R	B	
2-2-4							R	B	
2-2-5							R	B	A
2-2-6								B	
2-2-7									A
2-2-8								B	
2-2-9								B	
2-2-10							R	B	A
	F1	T1	T2	T3	01	02	P1	C1	C2

TABLE

ITEM	LEVEL								
	F1	T1	T2	T3	01	02	P1	C1	C2
	F1	T1	T2	T3	01	02	P1	C1	C2

FIGURE 5-4-37. Example completed TLA system, subsystem, or equipment.
(Sheet 2 of 2)

TRAINING LEVEL ASSIGNMENT FOR THE
CONSTRUCTION MECHANIC (NEC CM-XXXX) TLA-CM1

TABLE B076

ITEM	TO LEVEL		
	B1	B2	S
1-1-1		R	
1-1-2		R	
1-1-3	R	R	
1-1-4		R	
1-1-5		R	
1-1-6		R	
1-1-7		R	
1-1-8		R	
1-1-9		R	
1-2-1		R	
1-2-2		R	
1-2-3		R	
1-2-4		R	
1-2-5		R	
1-2-6	R		
1-2-7	R	R	
1-2-8		R	
1-2-9		R	
1-2-10		R	
2-1-1			R
2-1-2a			
thru j			R
2-1-2k			
thru o			1
2-1-3			R
2-1-4a			
thru c			R
2-1-4d			
thru g			1
2-2-1			R
	B1	B2	S

TABLE B076 (Cont)

ITEM	TO LEVEL		
	B1	B2	S
2-2-2			R
2-2-3a			R
2-2-3b			1
2-2-3c			R
2-2-3d			R
2-2-3e			1
2-2-3f			1
2-2-4			R
2-2-5			R
2-2-6a			R
2-2-6b			1
2-2-6c			R
2-2-6d			R
2-2-6e			1
2-2-6f			1
2-2-7			R
2-2-8			R
	B1	B2	S

TABLE A074

ITEM	TO LEVEL		
	B1	B2	S
1-1	S		
1-2		S	
1-3		S	
1-4		S	
1-5		S	
1-6		S	
1-7		S	
1-8		S	
1-9	S	S	
1-10	S	S	
1-11	S	S	
1-13		S	
1-14		S	
1-15		S	
1-16		S	
1-17	S	S	
1-18		S	
1-19		S	
1-20	S	S	
1-21		S	
1-22		S	
1-23		S	
1-24		S	
1-25		S	
1-26		S	
1-27		S	
1-28		S	
2-2			S
2-3			S
2-4			S
	B1	B2	S

SH132031577

FIGURE 5-4-38. Example completed background TLA.

TRAINING LEVEL ASSIGNMENT FOR THE
CONSTRUCTION MECHANIC (NEC CM-XXXX) TLA-CM1

TABLE B076

ITEM	TO LEVEL		
	B1	B2	S
1-1-1		R	
1-1-2		R	
1-1-3	R	R	
1-1-4		R	
1-1-5		R	
1-1-6		R	
1-1-7		R	
1-1-8		R	
1-1-9		R	
1-2-1		R	
1-2-2		R	
1-2-3		R	
1-2-4		R	
1-2-5		R	
1-2-6	R		
1-2-7	R	R	
1-2-8		R	
1-2-9		R	
1-2-10		R	
2-1-1			R
2-1-2a			
thru j			R
2-1-2k			
thru o			1
2-1-3			R
2-1-4a			
thru c			R
2-1-4d			
thru g			1
2-2-1			R
	B1	B2	S

TABLE B076 (Cont)

ITEM	TO LEVEL		
	B1	B2	S
2-2-2			R
2-2-3a			R
2-2-3b			1
2-2-3c			R
2-2-3d			R
2-2-3e			1
2-2-3f			1
2-2-4			R
2-2-5			R
2-2-6a			R
2-2-6b			1
2-2-6c			R
2-2-6d			R
2-2-6e			1
2-2-6f			1
2-2-7			R
2-2-8			R
	B1	B2	S

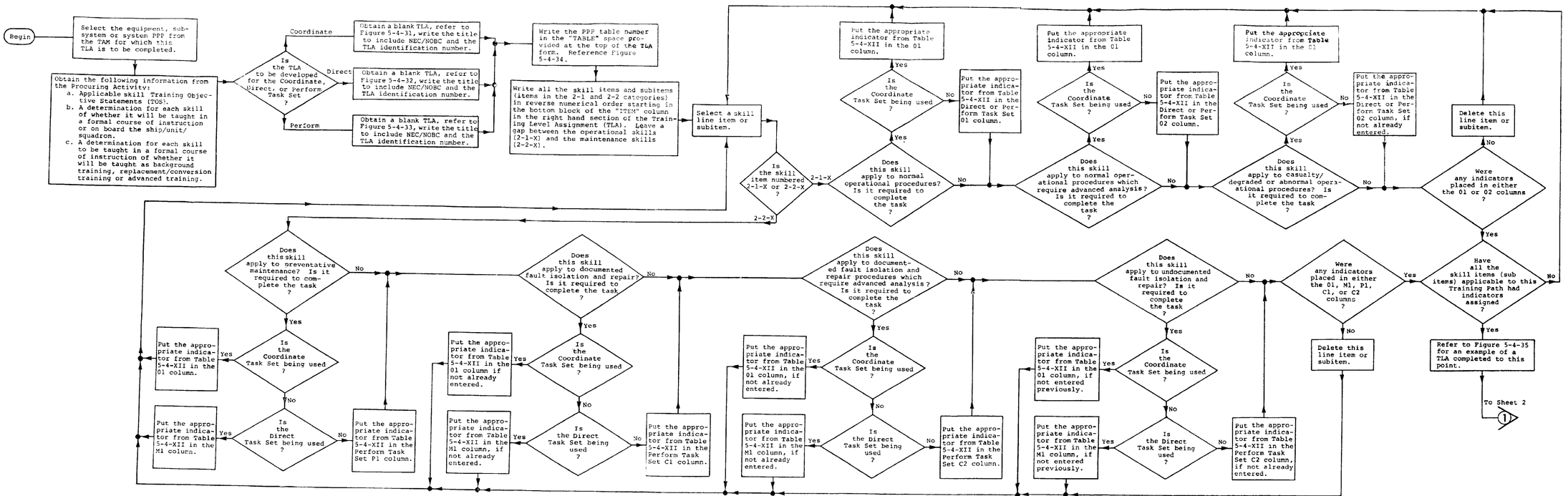
TABLE A074

ITEM	TO LEVEL		
	B1	B2	S
1-1	5		
1-2		5	
1-3		5	
1-4		5	
1-5		5	
1-6		5	
1-7		5	
1-8		5	
1-9	5	5	
1-10	5	5	
1-11	5	5	
1-13		5	
1-14		5	
1-15		5	
1-16		5	
1-17	5	5	
1-18		5	
1-19		5	
1-20	5	5	
1-21		5	
1-22		5	
1-23		5	
1-24		5	
1-25		5	
1-26		5	
1-27		5	
1-28		5	
2-2			5
2-3			5
2-4			5
	B1	B2	S

SH132031578

FIGURE 5-4-39. Example completed task/function TLA.

TABLE 5-4-XIII. Equipment, subsystem, or system TLA development. (Sheet 1 of 2)



5-4-85/86

TABLE 5-4-XIII. Equipment, subsystem, or system TLA development. (Sheet 2 of 2)

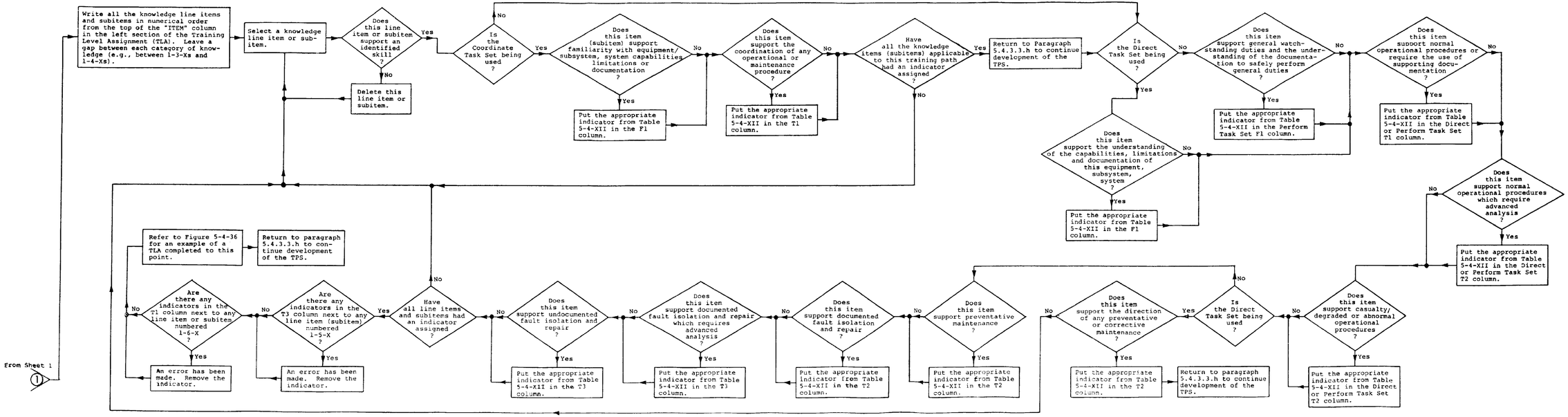
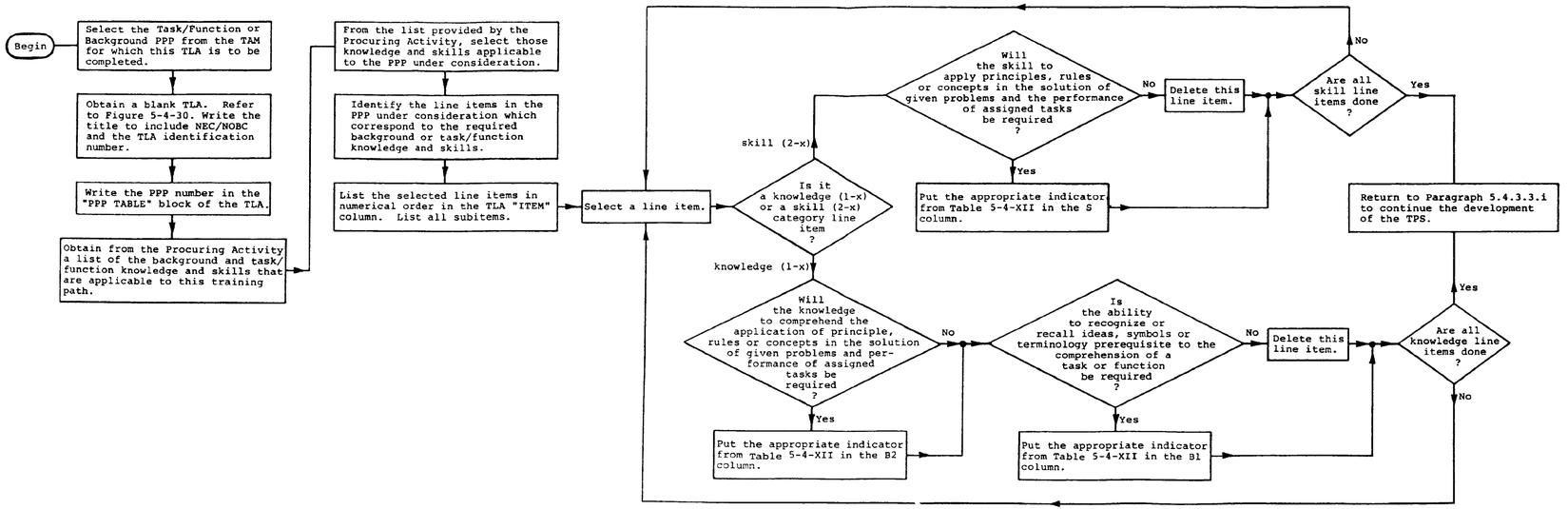


TABLE 5-4-XIV. Background or task/function TLA development.



5.4.3.4 TAC development Prerequisites. The TAC is a graphic representation of a complete training pipeline for a category of personnel.

(a) The TAC identifies the areas of knowledge and skill required. The chart may also identify entry or exit points to or from another training path (if required). The TAC "assigns" knowledge and skills as identified by appropriate PPP table numbers and TOS levels to specific training courses. These courses are then "assigned" to be taught into one of four categories.

(1) Background training. The training that provides basic technical knowledge and skills prerequisite to higher learning.

(2) Replacement/conversion training.

(a) Replacement prepares trainees for their first assignment.

(b) Replacement is formal training that provides trainees with the minimum required operational and maintenance qualifications on assigned systems, subsystems, and equipment.

(c) Conversion is formal training that is given to previously formally trained and experienced personnel to enable them to operate and maintain an updated or modified system, subsystem, or equipment. The training will be sufficient to allow the trainee to assume new operation and maintenance duties at a level which normally involves replacement training.

(3) Advanced training. The formal training that is provided after replacement/conversion training. Advanced training normally completes the TOS coverage of particular system, subsystem, or equipment knowledge and skills.

(4) On board training. This is either formal or informal training provided to shipboard personnel which covers the necessary individual operator and maintenance technical training, general watchstanding qualifications, watchstanding team training, and general military training subjects.

(b) The prerequisite information for development of a TAC consists of:

(1) A complete set of applicable PPPs
(2) The TAM
(3) The applicable TLA drafts

A separate TAC is prepared for each category of personnel, therefore each TPC has a unique TAC.

5.4.3.5 TAC development. The TAC development is discussed in the following paragraphs:

(a) During the development of a TAC the specific training requirements

for each category of personnel are identified by the TLA and divided into background, replacement/conversion, advanced, or on board categories. After the total training requirement has been divided into the four categories, as indicated by the applicability codes, each category must be divided into specific courses of instruction and on board training. The contracting activity will provide the necessary training requirements. Individual course content questions that must be answered include: Will the course be equipment specific or skill type specific? Should the courses cover many equipments to one skill level, few equipments to several skill levels or a combination? Are background or task/function requirements required?

(b) On the TAC, each section is separated by a vertical broken line. Each course of instruction or on board training segment is indicated by a block or blocks in the applicable section. Each block represents a logical unit of instruction, consisting of a block of training where interruption of learning at the end of the unit does not affect or degrade continuity, and where personnel analysis and evaluation may be conducted. The CIN and title of the particular course is placed directly above the blocks. Each block on the TAC contains the PPP table numbers and TOS levels that correspond to the system, subsystem, equipment, task/ function or background areas to be taught. Entries in an OBT block are the PPP numbers for which TOS applicability indicator codes indicating OBT requirements are applicable. The PPPs within the blocks are listed top to bottom in alphanumeric order.

(c) When more than one block is required, the blocks are arranged in a vertical manner, one block directly below the other, and connected by a single line to indicate the order of instruction (reading top to bottom). If the replacement/conversion training section requires more than a single vertical column of blocks, a second vertical column is started immediately to the right of the first column. A line is 'drawn to connect the bottom box in the first column with the top box in the second column. The courses in a category of training not linked together by prerequisites are indicated on the TAC by parallel paths. The background, replacement/conversion, advanced and on board training sections are separated from each other by a broken vertical line.

(d) In the replacement/conversion training sections the upper section is for the replacement training and the lower section is for the conversion training. Conversion training indicates that the person has been previously trained in a different training path. Conversion training from another training path is indicated on the TAC by a line which enters the chart in the appropriate portion of the conversion training section. This entry, from another training path, is indicated by labeling the line with the number of that training path.

(e) Refer to figures 5-4-40, 5-4-41, 5-4-42, and table 5-4-XV, as appropriate to complete the following steps:

Step 1. Write the heading that provides a full definitive title and code which relates this TPC element to the others and to the TM for this particular personnel group to include NEC/NOSC.

Step 2. Write the PPP table numbers under the appropriate training column.

Step 3. List the CINS and course title.

Step 4. Identify the PPP table numbers and TOS levels associated with each CIN.

Step 5. Draw the appropriate connecting lines to each block in order of teaching sequence.

(f) Final TAC organization consists of placing this information in the proper format. Refer to figure 5-4-42 for an example of a completed TAC.

5.4.3.6 TPS compilation. The final step in the development of a TPS is a compilation of the different tables, matrices, and charts. This collection of diverse elements must be carefully integrated and correlated. A change to any one element of the TPS or PPP must be carefully reviewed for impact to the other elements. Modifications may be required as a result of review comments. After modifications are completed, the final TPS is compiled incorporating all the reviewed, approved and modified elements. The TPS may be organized into one or more volumes, depending on the training program, personnel categories, and quantity of material. In general, the TPS will be assembled as follows:

a. Front Matter

(1) Cover
(2) Introduction: It must be located after the Table of Contents and only in the first volume of a multivolume TPS.

b. Individual TPCS

(1) TAM
(2) TAC

c. Individual TLAs

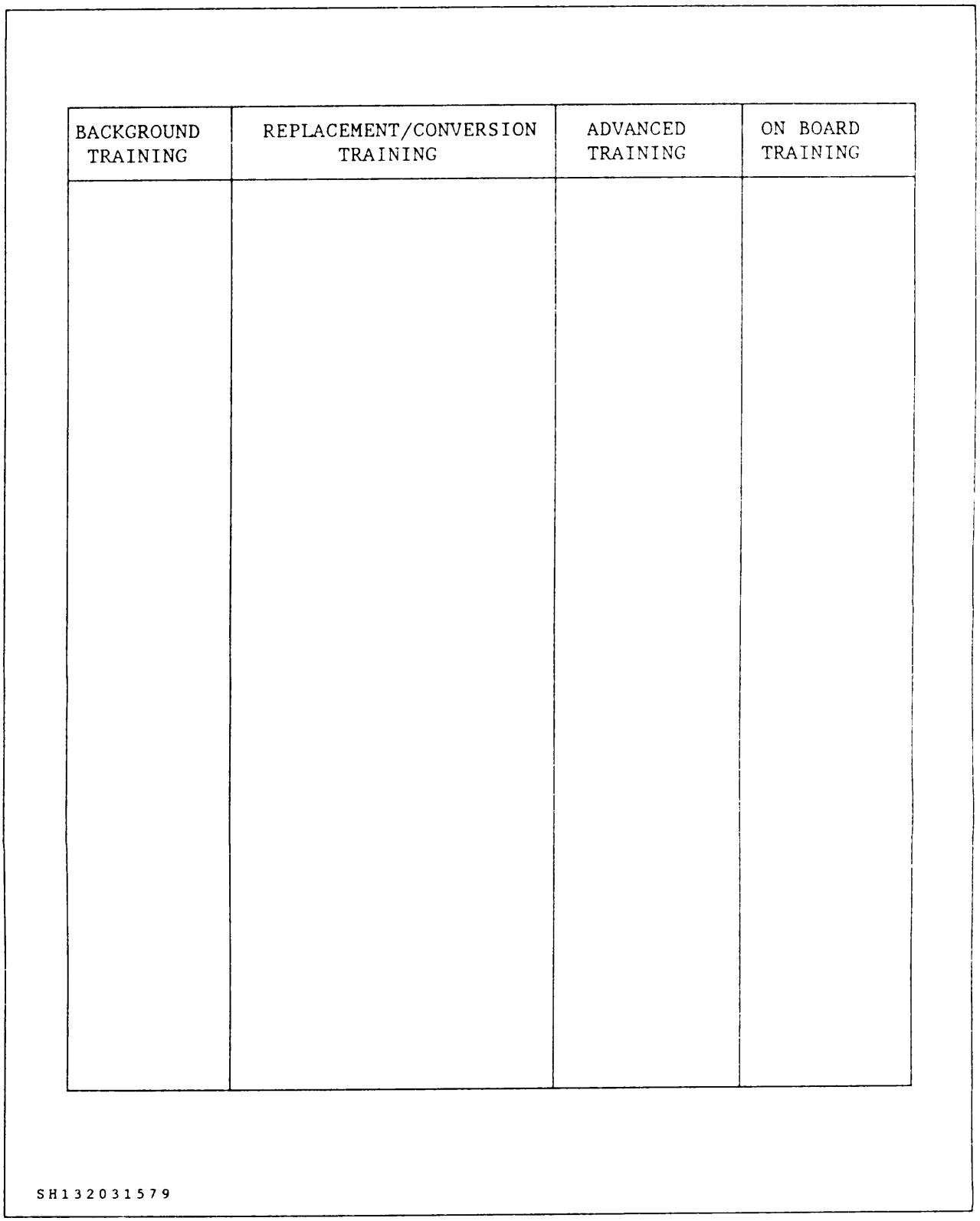


FIGURE 5-4-40. Example TAC development page format.

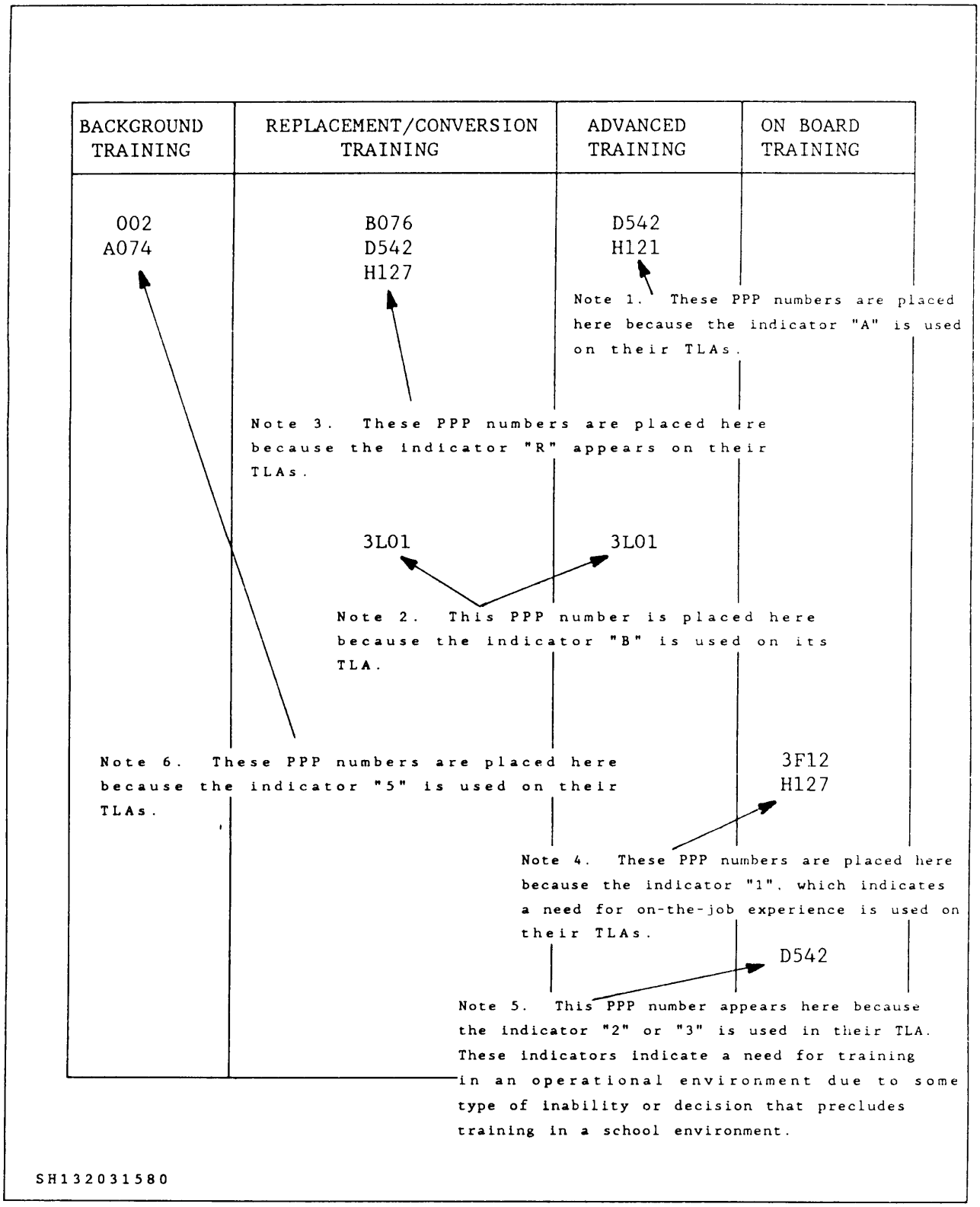


FIGURE 5-4-41. Example TAC with the PPP table numbers added.

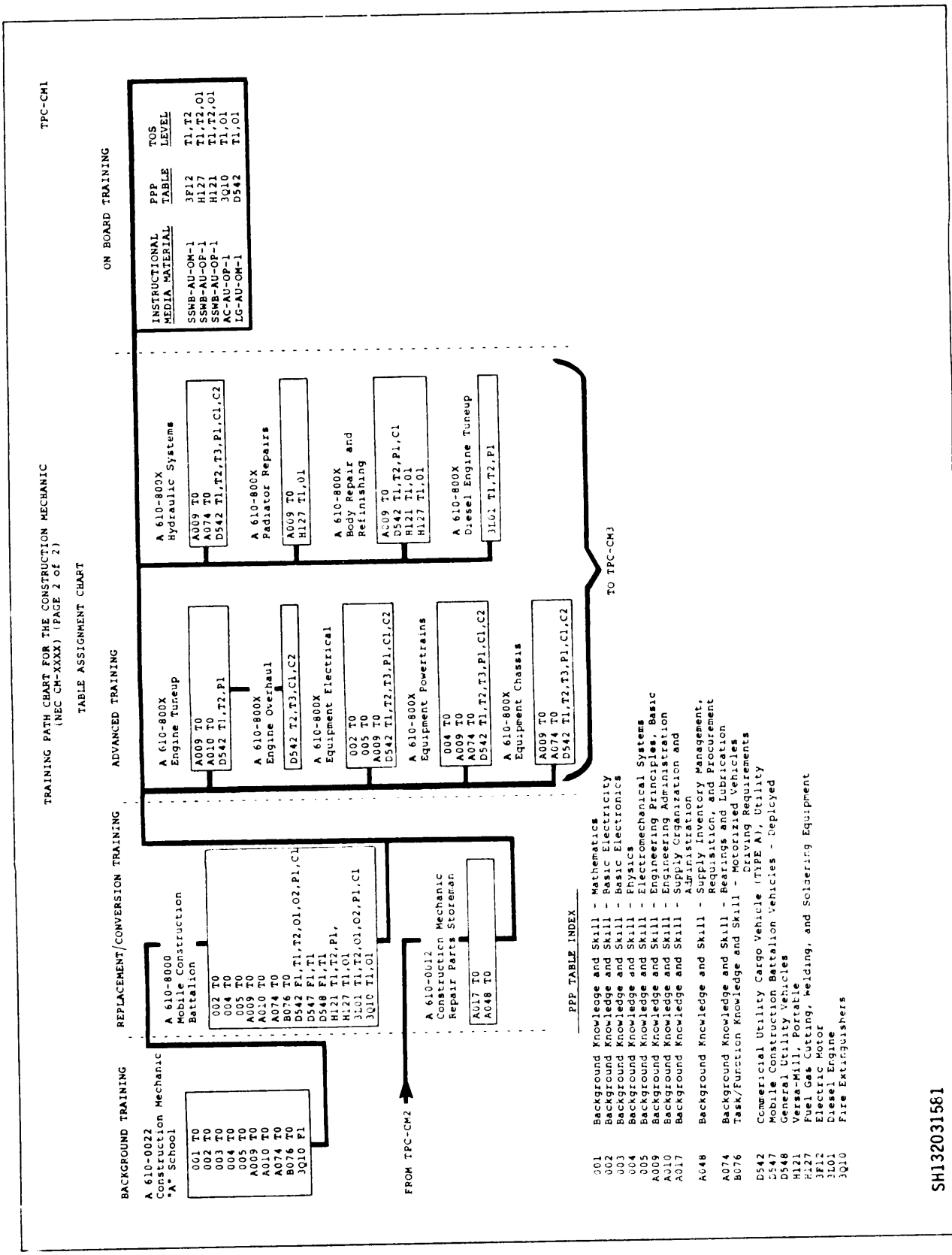
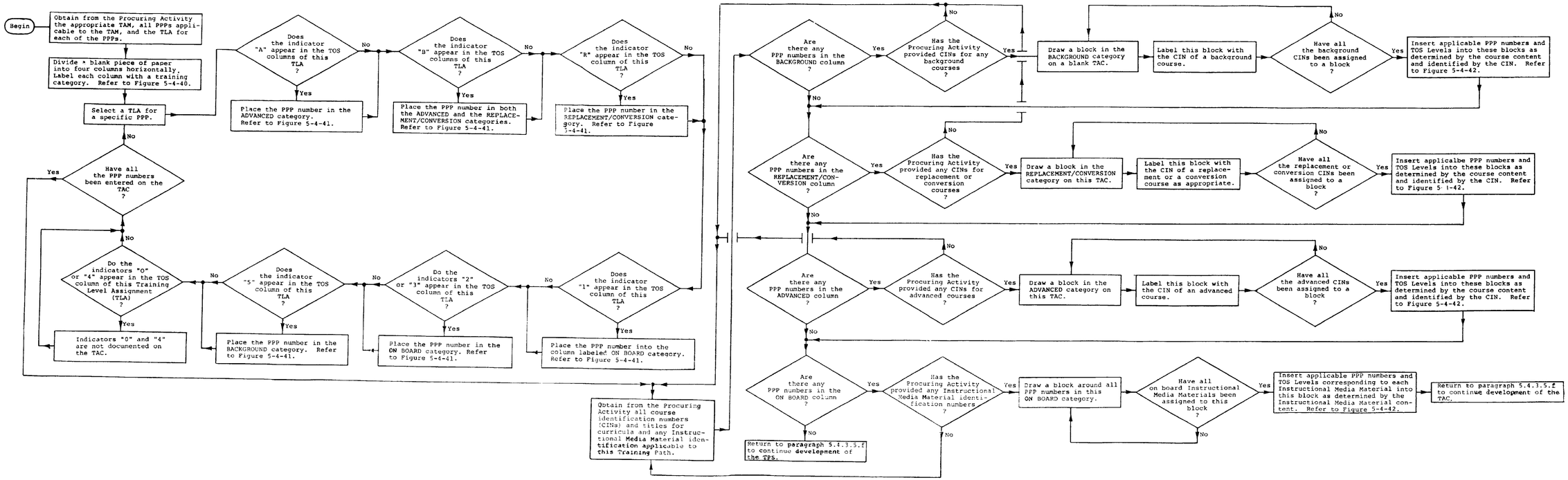


FIGURE 5-4-42. Example completed TAC.

TABLE 5-4-XV. TAC development.



5.4.3.7 Subject term (keyword)listing.

Manpower summary
Manpower planning
Personnel performance profiles
Training path system
Training program

Custodian:
Navy - SH

Preparing activity:
Navy - SH
(Project ILSS - N019

Review activities:
EC, AS

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