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# MAINTENANCE PERFORMANCE SYSTEM (ORGANIZATIONAL) HANDBOOK FOR CERTIFYING MECHANICS IN DIVISION 86 ARMOR UNITS

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The purpose of this effort is to develop the Maintenance Performance System-Organizational which is an integrated system for measuring maintenance performance, diagnosing performance problems, taking corrective actions, and providing training. MPS-O contains a component that relates to the certification of qualified maintenance mechanics. This report is a handbook which describes how the certification program will work, how it is installed and operated, and its effectiveness monitored. The relationship of the certification program to the maintenance management information system component of MPS-O is also explained.

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## TABLE OF CONTENTS



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TABLE OF CONTENTS (Continued)



## LIST OF FIGURES



## LIST OF TABLES

**The preface, introductory material, and section following (pages 1-18) are provided as background for Army Research Institute personnel only. They are not included in the copies of the handbook distributed for field use.**

## INTRODUCTION

The primary purpose of this report is to describe a program for formal recognition of organizational-level maintenance mechanics who have qualified at specified skill levels. The formal recognition is centered around provision of a certificate of accomplishment, automated record-keeping and public recognition. The certification program is a refinement and re-development of a certification concept that was proposed during the first two years of the project.[1]

The program has been designed to conform to changes in battalion maintenance organization required by the Army's Division 86 structure, and also incorporates lessons learned from other DoD entities and private industry who have made certification work to their advantage.

The second purpose is to provide interested agencies such as ARI, USAOC&S, ATB and the like with data on mechanic certification. We could not find a similar review in the literature.

Because of the importance of benefitting from ongoing certification programs, this section presents in some detail, information obtained from the Army, Navy, Air Force, and two major national industrial certification efforts.

The implications for maintenance performance are summarized.

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[1]Simpson H. K., & Harper, W. R. Maintenance performance systems (organizational). A model for unit OJT and mechanic certification. Santa Barbara, California: Anacapa Sciences, Inc., Technical Report 465-19, April 1982.

## STATUS OF MECHANIC CERTIFICATION PROGRAMS IN THE MILITARY AND PRIVATE INDUSTRY

The review required examination of source documents and discussions with appropriate personnel in DoD and industry. The document search included a search of the ERIC and NTIS data bases accessed through the DIALOG system. In addition, previous issues of the Technical Awareness Bibliography and other DTIC publications were examined for mechanic certification references. The Government Publications Depository and general library of the University of California (Santa Barbara) was searched for general information on certification.

Personnel were interviewed from: the Army Research Institute; U.S. Ordnance Center and School; Army Training Board; U.S. Army Training and Doctrine Command; U.S. Army Transportation School, Industry and Apprenticeship Program; U.S. Army Transportation School, Marine Qualification Board; Air Force Human Resources Laboratory; American College Testing Program; and the National Institute for Automotive Service Excellence.

The literature review and interviews were highly selective. The main objective was to identify and describe programs that work, as opposed to merely citing programs that have been implemented. Webster defines "certify" as "...to guarantee as meeting a standard." To conform to this definition implies that in a certification program:

- Explicit standards are used,
- The certification process is formal,
- Certification has recognition beyond the certifying unit.

The review that follows describes the Army, Navy, Air Force, and private industry efforts, respectively.

### ARMY

#### Master Mechanic Program

Most of the Army personnel interviewed didn't know of any Army-wide mechanic certification programs. Personnel from ARI and TRADOC reported that a promising service-wide program, the Master Mechanic Program, had yet to be

implemented. This program has been in the conceptual stage for five years and was first suggested as an automotive maintenance program parallel to the highly successful Master Gunner program now operating in Armor battalions. The program was designed to provide specialized training to organization-level mechanics in one weapon systems family. Its overall objective was to track and certify a group of highly skilled mechanics who would be trained to handle all the maintenance needs for a single weapon system. A major byproduct of this skill enhancement program eventually was to improve the performance of mechanics in direct support and general support units. The program appears to be in limbo at this time.

**Marine Qualification Program**

One mechanic certification program, the Marine Qualification Program, was identified. A visit was made to the Presidio (San Francisco) office to investigate the operation of the program. An overview of the program's main features is given below.

The Marine Qualification Office, a division of the U.S. Army Transportation School, supervises the maintenance and operation of the Army's vessels. In combat, Army vessels provide supply and logistics capability after a combined Navy-Marine amphibious assault has secured a beachhead. The criticality of the Army's role in marine operations has recently received major emphasis resulting from the administration's interest in maintaining a substantial Rapid Deployment Force (RDF). Increased reliance on the Army's capability to transport RDF troops has underlined the need for the Army to staff its vessels with competent deck operators and engine repairmen. Competency here implies working to a service-wide standard of performance for those specific MOSs.

In April 1982 the Marine Qualification Office initiated the Marine Qualification Program. Responsibility for setting standards and running the program rests with the Marine Qualification Board (MQB), based at Fort Eustis, VA. An overview of the program's major features is shown in Figure 1. The program covers two MOSs, the 61B deck operator and the 61C engine repairman, at four skill levels, 10 through 40. The program adopts a two-tier approach to qualification in which the operator or mechanic is first certified and then licensed to work on a particular vessel.

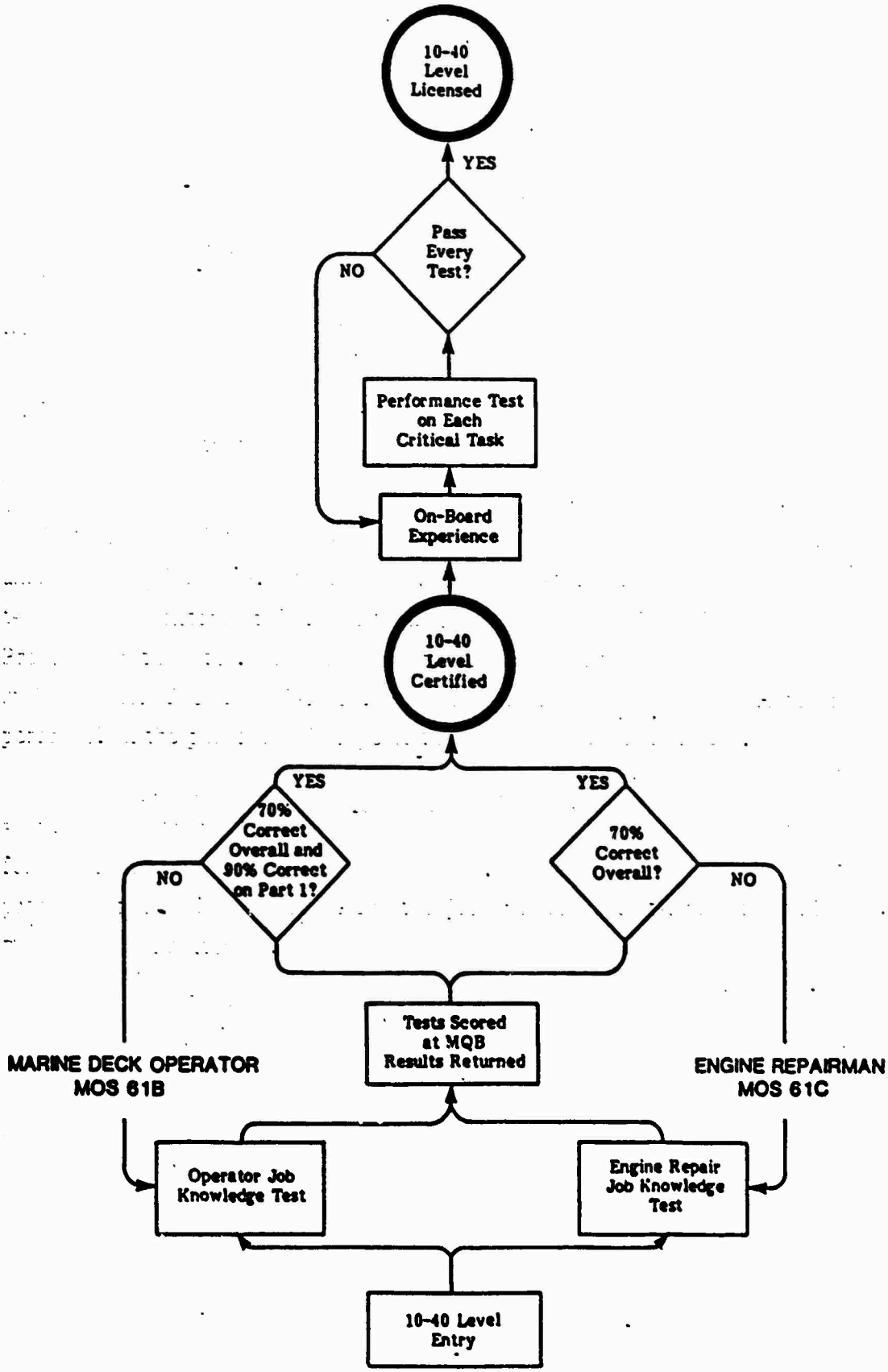


Figure 1. Overview of Marine qualification program.

Shortly after assignment to a new post, personnel in these MOSs take a written job knowledge test geared to each MOS and skill level. Question difficulty is tied directly to skill level. Examinations consist of about 80-100 four-foil, multiple choice questions, depending on skill level and MOS. Tests are closely proctored by a CWO and take 2-3 hours to complete.

Since reading problems are common, the pass rate on the exam is low. It is estimated that 75% of the operators and only 15% of the repairmen pass the job knowledge test. It is not uncommon for men to take a test three or more times before passing. Each man who passes receives a formal certificate. When time permits, certificates are awarded at a small ceremony in the office of the CWO. Test scoring, data processing, and certification material production are performed at the MQB office in Ft. Eustis.

When certified, each man is eligible to acquire shipboard task experience and take the "hands-on" tests necessary for licensing. One aspect of the program not shown in Figure 1 is that **licensing is vessel-specific.** Army vessels do vary markedly from one type to the next. "Hands-on" tests are administered on the critical tasks for a given MOS-skill level combination. Standardized task lists and performance standards are available from the U.S. Army Transportation School.

The procedure for administering and scoring the tests requires the unit commander to appoint a WO as official examiner. This WO is responsible for administering tests and maintaining unit test records. Tests are scored go/no-go and are given on a "catch-as-catch-can" basis. When a man passes a test, the examiner signs his name, records his own license number (USAML#), and the date against the corresponding task on a form. The enlistee's identifying information has been previously recorded at the top of the sheet. The examiner also writes his name and date on a second set of sheets that contain the test instructions and scoring standards.

After a man has passed all the performance tests for his skill level, his CO signs the master task sheet and the instruction sheet. The unit retains the latter in the man's files; the master sheet is forwarded to the MQB for processing. After processing, the man receives a laminated, wallet-sized license. The man's license number is unique and authorizes him to work on that vessel type anywhere in the Army.

During its first year of operation the MQB has certified and licensed over 1500 men in the two MOSs. By almost any criteria, the program could be considered a success. Although a formal evaluation of the program has yet to be conducted, its strong points are already evident. First, the MQB maintains close ties with each of the marine units participating in the program. MQB members and unit staff exchange daily phone calls regarding program protocol, potential problems, and needed materials. Moreover, each unit receives from the MQB a monthly bulletin that contains the minutes of MQB meetings, any changes in program operations, and a list of all recent certificate and license recipients.

The MQB also provides manpower and advisory assistance to participating units on a regular basis. For instance, the MQB sent out maintenance management teams to hold extensive OJT and testing workshops when the Marine Qualification Program first started. (These appear to be analogous to the MAIT's for automotive maintenance.) The MQB also sent representatives to each marine site to brief key personnel on the purpose and scope of the program before it started.

Finally, the MQB supplies each site with critical reference materials to help sustain program quality. These materials include updated task lists and performance standards, training requirements, examination reference lists to help prospective examinees prepare for the job knowledge tests, plus the full complement of award materials.

The strong tie and cordial relationship between the MQB and the individual units is no doubt an important reason behind the success of the program. This liaison gives both "top-down" and "bottom-up" support for the program.

## NAVY

### Navy Enlisted Classification Structure

Like the Army, the Navy has no service-wide formal certification program for mechanics or any other occupational specialty. The Navy does have, however, an implicit form of certification embedded in the Navy Enlisted Classification (NEC) system. The NEC system is used to supplement the existing enlisted paygrade rating structure for identifying personnel and billets by codes when authorizing manpower. That is, these NEC codes "reflect special knowledge and

skills that identify personnel and requirements when the rating structure is insufficient by itself for manpower management purposes."[2] Since these NEC codes entail meeting performance standards beyond that required by paygrade rank, they can be considered a form of certification.

The requisite qualifications vary widely across NECs. For a given NEC, criteria may include completion of special courses, qualifications based on OJT awards, component NEC(s) requisite to the primary NEC, paygrade restrictions, or amplifying information. This amplifying information might entail anything from special training, to an operator's license, to good conduct.

**EPICS Program**

While not designed explicitly as a certification program, the Enlisted Personnel Individualized Career System (EPICS) program nevertheless has some direct implications for this project. The EPICS project was initiated in 1977 to achieve two major objectives: (1) expand the job performance aid (JPA) technology base through research and development, and (2) develop and test a JPA-based integrated personnel system and training model.[3]

A related objective of the program was to reduce the high cost of heavy "front end" training by distributing technical training over a sailor's four-year enlistment period via structured JPAs. Under the EPICS program, each sailor progressed through three skill levels during his enlistment:

- **Apprentice Technician**--Sailors were placed in the shipboard apprentice program directly from recruit training. They served in this program for one year.
- **Equipment Technician**--After their one-year term, apprentice technicians advanced to equipment technician.

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[2]Naval Military Personnel Command. **Manual of Navy Enlisted Manpower and Personnel Classifications and Occupational Standards: Section II Navy Enlisted Classification** (SIN-0500-LP-453-0099). Washington, DC, October 1980.

[3]Blanchard, R. E. EPICS-A JPA-based integrated personnel system. Paper presented at the **Multiservice Conference on Training and Manpower**, San Antonio, Texas, May 1982.

- **System Technician**--After a one-year term as an equipment technician sailors were certified at the highest level, i.e., systems technician.

Technical competence was developed in each skill level through a building-block approach to training. Four distinct training methods were used: practical job experience, formal OJT, instructional modules tailored to each skill level, and shore-based resident school training.

The extensive set of documents developed and distributed to EPICS participants to support program implementation are cited below:[4]

- EPICS Recruiting Pamphlet--brief overview of the program to help recruit EPICS sailors.
- EPICS Orientation Booklet--capsule summary of program used as a handout in command briefings.
- EPICS Sailor's Handbook--ring notebook that outlines the program for EPICS sailors upon graduating from recruit training.
- EPICS Administration Guide--detailed guide that discusses program prerequisites, reporting forms, job aids, and monitoring techniques for the EPICS shipboard administrator.
- EPICS "LOG"--quarterly newsletter that is distributed to all EPICS sailors and officers. It highlights program changes, acknowledges sailor achievements, and indicates special instructions.

Since the first group of EPICS sailors began training in 1980, the program has been extensively evaluated in terms of acceptance, cost, feasibility, and effectiveness. The initial results cited below are positive and encouraging:

- EPICS sailors took significantly less time to complete a series of advanced instruction modules than their non-EPICS counterparts.
- Overall, supervisors claim to have more confidence in EPICS sailors vs. non-EPICS sailors.
- EPICS sailors used their JPAs substantially more than non-EPICS sailors (a partial index of program acceptance).

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[4] Blanchard, R. E., & Smillie, R. J. Integrated personnel systems approach (IPSA): The enlisted personnel individualized career system (EPICS) Model (NPRDC TN 80-14). San Diego: NPRDC, May 1980.

- Preliminary estimates suggest that the EPICS program can yield up to a 25% cost savings over a ten-year period as compared to standard shore-based training.

## AIR FORCE

Of the three services, only the Air Force has a service-wide certification program. Skill certification is an integral part of the Air Force's aggressive, standardized OJT program, and is not considered separately in Air Force organization. Figure 2 gives an overview of an airman's skill progression in the OJT/certification program.

An airman's progression up the skill ladder is documented by proficiency, merit, and experience indices. Training is directed toward enhancing the technical proficiency of men at four skill levels:

- Level 1--Helper
- Level 3--Semi-skilled
- Level 5--Skilled
- Level 7--Advanced.[5]
- (Level 9--Although shown on the diagram is primarily a supervisors level.)

The Air Force operates five types of training programs to facilitate skill progression: structured OJT, upgrade training, quality training, retraining, and lateral training. The first three types of programs form the core of the Air Force's technical training thrust.

The **OJT program** is the cornerstone of the Air Force's skill progression system. OJT is very broadly defined and incorporates a dual channel program comprised of both career knowledge training and job proficiency training. **Career knowledge training** is carried out via a series of career development courses, using a behavioral objectives format, that are geared toward the technical or semi-technical levels. **Job proficiency training** takes place in the operational environment and is directed by the men's immediate supervisor who is responsible for certifying the airman's technical proficiency. (Under Air Force doctrine, the supervisor may delegate certification qualification testing to a qualified trainer.) As shown in Figure 2, only the supervisor can recommend that the airman receive a

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[5]Department of the Air Force. **On-the-job training** (AFR 50-23). Washington, DC: 29 May 1979.

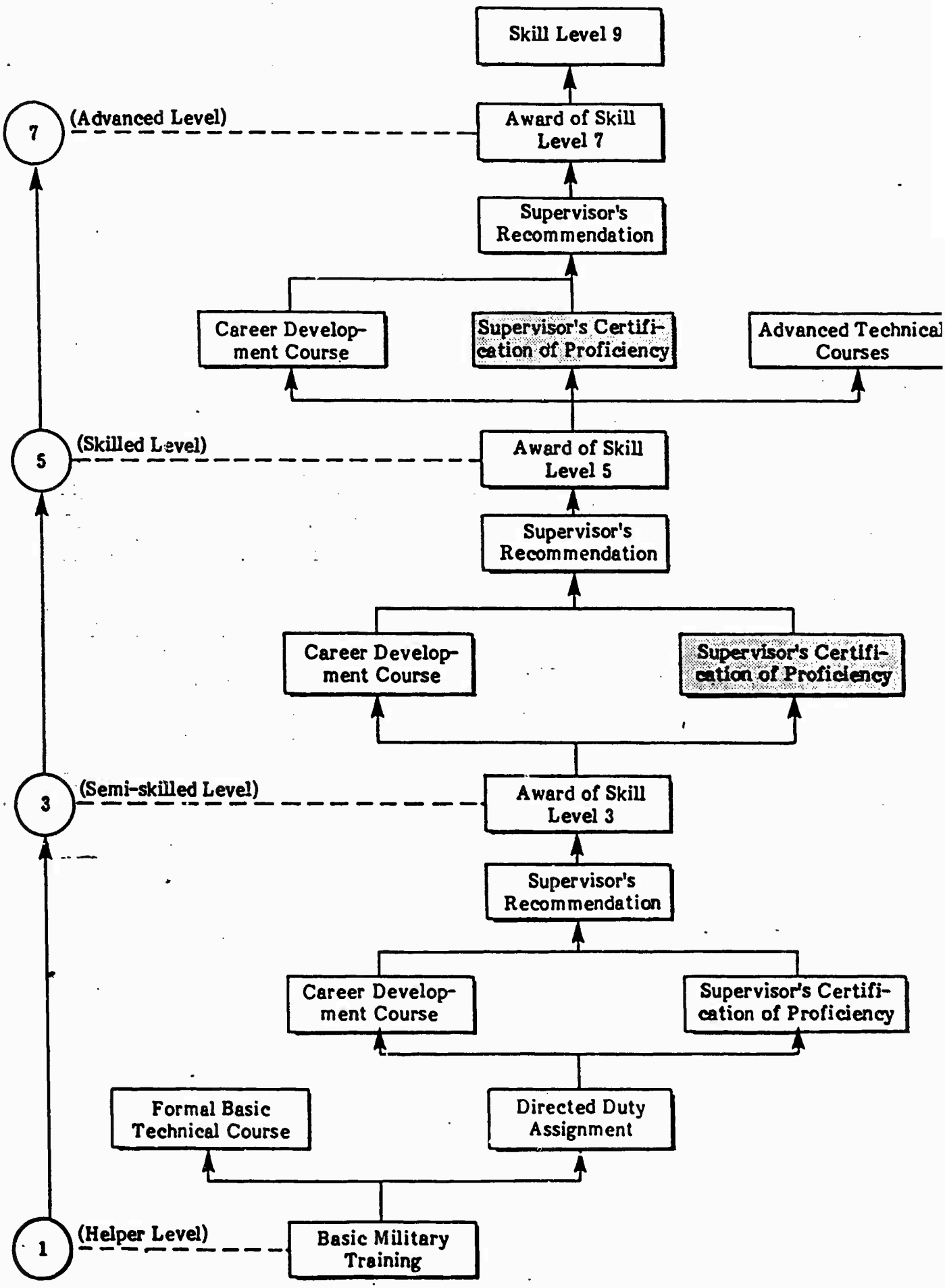


Figure 2. Air Force skill progression chart.

skill level upgrade and certification award. Permission for the man to progress to the next skill level is considered an award in itself. Other features of the system include decertifying and recertifying airmen as well as singling out individual tasks for special certification.

The decertification notion is unique and provides the "teeth" in the certification process. If a man's skill falls below specified levels, if he makes consistent errors or has a high ratio of false removals, he can be de-certified. After re-training he can be re-certified.

**Upgrade training** is designed specifically to help an airman upgrade his skill level. Skill level upgrading entails three specific requirements: career knowledge, job proficiency, and job experience. The first two requirements overlap with OJT and thus give the program its integrative structure. The last requirement, job experience, highlights time-in-service and learning under operational conditions, as important components of training.

The **quality training program** is designed so that----"all assigned personnel can consistently perform all parts of their assigned duties correctly while meeting local demands for speed and accuracy and that they can explain when the tasks must be performed and why each step is necessary...." The section (work center) supervisor is tasked with qualification responsibility to ensure that qualification of his subordinates is a continuing process. Supervisors are issued master job proficiency guides that describe all the tasks authorized for that duty specialty (i.e., MOS equivalent). The supervisor then identifies that subset of tasks performed in his section. In monitoring an airman's proficiency, the supervisor is expected to select tasks at random from the task population represented in the job proficiency guide, for checking. Within this random subset, the supervisor can identify tasks critical to the success of the job and conduct adequate checks on them to determine the "adequacy and effectiveness" of his random sample of tasks.

The Air Force skill progression system constitutes an integrated, powerful method of training and certification. Using concepts of learning-by-doing and self-study, the system has sufficient structure and includes enough evaluation checks so it can be used universally throughout the Air Force. By any criteria, the system can be considered successful; it is by far the most advanced and sophisticated training/certification system of any of the services.

## PRIVATE INDUSTRY

As expected, examination of the published literature revealed that mechanic certification programs abound in private industry. Many of the certification programs operate under the auspices of the individual company , such as GM, IBM, Xerox, and are uniquely product-specific. Since they are closely tied to the parent companies operations they are not widely publicized. Other industrial programs are run by vocational education centers and are academically oriented. Still others attempt to validate mechanic competence using national standards of performance.

Rather than attempt to review all programs currently operating in industry, we will focus on two programs that have a history of operation and enjoy a national reputation: the program sponsored by the National Occupational Competency Testing Institute (NOCTI), and the National Institute for Automotive Service Excellence (NIASE). These have some promise of contribution to our work on certification of maintenance mechanics.

### National Occupational Competency Testing Institute (NOCTI)

The NOCTI was formed as a non-profit corporation in June 1973.[6] This corporation sponsors the National Occupational Competency Testing Program (NOCTP), which grew out of a three-year research and development project funded by the U.S. Office of Education. The NOCTP was intended to provide objective evidence of the competency of experienced craftsmen to help them (1) earn course credits toward an academic degree, (2) become certified as an industrial teacher, or (3) enroll in an industrial teacher education program.

The examinations were constructed jointly by skilled tradesmen and test development specialists. Extensive pilot testing was conducted at Area Test Centers throughout the country. Items were chosen to maximize the test's internal reliability, predictive validity, and discriminant validity.

Twenty-six trades were covered by the program, including auto body repair, auto mechanic, and diesel engine repair. For each trade, the test was administered

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[6]National Occupational Competency Testing Institute. **National Occupational Competency Testing Institute Bulletin of Information for Candidates.** Albany, New York, September 1978.

in two parts: a three-hour multiple-choice written exam and a three- to six-hour performance test. The written test covered job knowledge (as opposed to textbook information), technical and factual knowledge, an understanding of basic principles, and problem-solving abilities. General topics included sessions on the tools and equipment commonly used in that trade, properties of materials, calculations, equipment setup and job procedures, application of scientific principles to problem-solving safety procedures, and government regulations.

The performance test was designed to test the skills the mechanic used in his daily work. It was usually taken on the same day as the written test, with the examiner supplying all the materials needed. The general skills measured by the test included troubleshooting and adjustments, operating equipment, using measuring equipment, and observing safe operating procedures.

The tests were carefully constructed so a specific percentage of the questions were devoted to each topic. For example, questions on the diesel engine repair written test were distributed across five topics according to these percentages:

| | % |
|---|---|
| • Fuel injection pumps | 25 |
| • Hydraulic systems troubleshooting and repair | 15 |
| • Electrical systems diagnosis and repair | 20 |
| • Power train operation and repair | 15 |
| • Basic engine diagnosis and repair | 25 |
| | 100 |

For the four-hour diesel engine repair performance test, the percentage of the test devoted to each topic was:

| | % |
|---|---|
| • Fuel injection pump | 10 |
| • Testing and calibrating pump systems | 20 |
| • Basic engine diagnosis and repair | 35 |
| • Electric systems diagnosis and repair | 10 |
| • Hydraulic systems troubleshooting and repair | 10 |
| • Power train operation and repair | 15 |
| | 100 |

A unique feature of the program was its use of both a written and a performance test component to measure mechanic competence. As a vehicle for

nationwide certification of mechanics, however, its use is limited by its educational orientation. While suitable for vocational education instructors, question content and performance conditions are perhaps too "laboratory-like" to represent the challenge of everyday work done in the environment of the average garage mechanic.

**National Institute of Automotive Service Excellence (NIASE)**

The most widely recognized mechanic certification program was that run by the NIASE. Established in 1972, the NIASE is a non-profit corporation governed by a Board of Directors who represent all segments of the auto industry, as well as the fields of education, government, and consumer protection. Since its inception, NIASE's stated purpose is to "improve the quality of performance in automotive repairs throughout the nation."[7] **In the past ten years almost a quarter of a million mechanics have received NIASE certification.**

Unfortunately, all versions of the NIASE tests come in written form only, and are administered by the American College Testing Program. Testing is conducted twice a year, in May and November, at 270 cities around the country. A $10 fee is charged for each test. The tests were designed to measure three major types of knowledge and skill:

- **Basic technical knowledge**--What's in a system and how it works.
- **Repair knowledge and skill**--How to use shop manuals, and understanding of how to disassemble, assemble, and recondition equipment.
- **Testing and diagnostic knowledge and skill**--How to trace efficiently the cause of a problem and use available test measurement equipment to diagnose the location of the problem.

Mechanics with at least two years of "hands-on" experience were eligible for NIASE certification. Certification was offered in two general areas, **General Automobile Mechanic** and **General Heavy-Duty Truck Mechanic**. These general areas were divided into eight and six sub-areas, respectively. Separate tests were written for each sub-area. A mechanic became certified in a sub-area by passing the written test. To become certified in the general area, he was required to pass

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[7] National Institute of Automotive Service Excellence. **NIASE Certification Tests Bulletin of Information.** Washington, DC: May 1983.

all the component sub-area tests. The topics covered by each of the component tests for the two general areas are shown in Table 1.

The tests consisted of multiple choice questions, with four foils per question. The tests were written for a low reading level; pictures accompanied most questions. Each question was subjected to extensive pilot testing and psychometric analysis before it was included in the final pool of test items. A replica of two test pages from the Engine Performance Test is provided as Figure 3.

No notes were permitted at the test site, and the examinees were closely proctored. Tests were scored at NIASE headquarters. Under the Privacy Act, only the examinee was given a copy of the test results. To promote recognition of certification, however, NIASE encourage mechanics to authorize release of their test information. Examinees can retake any test that they failed during the next available testing period.

Mechanics passing the exams receive a certificate of accomplishment suitable for framing, a blue and orange shoulder patch with the NIASE logo, a pocket credentials and identification card, and a display card listing the mechanic's areas of certification. Every five years NIASE mechanics must be "recertified" by retaking updated exams in their areas of expertise. Recertification tests have only one-half the number of items as were on the original exams. Mechanics who recertify receive a personally engraved tool box plate.

The NIASE program has been quite successful and will likely expand in scope. By not requiring a hands-on performance component, NIASE tests can be administered practically anywhere at a low cost. In the future, the Army might consider developing NIASE-like written tests to certify organization-level mechanics. For example, a battery of tests could be developed to cover maintenance areas and equipment specific to the Army. One test could cover turret repair, another automotive tank maintenance, another communication equipment repair, and so on. By designing appropriate tests according to sound psychometric principles, and in conformance to the NIASE format and model, NIASE endorsement of the tests could be possible. That is, though the tests would be geared to Army topics, the associated certificate could have national recognition--both in

TABLE 1
TOPICS AND CONTENT COVERED BY THE NIASE CERTIFICATION TESTS

GENERAL AUTOMOBILE AREA

| TEST NUMBER | TOPIC | NO. QUESTIONS | CONTENT |
|---|---|---|---|
| A1 | Engine Repair | 80 | Cylinder and block assemblies; ignition, fuel and storing systems |
| A2 | Automatic Transmission/ Transaxle | 40 | Controls and linkages; hydraulic and mechanical systems |
| A3 | Manual Drive Train and Axles | 40 | Manual transmission, front and rear drive systems |
| A4 | Front End | 40 | Manual and power steering, suspension and alignment |
| A5 | Brakes | 40 | Drum, disc, and parking brake; hydraulic |
| A6 | Electrical Systems | 40 | Batteries, starting sytems, electrical instruments |
| A7 | Heating and Air Conditioning | 40 | Refrigeration, AIC, heating |
| A8 | Engine Performance | 80 | Oscilloscopes, emission control, ignition, fuel |

GENERAL HEAVY-DUTY TRUCK AREA

| TEST NUMBER | TOPIC | NO. QUESTIONS | CONTENT |
|---|---|---|---|
| A1 | Gasoline Engines | 80 | Cylinder and block assemblies; ignition, fuel, and starting systems |
| A2 | Diesel Engines | 80 | Cylinder and block assemblies; lubrication, air induction, braking |
| A3 | Drive Train | 60 | Manual transmissions, U-joints, drive axles |
| A4 | Brakes | 60 | Air, hydraulic, and parking brake systems; wheel bearings |
| A5 | Suspension Steering | 60 | Manual and power steering, front and rear suspension |
| A6 | Electrical System | 40 | Batteries, starting and charging; accessories |

Questions 7-9 deal with automobile fuel systems. Practice question 7 deals with carburetion while 8 and 9 are import-type fuel injection questions. The Engine Performance Test (A8) includes (1) several questions on carburetion and (2) an equal number of questions on import-type fuel injection systems. (Does not include throttle body injection or other domestic-type fuel injection systems). Mechanics taking the Engine Performance Test will choose between these two groups when taking this test.

7. Which of these could happen when the accelerator pump inlet check ball is left out of a carburetor?
   (A) Flooding during acceleration
   (B) Hard starting and hesitation when the throttle is opened suddenly
   (C) Hesitation or stalling when the throttle is closed suddenly
   (D) Very rich mixtures during low speed driving

8. An engine with an electronic fuel injection (EFI) system stalls at idle.
   Mechanic A says that a binding air-flow sensor flap could be the cause.
   Mechanic B says that a loose connection in the fuel injection wiring harness could be the cause.
   Who is right?
   (A) A only (B) B only (C) Both A and B (D) Neither A nor B

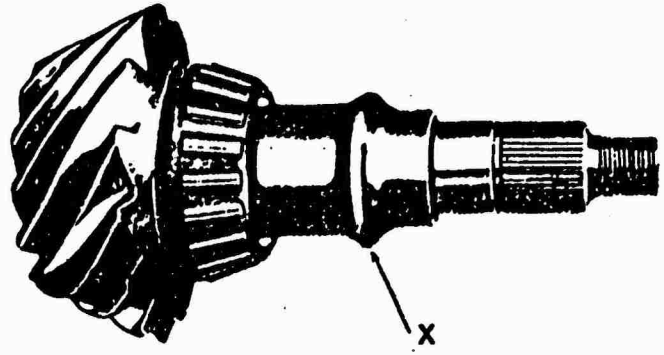
9. The primary system pressure is below specs on an engine with a continuous injection system (CIS). The fuel pump delivery volume is ok.
   Mechanic A says that the primary pressure regulator should be adjusted.
   Mechanic B says that the warm-up regulator should be checked.
   Who is right?
   (A) A only (B) B only (C) Both A and B (D) Neither A nor B

Figure 3. Sample questions from the NIASE test.

10. What front pump clearance is the mechanic measuring in the picture above?
    (A) Body face to crescent face
    (B) Drive gear to driven gear
    (C) Driven gear to case
    (D) Body face to gear face

11. The engine of a car with an automatic transmission starts in all selector positions. What is the most likely cause?
    (A) A shorted ignition switch
    (B) A shorted neutral switch
    (C) An open neutral switch
    (D) An open ignition switch

12. The upshifts of an automatic transmission are very late under light acceleration.
    Mechanic A says too much throttle (modulator) pressure could be the cause.
    Mechanic B says a bad governor could be the cause.
    Who is right?
    (A) A only (B) B only (C) Both A and B (D) Neither A nor B




13. Mechanic A says that part X in the picture above is used to adjust drive pinion depth.
    Mechanic B says that part X can be adjusted by tightening or loosening the pinion nut.
    Who is right?
    (A) A only (B) B only (C) Both A and B (D) Neither A nor B

14. Which of these can cause the splines in the hub of a clutch disc to wear more at the ends than in the middle?
    I. Weak pressure plate springs
    II. Misalignment of the transmission and engine
    (A) I only (B) II only (C) Both I and II (D) Neither I nor II

15. A car with manual rack and pinion steering has a shimmy.
    Mechanic A says that worn rack to frame mounting bushings could be the cause.
    Mechanic B says that loose inner or outer tie rod ends could be the cause.
    Who is right?
    (A) A only (B) B only (C) Both A and B (D) Neither A nor B

and out of the service. Becoming a NIASE-certified Army mechanic would be a strong incentive for entry-level (proficiency-level 0) mechanics to upgrade their knowledge and skills. Although the initial costs of such a program might be high, the boost in productivity and morale from acquiring a service-wide NIASE-endorsed certification program might prove a worthwhile motivational tool to boost maintenance performance.

## NOTES ON THE HANDBOOK

This handbook explains how to start and run a mechanic certification program. It is written for those battalion maintenance managers and supervisors who will be responsible for an operational certification program. The program is designed to certify mechanics whose skills are developing and whose proficiency should be tracked in a structured way. Mechanic certification programs now operate in other U.S. armed services and in private industry. Although the Army does certify some personnel, there is presently no Army-wide certification program. Organizational maintenance is one area that will benefit from such a program.

Mechanic certification is a component of the Maintenance Performance System (Organizational) (MPS(O)) developed for armor battalions. The MPS(O) will help improve the proficiency and effectiveness of Army organizational-level maintenance. Besides certification, the other components of the MPS(O) are: a computer-based maintenance management information system (MMIS), a maintenance training program, and a structured framework for taking maintenance actions. The total system has been developed in accordance with the organizational structure proposed for DIVISION 86 armor battlions. Other MPS(O) documents describe the other system components in detail.

The handbook is divided into five sections. The first section gives an overview of the total certification program. The second section describes the actual certification process in general terms. The third section presents the steps for installing the program; section four covers the steps for operating the program. The fifth section gives some tips on how to monitor the effectiveness of the program.

The summary that follows describes the certification program at-a-glance.

## THE MPS(O) CERTIFICATION PROGRAM AT-A-GLANCE

| | |
|---|---|
| **What is it?** | A formal method of checking a mechanic's maintenance proficiency and of communicating that status to his supervisors and fellow mechanics. |
| **What will it do?** | A successful program can standardize maintenance proficiency criteria, boost morale, and promote recognition of who's skilled. |
| **Who can be certified?** | Any mechanic under the rank of E-6 who has one of these MOSs: 31V, 45N/T, 63N/T, 63B/S. |
| **Who runs it?** | Either the BMT or other senior maintenance supervisor. |
| **How does it work?** | Mechanics who work in one of four technical areas--tracks, turret, wheels, and commo--may be certified at one of two proficiency levels. Certification is accomplished by qualifying on ten key maintenance tasks designated for that level and area, and passing a supervisor review. The award consists of a signed certificate and a cloth insignia patch to be worn by the mechanic. |
| **What resources are needed?** | MMIS-86 experience and task qualification reports (Tables 8, 9 and 11), MMIS-86 data form (Form 8), key maintenance task lists, candidate review forms, certificates, and certification insignia. |

## THE WHAT, WHY, WHO, AND HOW OF MECHANIC CERTIFICATION

### What is Certification?

Certification is a formal way to verify and recognize the degree of proficiency that a mechanic has attained. The certification process may range from experience on key tasks to passing a battery of written and hands-on tests, or even a substantial collection of supervisory skill assessments. The certification award can range from a simple acknowledgement of progress to an elaborate diploma and a uniform patch awarded in a formal ceremony. Whether the process and award are simple or elaborate, certification will confirm a mechanic's competence and communicate that status to his superiors and peers.

### Why Certify Mechanics?

Three major purposes of certification at the organizational maintenance level are to:

- **Standardize maintenance proficiency criteria.** By adopting standardized performance criteria, a yardstick can be derived for assessing performance of individual mechanics.
- **Boost morale.** By publicly acknowledging mechanics' professional advancement, their morale and job satisfaction should grow.
- **Promote recognition of who's skilled.** By wearing a certification insignia, certified mechanics can be spotted easily by maintenance supervisors and entry-level mechanics while on a Q-line or down-range. Troublesome or urgent repairs can be earmarked for the certified mechanic.

### Who Should be Certified?

In principle, **everyone** in maintenance should be included in the certification process. However, such broad coverage of men and equipment is impractical. The certification program, therefore, will focus on men working in a mechanic MOS who are not supervisors. The MOSs include personnel who do the work of:

- **63N/T** Automotive Mechanic
- **45N/T** Turret Mechanic
- **63B/S** Automotive Mechanic (wheeled vehicles)
- **31V** Communication System Mechanic

Certification will be awarded for demonstrated proficiency in one of four different maintenance areas:

- Track vehicle engine repair (TRACK)
- Turret repair (TURRET)
- Wheeled vehicle engine repair (WHEELS)
- Communication equipment repair (COMMO)

**Who Will Run the Certification Program?**

The same officers and managers who supervise maintenance training will be involved in mechanic certification (see **Handbook for Maintenance training in DIV 86 armor units.**)[8] The handbook has therefore been written for personnel who will have roles in managing the mechanic certification program including:

- Battalion Executive Officer
- Battalion S3
- Battalion Maintenance Officer
- Battalion Maintenance Technician
- Battalion Motor Sergeant
- Section NCOICs and Supervisors

**What is Needed for a Certification Program?**

The mechanic certification program assumes close interaction with ongoing maintenance activities and will require these elements:

- **Performance standards.** An objective set of performance standards will be the yardstick by which each man's proficiency is measured.
- **Information on who's eligible.** Eligibility for certification will be based on records of each man's proficiency on a set of "key" maintenance tasks.
- **Award materials.** The certification award should be something the recipient considers valuable, a source of pride. Certificates will be provided but supplemented with items which are rugged and clearly visible, like a badge or insignia to be worn on the uniform.

---

[8]Dick, R. A., Harper, W. R., Wotkyns, A. L., Wolfe, D., & Lueb W. **Maintenance performance systems (organizational): Handbook for maintenance training in Division 86 armor units.** Santa Barbara, California: Anacapa Sciences, Inc., Technical Report 465-35, June 1983.

- **Award ceremony.** Like the award itself, the ceremony should have meaning and importance to the honoree. While a 21-gun salute is somewhat out of place, a simple and serious ceremony attended by maintenance managers and fellow-mechanics is not.

- **Operating effectiveness evaluation plan.** Program effectiveness is evaluated by determining if it has achieved its objectives. The weak elements in the program can be identified and strengthened.

**How Does Certification Fit in with the Other MPS(O) Components?**

The certification program will be operated as one of the four MPS(O) components. The other components are training, action-taking, and the Maintenance Management Information System-86 (MMIS-86). The relationship of certification to the other three MPS(O) components is summarized below:

- **Maintenance Management Information System-86 (MMIS-86).** The MMIS-86 summarizes data on a number of key maintenance indicators: number and distribution of maintenance man-hours, vehicle task maintenance histories, and individual task experience and qualification profiles. These MMIS reports are integral to the certification program as a record of who has already been certified for the program manager, and who is currently eligible for certification.

- **Maintenance Training Program.** This program provides structured on-the-job training (OJT) for entry-level mechanics and continuous on-the-job experience (OJE) practice for advanced-level mechanics. Graduates of the OJT and OJE programs will provide the pool of candidates to be considered for certification as Level A and Level B Mechanics, respectively.

- **Maintenance Action-Taking Program.** One element of the maintenance action-taking program describes a framework for helping maintenance managers make informed decisions on maintenance problem areas based on informal or formal meetings with other maintenance staff. These meetings could also serve as a forum for discussing issues relevant to the certification program such as candidate review, performance standard revisions, and award ceremony scheduling.

**How to Use This Handbook**

This handbook has been written in "how-to" format to help the reader take the necessary steps to install, operate, and monitor a battalion-oriented mechanic certification program. Each section from here on should be read as needed, referring to other sections whenever necessary.

## CERTIFICATION: THE BIG PICTURE

This section provides an overview of the certification program. The certification process is explained, based on how the mechanics move through the program while working in the battalion maintenance section. The job responsibilities expected of certification recipients at different levels are described. The MOSs, maintenance areas, and vehicles covered by the program are summarized. The structure and contents of the certification program have been designed to conform to the requirements of the new DIV 86 organization.

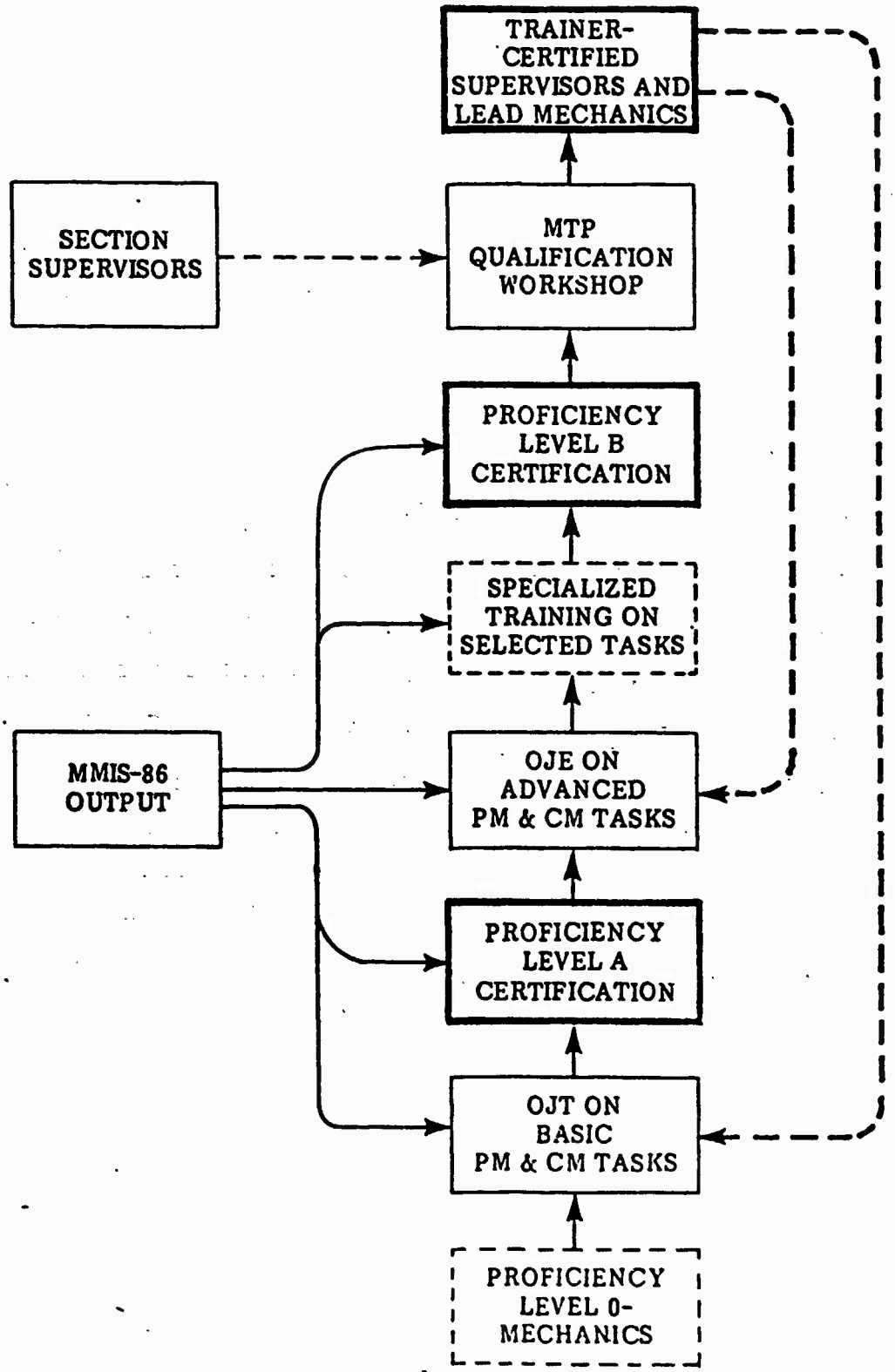
### The Certification Process

The certification process is shown in Figure 4. The certification process involves two proficiency levels for four selected areas of maintenance. Mechanics can be certified in one of four MOS-related areas: automotive track vehicle maintenance, turret maintenance, automotive wheeled-vehicle maintenance, or communications equipment repair. For convenience, these systems are called track, turret, wheels, and commo, respectively.

After leaving AIT, mechanics are assumed to be at proficiency Level 0, i.e., they are entry-level mechanics and are assigned to the battalion on-the-job training (OJT) program conducted in the Service Section of the Battalion Maintenance Platoon. Upon completing OJT and meeting the specific performance standards described later, mechanics will be certified at Proficiency Level A. Level A mechanics automatically become part of the battalion's continuing on-the-job experience (OJE) program. As mechanics gain job-related experience by performing normal maintenance duties, their OJEs build up over time. Those mechanics who meet the required higher-level experience and performance standards will be certified at Proficiency Level B. Further progress is related to advances in rank and the assumption of supervisory responsibilities, and is beyond the scope of the present certification program. (An option is discussed at the end of this handbook for certifying key personnel as unit maintenance trainers.)

### Levels of Job Responsibilities

A maintenance supervisor can expect different levels of performance from mechanics certified at the two proficiency levels. Level A mechanics should


TRAINER-CERTIFIED SUPERVISORS AND LEAD MECHANICS
SECTION SUPERVISORS
MTP QUALIFICATION WORKSHOP
PROFICIENCY LEVEL B CERTIFICATION
SPECIALIZED TRAINING ON SELECTED TASKS
MMIS-86 OUTPUT
OJE ON ADVANCED PM & CM TASKS
PROFICIENCY LEVEL A CERTIFICATION
OJT ON BASIC PM & CM TASKS
PROFICIENCY LEVEL 0- MECHANICS

routinely be able to perform basic repair tasks like replacing or adjusting simple components without supervision. They should also be able to function as a contributing member of a repair team on the more difficult jobs. Besides doing repairs, Level A mechanics should be able to use technical manuals, fill out job forms, and locate critical parts and tools.

Of course, more will be expected of a certified Level B mechanic. Besides performing more advanced, and critical replacement and adjustment tasks without supervision, he must troubleshoot and diagnose equipment malfunctions quickly and accurately. In a pinch, a Level B mechanic might also be able to oversee work in the section NCOIC's absence.

**Equipment and Personnel in the Certification Program**

The MPS(O) certification program is designed to cover the bulk of the maintenance work performed in the unit, but it does not cover everything. But it does cover those MOSs and equipment systems summarized in the MMIS reports. Table 2 lists the MOSs and vehicles, and how they are related to the four areas of maintenance.

TABLE 2
PERSONNEL, EQUIPMENT, AND MAINTENANCE AREAS INCLUDED IN CERTIFICATION PROGRAM

| Maintenance Area | Personnel | | Equipment | |
|---|---|---|---|---|
| | MOS | Title | Desig. | Title |
| TRACK | 63N | Tank System Mech. | M60 | Tank |
| | 63T | ITV/IFV/CFV System Mech. | AVLB | |
| | | | M113 | Personnel Carrier |
| | | | M88 | Recovery Vehicle |
| | | | M578 | Recovery Vehicle |
| TURRET | 45N | Tank Turret Mech. | M60 | Tank |
| | 45T | ITV/IFV/CFV Turret Mech. | M113 | Personnel Carrier |
| WHEELS | 63B | Light Wheel Vehicle Mech. | M151 | Utility Truck |
| | 63S | Heavy Wheel Vehicle Mech. | M35 | 2½ Ton Truck |
| | 63N | Tank System Mech. | M54 | 5 Ton Truck |
| | 63T | ITV/IFV/CFV System Mech. | M561 | 1¼ Ton Truck |
| | | | M792 | 1¼ Ton Truck |
| | | | GOER | 8-10 Ton Truck Family |
| COMMO | 31V | Tactical Comm System/Op Mech. | Radio | |
| | | | Other Commo Equipment | |

## INSTALLING THE CERTIFICATION PROGRAM

This section covers the steps for initially setting up the certification program. The guidelines below help provide a foundation for an effective program. The five major steps are:

- Appoint a program manager
- Review and procure program materials
- Assemble program materials
- Set up a candidate review procedure
- Develop a standard format for scheduling regular award ceremonies.

Each step is explained in detail below. A **checklist** is provided at the end of this section to record completion of each installation step.

### Step 1: Appoint a Program Manager

If the BMO (or BMT) is assumed to be in charge of the Maintenance Training Program, he should also be in charge of mechanic certification. However, if local conditions prevent this, be sure the three points below are considered in choosing an alternate certification program manager:

- **One person should be designated as permanent program manager.** The program should be run by one person so that program decisions can be made more efficiently. The program manager should be a continuing, not a rotating, assignment.
- **A backup program manager should be appointed.** A responsible alternate should be designated to act for the program manager in case of emergency or TDY.
- **The program manager should thoroughly understand the certification concept.** The appointee should also have a strong committment to making the certification program work.

### Step 2: Review and Procure Program Materials

Examples of the materials used in the program are described in the pages that follow. (A package of sample copies of the necessary program materials is contained in the appendix.) These materials include: a list of the key maintenance

tasks to be performed by certification recipients, an evaluation form for certification candidates, MMIS-86 forms and reports, and samples of the award materials.

- **Maintenance task lists.** Appendix A contains the lists of key maintenance tasks that certification candidates must be able to do. The lists are arranged by maintenance area for Level A and Level B Mechanics.

  Each list contains ten maintenance tasks on which a mechanic must qualify before being considered for certification in that technical area. Within each technical area, key tasks were chosen that (1) represent the general level of difficulty of tasks done by mechanics at the two levels, and (2) occur often enough to give mechanics a chance to perform them under operational conditions.

- **Candidate evaluation forms.** Page 38 contains a sample form for summarizing the suitability of a mechanic for certification. This form will typically be used by the immediate supervisor of the mechanic candidate.

- **MMIS-86 forms and reports.** Appendix B contains copies of the MMIS-86 materials to support the program. (A more complete description of these materials is given in the **MMIS-86 User's Guide.**)

  - Form 8 is filled out to record task qualifications or award of a certificate for entry in the MMIS-86.

  - MMIS-86 Table 8 summarizes, by maintenance section, the overall experience and task qualification status of each mechanic. It also lists mechanics' current certification status. (Only the table for the 31V, Commo mechanic has been provided in the appendix as a sample.)

  - MMIS-86 Table 9 summarizes, by maintenance section, the experience credits and qualifications earned on the individual tasks by each mechanic. Only the table summarizing the work by 31V, Commo mechanics appears in the Appendix.

  - MMIS-86 Table 11 lists, for all maintenance sections, every mechanic who has been certified or task-qualified within the previous 4-weeks.

- **Awards materials.** Appendix C contains a sample certificate and draft sketches of the four certification uniform insignia that will be used. These materials were designed specifically for use in armored battalion maintenance. The insignias were designed so that the system and level of the wearer will be apparent to others.

**Step 3: Assemble Program Materials**

Sufficient copies of all needed materials should be obtained **before** the program is operational.

- **Start a Certification Program "File."** Maintaining a program "file" ensures that program materials are stored in a central location. The file may start out as a single manila folder, but as the program progresses will probably require more space. The file should be kept in one location and secured when not in use.

- **Assemble MMIS-86 Reports and Data Forms.** The accuracy and timeliness of the certification awards depend on having up-to-date information on each mechanic's skill progress. Reserve a space in the program file for each new version of MMIS-86 Report Table 8, the certification and task qualification summary for individuals; MMIS-86 Report Table 9, the task qualification and experience summary; and MMIS-86 Report Table 11, the qualification and certification bulletin.

- Also, have copies of Form 8 (Qualification and Certification Data Card) on hand. These must be filled out to ensure that a mechanic's task qualifications and eventual certification is entered into the MMIS.

- **Assemble Award Materials.** Make sure that sufficient numbers of certificates and insignias of each type are available.

**Step 4: Establish a Candidate Review Procedure**

The purpose of this review is to provide an opportunity to match the candidate's performance to the certification requirements before making the final certification decision. This subjective evaluation is part of a formal certification review procedure that is made **after** a mechanic has met the performance standards but **before** he is officially certified. This review will help ensure that only deserving mechanics are certified.

One senior-level NCO for each technical area should be named. The man will complete a mechanic evaluation form for each task-qualified candidate in his technical area. Generally, the best choices will be the section NCOICs (supervisors) of each technical area since they have the technical expertise and personal contact with the mechanics to provide valid subjective judgments.

**Step 5: Establish Certification Award Procedure**

The certification program will yield maximum returns if the award has special meaning to the recipient and to the unit. Careful planning and attention to ceremonial details can go a long way toward reaching these goals.

- **Schedule time and location of ceremony.** Attendance at the ceremonies should be mandatory. They should be held at the same time and in the same place whenever possible. Posting notices for the ceremony in advance will help make it a regular part of maintenance activities.

- **Identify and notify award ceremony participants.** The individuals who are to take part regularly in the ceremony should be notified well in advance. Those attending should include: the BMO, the BMT, the BMS, plus the various section NCOICs.

- **Establish a certification follow-up procedure.** Maximum benefit from the program will be gained by establishing a follow-up procedure to ensure that others are aware of the recipient's new status. Specific actions to be performed are:

  - **Update the MMIS-86 reports.** The reports will be automatically updated by filling out a Form 8 for the recipient, indicating the date, certification level, and maintenance area.

  - **Enter the mechanic's certification in his military record.** This ensures that the man's accomplishments will be recognized outside his own battalion, and could help him win a promotion or secure a better job should he decide to leave the service.

  - **Publish in the local newsletter** that the man has been certified shortly after the ceremony. A highly effective way to recognize an individual's accomplishments and increase his motivation is to have him see his name in print.

A program installation checklist follows.

## INSTALLING-THE-PROGRAM CHECKLIST

**Step 1: APPOINT A PROGRAM MANAGER**

- ☐

**Step 2: REVIEW PROGRAM MATERIALS**

- ☐ Maintenance task lists.
- ☐ Candidate evaluation forms.
- ☐ MMIS-86 forms and reports.
- ☐ Awards materials.

**Step 3: ASSEMBLE PROGRAM MATERIALS**

- ☐ Start a certification program "file."
- ☐ Assemble MMIS-86 reports and data forms.
- ☐ Assemble award materials.

**Step 4: ESTABLISH A CANDIDATE REVIEW PROCEDURE**

- ☐

**Step 5: ESTABLISH CERTIFICATION AWARD PROCEDURE**

- ☐ Schedule time and location of ceremony.
- ☐ Identify and notify ceremony participants.
- ☐ Establish a certification follow-up procedure.

## OPERATING THE CERTIFICATION PROGRAM

The certification program should run on a six-week cycle, to coincide with the delivery of appropriate MMIS-86 training status reports. Five major steps are required to operate the program:

- Remind maintenance personnel about the program
- Review task qualification data
- Review qualifications of the certification candidates
- Recommend mechanics for certification
- Award certification.

A checklist is provided at the end of this section listing the steps and sub-steps discussed below.

### Step 1: Remind Maintenance Personnel about the Program

Because of the high personnel turbulence rate at the organization level, periodic announcements about the certification program will be needed. The BMO should be responsible for ensuring that the certification program is publicized. These announcements will both inform the newer people and remind the more senior people about the program's operations.

### Step 2: Review Task Qualification Data

Review of the mechanic qualification data for the current six-week period should begin immediately after receiving MMIS-86 Tables 8 and 9 (see Figures 5 and 6) of the MMIS-86 training report series. Time (say about 1-2 hours), should be set aside to review the task status of all mechanics in the certification program. Total review time will be less if it's done where and when there are few distractions and interruptions.

- **Arrange the MMIS-86 reports by maintenance section and MOS.** The certification program manager should first sort MMIS-86 Tables 8 and 9 by maintenance section and MOS. Make sure that each section's MMIS-86 Table 8 (individual certification/qualification summary) and its MMIS-86 Table 9 (task certification/qualification summaries) are stacked together. Under the DIV 86 organizational structure, a total of seven stacks will be needed:

TABLE 8 (31V-ALL): CERTIFICATION, QUALIFICATION AND EXPERIENCE SUMMARY BY INDIVIDUAL

SIX-WEEK REPORTING PERIOD ENDING: 3140 (28 MAY 83)

| NAME/PAYGRADE | CERT | % TASKS QUAL | % TASKS EXP'D | % TASKS EXPERIENCED 0---20---40---60---80---100 |
|---|---|---|---|---|
| BROWN, J.(31V-32) | | 42* | 42 | ----------+ |
| HALEY, E(31V-E3) | A | 73* | 79 | ---------- ---------+ |
| JOHNSON, .(31V-E1) | | 0 | 6 | --+ |
| JONES, C.(31V-E1) | | 18* | 21 | --------+ |
| RAYMOND, J.(31V-E5) | B | 100 | 100 | ---------- |
| ALL | | 47 | 49 | ---------- |

Figure 5. Example of certification, qualification, and experience summaries for MOS 31V contained in MMIS-86 Table 8.

1. 31V - Total number of 31V mechanics--no matter where assigned
2. 45N/T - Total number of 45N/T mechanics--no matter where assigned
3. 63B/S - Assigned to Service Section
4. 63B/S - Assigned to Wheel Section
5. 63N/T - Assigned to Service Section
6. 63N/T - Assigned to Recovery Section
7. 63N/T - Assigned to Track Section.

Note that most "stacks" will contain several versions of MMIS-86 Table 9, one for each equipment type worked on by the MOS in that section.

- **Identify mechanics' current certification status.** Next, the program manager should examine the CERT column in MMIS-86 Table 8 to identify the current certification level of every mechanic in each of the seven MOS/section stacks. Mark the level--either A or B--under the man's name in the corresponding MMIS-86 Table 9 for that MOS and section.

  The discussion that follows centers around data from MMIS-86 Tables 8 and 9 for the 31V/Commo repairman. Note, for example, that the

TABLE 9 (31V-ALL): QUALIFICATIONS AND EXPERIENCE SUMMARY BY TASK

SIX WEEK REPORTING PERIOD ENDING: 3126 (6 MAY 83)

| EQUIPMENT/TASK | NAME/TIMES DONE | | | | |
|---|---|---|---|---|---|
| | BROWN | HALEY | JOHNS | JONES | RAYMO |
| COMMO | | | | | |
| 1 *REPL ANTENNA ELEMENT,AT-1095/1730 | Q | Q | 1 | Q | Q |
| 2 *REPL ANTENNA MATCHING UNIT | Q | Q | 2 | Q | Q |
| 3 *REPL RF CABLE,CG-1773 | Q | Q | 1 | Q | Q |
| 4 *REPL CABLE,CX-4722/4723 | Q | Q | 1 | Q | Q |
| 5 *TEST RECEIVER/XMITTER,RT-246/524 | Q | Q | 3 | | Q |
| 6 *TEST RECEIVER,R-442 | Q | | | | Q |
| 7 REPL AMPLIFIER,AM-2060 | | | | | Q |
| 8 REPL MOUNTING,MT-1029 OR MT-1898 | Q | Q | 1 | Q | Q |
| 9 *REPL AUDIO FREQUENCY AMPLIFIER | Q | Q | | Q | Q |
| 10 REPL INTERCOM CON SET,C-2296/7/8 | 2 | Q | | | Q |
| 11 *REPL RADIO CON SET,C-2299 | Q | Q | 4 | | Q |
| 12 REPL FREQUENCY SELECT CON,C-2742 | | | | 4 | Q |
| 13 REPL POWER CABLE,CX-4655 VRC-64 | 2 | Q | 1 | | Q |
| 14 REPL SUPPRESSOR,MX-7778A | 1 | | | | Q |
| 15**TEST/REPR HELMET,CVC | | Q | | 2 | Q |
| 16**TEST/REPR SWITCHBOARD,SB-22/993 | | Q | | 1 | Q |
| 17**TEST/REPR TELEPHONE,TA-1/312 | Q | Q | | | Q |
| 18 *TEST LOUDSPEAKER | Q | Q | | | Q |
| 19 TEST MICROPHONE OR HANDSET | Q | | | | Q |
| 20 *SERVICE WIRE,WD-1 AND/OR REEL | Q | Q | | 2 | Q |
| 21**TEST/REPL KY-57 | Q | Q | | | Q |
| 22 TEST ANTENNA ELEMENT | Q | Q | | | Q |
| 23 TEST ANTENNA MATCHING UNIT | | Q | | | Q |
| 24 TEST RF CABLE,CG-1773 | | | | | Q |
| 25 TEST CABLE,CX-4722/4723 | | | | | Q |
| 26**TEST AMPLIFIER,AM-2060 | 1 | Q | | 1 | Q |
| 27**TEST MOUNTING,MT-1029 OR MT-1898 | 1 | Q | | 2 | Q |
| 28 TEST AUDIO FREQUENCY AMPLIFIER | | 4 | | Q | |
| 29**TEST INTERCOM CON SET,C-2296/7/8 | | Q | Q | | Q |
| 30 TEST RADIO CON SET,C-2299 | | 6 | | | Q |
| 31**TEST FREQUENCY SELECT CON,C-2742 | 1 | Q | | | Q |
| 32**TEST POWER CABLE, CX-4655 VRDC-64 | 1 | Q | | | Q |
| 33**TEST SUPPRESSOR,MX-7778A | | Q | | | Q |

Figure 6. Example of qualifications and experience summary by task for MOS 31V contained in MMIS-86 Table 9.

absence of any designation under the CERT column in MMIS-86 Table 8 (Figure 5) for mechanics Brown, Johnson, and Jones indicates their current status is Proficiency Level 0; Haley and Raymond are working at Levels A and B, respectively.

- **Identify candidates for certification.** The program manager should follow these steps to identify candidate mechanics for certification. Taking each MOS/section "stack" at a time, focus first on the mechanics at Level 0. (In the example in Figure 5 these are Brown, Johnson, and Jones.) Since these men are working toward a Level A certification, determine if any of them have qualified on **all** of the Level A key tasks in MMIS-86 Table 9 (Figure 6). A mechanic will be identified as a candidate for Level A certification if he has a "Q" on every task marked with **one** asterisk. Candidates can be noted by placing a checkmark beside their name.

  As a next step, examine the task qualification data for mechanics working at Level A to identify candidates for Level B certification. A Level B candidate will have a "Q" on every task preceded by **two** asterisks.

  Finally, remember that there is no need to examine the task qualification data for men certified at Level B. These men have already gone as far as they can in the MPS(O) certification program.

  Now go through the practical exercise on page 36.

## PRACTICAL EXERCISE:
## IDENTIFYING CERTIFICATION CANDIDATES FROM TABLE 9

1. The **materials** you will need are: a ruler, a pencil, and Table 9 shown as Figure 6 on page 34.

2. The purpose is to find out **who** can be certified and at **what level.** Make notes on a piece of scrap paper as you go through the exercise. You'll get a chance to check your results later.

   (THIS IS NOT A TEST.)

3. First identify the mechanics who are still at Level 0 by following these steps:

   a) Check their qualification status on the 10 key Level A tasks (use the ruler to line up the task statements and look for a 'Q' under the man's name).

   b) If you find the man does **not** have a 'Q' against a task, he is not ready for certification at Level A.

   c) **Who does not qualify at Level A?**

   d) **Who does qualify?**

4. Next identify the Level A certified mechanics who are candidates for Level B certification.

   a) **Who is a Level A certified mechanic and therefore eligible for Level B certification?**

   b) Check to see if they have a "Q" under the candidate's name for Level B tasks (Level B tasks are identified by **). **Who qualifies for Level B?**

   c) **What do you think Raymo's status is?**

**NOW TURN OVER THE PAGE AND CHECK YOUR ANSWERS.**

**Step 3: Review Qualifications of the Candidates for Certification**

After the certification candidates have been identified, the program manager should follow these steps to ensure that each candidate's qualifications are properly reviewed:

- **Fill out candidate evaluation forms.** The program manager should fill out the identifying information in the top part of the candidate evaluation form. Use one form per candidate. A sample copy of this form is provided on the following page as Figure 7.

- **Circulate candidate evaluation forms.** Each evaluation form should be sent to the section NCOIC representing that technical area. Forms for candidates in the same technical area should be kept together. These evaluations should be kept confidential.

- **Record the evaluation results.** The program manager should check that all the questions on the returned evaluation forms have been completed. A completed evaluation form will look like the example (Figure 7). If the section NCOIC had any "no" boxes checked for the candidate, certification should be delayed until the identified deficiencies are corrected.

**Step 4. Recommend Candidates for Certification**

After the qualifications review process is completed, candidates with approved qualifications should be recommended for certification to the ranking battalion officer in charge of maintenance, the Bn XO.

- **Fill out certificates.** The BMO (certification program manager) should write the name, rank and MOS of each candidate who has been approved on a blank certificate. Be sure the correct proficiency level and technical area appear on the certificate. Use only one certificate per man.

- **Have the certificates signed.** Each approved candidate's certificate should be signed by the Bn XO.

- **Have the signed certificates returned.** The signed certificates should be returned to the BMO. Place the certificates in a safe place until the award ceremony.

**Step 5: Award the Certificate**

The substeps for awarding certificates to the approved candidates are listed below.

- **Notify participants of the award ceremony.** The program manager should ensure all officers and mechanics who are to participate in the ceremony

## CERTIFICATION CANDIDATE EVALUATION FORM

**PART 1: Program Manager**

**INSTRUCTIONS:** Write in candidate's name, and check appropriate boxes below. Give to man's section supervisor for completion and return to you.

CANDIDATE NAME Rollins. K.

| | | | | | |
|---|---|---|---|---|---|
| PAYGRADE | [E1] | [E2] | [X E3] | [E4] | [E5] |
| MOS | [31V] | [45N/T] | [63B/S] | [63N/T] | |
| TECHNICAL AREA | [TRACK] | [TURR] | [WHLS] | [COMMO] | |
| CERT LEVEL | [X A] | [B] | | | |

**PART 2: Section NCOIC**

**INSTRUCTIONS:** Complete this form to determine the suitability of this candidate for certification. Sign your name, write in date and return form to Certification Program Manager.

| | Check 1 Box per Question |
|---|---|
| Can the candidate retrieve information from the TM? | [X Yes] [No] |
| Can the candidate carry a job/task through to completion without supervision? | [X Yes] [No] |
| Is the candidate conscientious about working to specifications? | [X Yes] [No] |
| How would you rate the quality of this candidates repair work on a scale of 1-5? | Low 1 2 3 (4) 5 High |
| Overall, would you recommend this man for certification at the proficiency level indicated above? | [X Yes] [No] |

NAME SFC Harper. K DATE 6 June 83

Figure 7. Certification candidate evaluation form.

know the time and place it is to be held **well in advance.** If the ceremony is to be held in conjunction with a regularly scheduled meeting, inform the members of the meeting about the ceremony. Unless the number of certificate recipients is large, all certificates earned during that time period can be awarded at the same time.

- **Hold the ceremony.** The program manager will be responsible for availability of the certificates and certification insignia. Determine in advance who will actually hand over the certificate and insignia to the recipient and and who will make appropriate remarks. Keep the ceremony brief and make it meaningful.

- **Followup to the ceremony.** After the ceremony the certification program manager must complete these actions to ensure that the recipients get the public recognition they deserve:

  - Complete MMIS-86 Form 8 for each man so his new status will appear in the next set of MMIS-86 reports.

  - Ensure each man's certificate is noted in his military record.

  - Notify the Post newspaper and unit newsletter of the mechanics' awards. Be sure to include mechanic's full name, rank, MOS, battalion designation and nature of award.

  - When the next set of MMIS-86 reports comes out six weeks later, these men's names will appear in MMIS-86 Table 11 (Figure 8). Make copies of the table and post them in appropriate high-traffic locations in the shop.

An operating-the-program checklist follows.

TABLE 11: QUALIFICATION AND CERTIFICATION BULLETIN

FOUR-WEEK REPORTING PERIOD ENDING: 3126 (6 MAY 83)

THESE MECHANICS WERE EITHER TASK-QUALIFIED OR CERTIFIED DURING THE PAST FOUR WEEKS

| MECHANIC | NUMBER OF NEW TASKS QUALIFIED | CERTIFICATION AREA/LEVEL |
|---|---|---|
| BROWN,J. 31V-E2 | 11 | COMMO A |
| HALEY,E. 31V-E3 | 5 | COMMO B |
| MEYER,P. 63N-E3 | 7 | TRACK B |
| RICHARDS,L. 45N-E2 | 10 | TURRET A |

Figure 8. Example of qualification and certification bulletin for all MOS's and technical areas.

## OPERATING-THE-PROGRAM CHECKLIST

**Step 1: REMIND MAINTENANCE PERSONNEL ABOUT THE PROGRAM**

- ☐

**Step 2: REVIEW TASK QUALIFICATION DATA**

- ☐ Arrange MMIS-86 reports by maintenance section and MOS.
- ☐ Identify mechanics' current certification status.
- ☐ Identify candidates for certification.

**Step 3: REVIEW QUALIFICATIONS OF THE CANDIDATES FOR CERTIFICATION**

- ☐ Fill out candidate evaluation forms.
- ☐ Circulate candidate evaluation forms.
- ☐ Record evaluation results.

**Step 4: RECOMMEND CANDIDATES FOR CERTIFICATION**

- ☐ Fill out certificates.
- ☐ Have the certificates signed.
- ☐ Have the signed certificates returned.

**Step 5: AWARD THE CERTIFICATION**

- ☐ 5.1 - Notify participants of the award ceremony.
- ☐ 5.2 - Hold the ceremony.
- ☐ 5.3 - Follow-up the ceremony.

## MONITORING EFFECTIVENESS OF THE CERTIFICATION PROGRAM

When the certification program has been operating for 4-5 months, its effectiveness and acceptance should be evaluated. If the program is not operating as described in this handbook and the causes are a function of the process of certification, the process may need changing. Three topics are covered in this section:

- Why monitoring effectiveness is important
- Measuring program effectiveness
- Questions to ask when troubleshooting program problems.

### Why Monitoring Effectiveness is Important

It is important that regular checks are made on the acceptance of the certification program as it relates to mechanics and supervisors. The impact of certification on the unit's maintenance efficiency is even more important. This latter evaluation is complex and is being handled as a separate topic in the broader field of evaluation of the total MPS(O). Getting feedback on the program's operating strengths and weaknesses soon after its field introduction will help to forge a better and more effective program later.

Any program that is ineffective or unpopular will eventually fail. Hoping that faults will self-correct simply postpones the inevitable. Continuing to operate a program without monitoring is costly and wasteful. One must be sure that the vehicle--or the program--is working as planned.

### Measuring Effectiveness of the Operating Program

Measuring operating effectiveness means gathering data on whether the program achieved its objectives. The objectives that governed program development were ease of operation, improvement of morale, and recognition of certified mechanics. The questions below relate to these objectives.

- **Has the program been easy to operate?** Have there been complaints about record-keeping? Do programmed reviews and events happen on time? Do the MMIS-86 reports reflect qualifications that relate to certification? Have there been negative comments about time needed to operate the certification program?

- **Has morale improved?** Do the men seem more satisfied with their work? Do they take more pride in their work? Does the unit spirit seem any higher since the program started? We recognize that individual perceptions color answers to these questions but experienced supervisors do think and talk in these terms, and their opinions almost always reflect the consensus of the supervisory population.

- **Are the certified mechanics being recognized?** Is everyone aware of who is, and is not, certified? Do supervisors make job assignments based on who's been certified by the program?

Although, as noted above, the answers to these questions require subjective judgments, they can still be a valuable source of information. Consistent negative responses to these questions indicate potential problems with the program.

To help get installation and operating problems solved, use the tips in the following section to identify the source of the problem.

**Diagnosing Potential Program Problems**

If the program manager has information from formal complaints, or feels subjectively that the program could be working better, these questions may help determine solutions:

- **Does Everyone Know About the Program?** If word hasn't gotten out about the program, then "spread the word" again. Posting notices, making announcements at meetings, and using word-of-mouth are all effective techniques for giving the program the visibility it needs to work properly.

- **Are the MMIS-86 Reports Accurate?** Certification relies heavily on data that reflect the quality of the information contained in the MMIS-86. If the men feel that the MMIS-86 does not accurately reflect or report their task qualifications and experience, they will have little confidence in the program. The problem might be at several levels of MMIS-86 operation, how the MMIS-86 data are entered into the computer, or final printing of the reports. Problems with errors on MMIS-86 data entry forms (i.e., on job experience, etc.) can be resolved by briefing mechanics on the proper way to fill out the maintenance job forms. (Problems with data entry or reports are properly a function of the battalion's MMIS-86 specialist.)

- **How is Certification Viewed in the Battalion?** If the mechanics and their supervisors do not treat certification seriously or don't view it as an important step in a man's career, then the program may have a problem with credibility and acceptability. It is useful to remind maintenance personnel that certification in other military programs has meant faster promotion, more responsibility, and better job prospects after leaving the service. It does provide a tangible, "take-away" recognition of superior performance.

- **Is the Certification Award Getting Publicized?** Closely allied to the first question is the notion that lack of publicity for the certificate recipients and the program, is being caused by newspaper/unit newsletter announcements not getting out, or the MMIS-86 Certification Bulletin not being read or even seen. Make sure that whoever is responsible for printing Certification news receives the names of the mechanics as soon as possible after the award. Also, ensure that the MMIS-86 Certification Bulletins are posted in high-density travel areas and are clearly visible to all working mechanics and their supervisors.

## A CERTIFICATION-FOR-TRAINERS OPTION

When mechanics receive OJT/OJE according to the plan outlined in the handbook for maintenance training (issued separately), their ultimate achievement is to receive a Level B Certificate of Proficiency. In terms of repair skills they have reached this final objective as mechanics. However, those Level B mechanics who have potential for helping others less-skilled are unofficially designated as **lead mechanics** and attend a Maintenance Trainers Workshop to provide them with training skills.

We recommend that those lead mechanics who attend the workshop successfully and demonstrate training proficiency in the field be awarded a Certificate of Proficiency as trainers. A model of an appropriate certificate is provided in Appendix C.

In addition to the certificate, a cloth insignia to be worn on the uniform should also be provided. The models for the trainers insignia are similar to those recommended for persons who qualify at Level A and B on the track, turret, wheels and commo technical areas. The primary difference is that the trainer's badge(s) would include a "T" instead of the "A" or "B" in the mechanics proficiency insignia.

An example is shown in Appendix C.

# APPENDIX A

## KEY TASKS BY TECHNICAL AREA FOR LEVEL A AND LEVEL B CERTIFICATION

# LEVEL A TASKS – CERTIFICATION

| TRACK SECTION EQUIPMENT | MMIS-86 TASK NO. | TASK |
|---|---|---|
| M60 | 1 | Remove defective/inoperative powerpack |
| M60 | 8 | Replace fuel lines and/or fittings |
| M60 | 9 | Replace fuel filters |
| M60 | 17 | Replace sending units or gages |
| M60 | 19 | Replace batteries, cables, and/or clamps |
| M60 | 23 | Replace air cleaner blower motor |
| M60 | 32 | Bleed brake lines |
| M113 | 18 | Replace belts and/or pulleys |
| M113 | 24 | Replace voltage regulator |
| M113 | 38 | Replace "U" joint |

| TURRET SECTION EQUIPMENT | MMIS-86 TASK NO. | TASK |
|---|---|---|
| M60 | 2 | Replace no-bak |
| M60 | 5 | Replace stabiliz. system control box |
| M60 | 11 | Bleed turret hydraulic system |
| M60 | 19 | Replace TC's power control handle |
| M60 | 23 | Replace/adjust loader's safety switch |
| M60 | 27 | Replace azimuth indicator |
| M60 | 32 | Replace turret power distribution box |
| M901 | 4 | Bleed down hydraulic pressure |
| M901 | 5 | Remove, or install, access covers |
| M901 | 30 | Remove/install driver's/gunner's level indicator lamp assembly |

# LEVEL A TASKS – CERTIFICATION (CONT.)

| WHEELED VEHICLE SECTION EQUIPMENT | MMIS-86 TASK NO. | TASK |
|---|---|---|
| M35A2/M54 | 6 | Replace fuel or oil filters |
| M35A2/M54 | 9 | Replace radiator |
| M35A2/M54 | 12 | Adjust fan belt |
| M35A2/M54 | 14 | Replace starter |
| M35A2/M54 | 24 | Adjust service brakes |
| M35A2/M54 | 30 | Replace hydraulic cylinder (hydrovac) |
| M35A2/M54 | 41 | Replace steering knuckle boot |
| M151 | 2 | Adjust clutch pedal free travel |
| M115 | 4 | Replace carburetor |
| M115 | 20 | Adjust ignition timing |

| COMMO SECTION EQUIPMENT | MMIS-86 TASK NO. | TASK |
|---|---|---|
| (Specified in task descriptions) | 1 | Replace antenna element, AT-1095 or AS-1730 |
| | 2 | Replace antenna matching unit, MX-6707 |
| | 3 | Replace RF cable, CG-1773 |
| | 4 | Replace cable, CX-4722/4723 |
| | 5 | Test receiver/transmitter, RT-246 or RT-524 |
| | 6 | Test receiver, R-442 |
| | 9 | Replace audio frequency amplifier, AM-1780 |
| | 11 | Replace radio control set, C-2299 |
| | 18 | Test loudspeaker |
| | 20 | Service wire, WD-1 and/or reel, DR-8 |

# LEVEL B TASKS – CERTIFICATION

| TRACK SECTION EQUIPMENT | MMIS-86 TASK NO. | TASK |
|---|---|---|
| M60 | A | Perform periodic service |
| M60 | 13 | Adjust accelerator, throttle controls, and linkage |
| M60 | 15 | Troubleshoot electrical system |
| M60 | 21 | Replace starter |
| M60 | 26 | Adjust transmission linkage |
| M60 | 36 | Adjust steering controls and linkage |
| M60 | 38 | Adjust/reset fixed fire extinguisher control valves |
| M113 | 11 | Replace cooling fan tower |
| M113 | 26 | Adjust transmission linkage |
| M113 | 32 | Adjust laterals (steering control) |

| TURRET SECTION EQUIPMENT | MMIS-86 TASK NO. | TASK |
|---|---|---|
| M60 | 4 | Repair main gun firing circuit |
| M60 | 6 | Replace stabiliz. system components |
| M60 | 8 | Replace superelevation actuator |
| M60 | 9 | Replace superelevation actuator cable |
| M60 | 29 | Replace rangefinder and/or end housing |
| M60 | 30 | Purge and charge sights |
| M60 | A | Perform periodic services (turret) |
| M901 | 9 | Remove/install elevation cylinder |
| M901 | 19 | Remove/install azimuth drive motor |
| M901 | A | Perform periodic services (turret) |

# LEVEL B TASKS - CERTIFICATION (CONT.)

| WHEELED VEHICLE SECTION EQUIPMENT | MMIS-86 TASK NO. | TASK |
|---|---|---|
| M35A2/M54 | 3 | Replace electrical in-tank fuel pump |
| M35A2/M54 | 5 | Adjust/replace accelerator controls and linkage |
| M35A2/M54 | 11 | Replace water pump |
| M35A2/M54 | 23 | Replace universal joint |
| M35A2/M54 | 26 | Replace service brakeshoe and adjust brakes |
| M35A2/M54 | 27 | Replace master cylinder |
| M35A2/M54 | 38 | Adjust steering gear |
| M151 | 1 | Adjust valves |
| M115 | 7 | Replace fuel pump |
| M115 | 28 | Replace differential, front or rear |

| COMMO SECTION EQUIPMENT | MMIS-86 TASK NO. | TASK |
|---|---|---|
| Specified in task descriptions | 15 | Test/repair helmet, CVC |
| | 16 | Test/repair switchboard, SB-22 or SB-993 |
| | 17 | Test/repair telephone, TA-312 or TA-1 |
| | 21 | Test/replace KY-57 |
| | 26 | Test amplifier, AM-2060 |
| | 27 | Test mounting, MT-1029 or MT-1898 |
| | 29 | Test intercom control set, C-2296/7/8 |
| | 31 | Test frequency select control, C-2742 |
| | 32 | Test power cable, CX-4655 (VRC-64) |
| | 33 | Test suppressor, MX-7778A |

# APPENDIX B

## EXAMPLES OF FORMS AND TABLES USED IN CERTIFICATION PROGRAM

TABLE 8 (31V-ALL): CERTIFICATION, QUALIFICATION AND EXPERIENCE SUMMARY BY INDIVIDUAL

SIX-WEEK REPORTING PERIOD ENDING: 3140 (20 MAY 83)

| NAME/PAYGRADE | CERT | % TASKS QUAL | % TASKS EXP'D | % TASKS EXPERIENCED 0---20---40---60---80---100 |
|---|---|---|---|---|
| BROWN,J.(31V-32) | | 42* | 42 | ----------+ |
| HALEY, E(31V-E3) | A | 73* | 79 | ---------- ---------+ |
| JOHNSON,.(31V-E1) | | 0 | 6 | --+ |
| JONES,C.(31V-E1) | | 18* | 21 | --------+ |
| RAYMOND,J.(31V-E5) | B | 100 | 100 | ---------- |
| ALL | | 47 | 49 | ---------- |

TABLE 9 (31V-ALL): QUALIFICATIONS AND EXPERIENCE SUMMARY BY TASK

SIX WEEK REPORTING PERIOD ENDING: 3126 (6 MAY 83)

| EQUIPMENT/TASK | NAME/TIMES DONE | | | | |
|---|---|---|---|---|---|
| | BROWN | HALEY | JOHNS | JONES | RAYMO |
| COMMO | | | | | |
| 1 *REPL ANTENNA ELEMENT,AT-1095/1730 | Q | Q | 1 | Q | Q |
| 2 *REPL ANTENNA MATCHING UNIT | Q | Q | 2 | Q | Q |
| 3 *REPL RF CABLE,CG-1773 | Q | Q | 1 | Q | Q |
| 4 *REPL CABLE,CX-4722/4723 | Q | Q | 1 | Q | Q |
| 5 *TEST RECEIVER/XMITTER,RT-246/524 | Q | Q | 3 | | Q |
| 6 *TEST RECEIVER,R-442 | Q | | | | Q |
| 7 REPL AMPLIFIER,AM-2060 | | | | | Q |
| 8 REPL MOUNTING,MT-1029 OR MT-1898 | Q | Q | 1 | Q | Q |
| 9 *REPL AUDIO FREQUENCY AMPLIFIER | Q | Q | | Q | Q |
| 10 REPL INTERCOM CON SET,C-2296/7/8 | 2 | Q | | | Q |
| 11 *REPL RADIO CON SET,C-2299 | Q | Q | 4 | | Q |
| 12 REPL FREQUENCY SELECT CON,C-2742 | | | | 4 | Q |
| 13 REPL POWER CABLE,CX-4655 VRC-64 | 2 | Q | 1 | | Q |
| 14 REPL SUPPRESSOR,MX-7778A | 1 | | | | Q |
| 15**TEST/REPR HELMET,CVC | | Q | | 2 | Q |
| 16**TEST/REPR SWITCHBOARD,SB-22/993 | | Q | | 1 | Q |
| 17**TEST/REPR TELEPHONE,TA-1/312 | Q | Q | | | Q |
| 18 *TEST LOUDSPEAKER | Q | Q | | | Q |
| 19 TEST MICROPHONE OR HANDSET | Q | | | | Q |
| 20 *SERVICE WIRE,WD-1 AND/OR REEL | Q | Q | | 2 | Q |
| 21**TEST/REPL KY-57 | Q | Q | | | Q |
| 22 TEST ANTENNA ELEMENT | Q | Q | | | Q |
| 23 TEST ANTENNA MATCHING UNIT | | Q | | | Q |
| 24 TEST RF CABLE,CG-1773 | | | | | Q |
| 25 TEST CABLE,CX-4722/4723 | | | | | Q |
| 26**TEST AMPLIFIER,AM-2060 | 1 | Q | | 1 | Q |
| 27**TEST MOUNTING,MT-1029 OR MT-1898 | 1 | Q | | 2 | Q |
| 28 TEST AUDIO FREQUENCY AMPLIFIER | | 4 | | Q | |
| 29**TEST INTERCOM CON SET,C-2296/7/8 | | Q | Q | | Q |
| 30 TEST RADIO CON SET,C-2299 | | 6 | | | Q |
| 31**TEST FREQUENCY SELECT CON,C-2742 | 1 | Q | | | Q |
| 32**TEST POWER CABLE, CX-4655 VRDC-64 | 1 | Q | | | Q |
| 33**TEST SUPPRESSOR,MX-7778A | | Q | | | Q |

TABLE 11: QUALIFICATION AND CERTIFICATION BULLETIN

FOUR-WEEK REPORTING PERIOD ENDING: 3126 (6 MAY 83)

THESE MECHANICS WERE EITHER TASK-QUALIFIED OR CERTIFIED DURING THE PAST FOUR WEEKS

| MECHANIC | NUMBER OF NEW TASKS QUALIFIED | CERTIFICATION AREA/LEVEL |
|---|---|---|
| BROWN,J. 31V-E2 | 11 | COMMO A |
| HALEY,E. 31V-E3 | 5 | COMMO B |
| MEYER,P. 63N-E3 | 7 | TRACK B |
| RICHARDS,L. 45N-E2 | 10 | TURRET A |

# 8 MECHANIC CERTIFICATION OR TASK QUALIFICATION

1. ⌊⌊⌊⌊⌊⌊ Julian date

2. 31V ☐ 45N/T ☐ 63B/S ☐ 63N/T ☐ MOS
   1 2 3 4

3. _____ Mechanic's name

---

If CERTIFICATION, enter:

4. TRACK ☐ WHEEL ☐ TURR ☐ COMMO ☐ Tech Area
   1 2 3 4

5. A ☐ B ☐ Certification Level

---

If TASK QUALIFICATION, enter:

6. M60 ☐ AVLB ☐ M113 ☐ M88 ☐ M578 ☐ M151 ☐ M35/M54 ☐ M561/M792 ☐ GOER ☐ COMMO ☐ Equipment Type
   1 2 3 4 5 6 7 8 9 10

7. ☐☐☐☐☐☐☐☐ Task Number

8. _____ Authorizer's Signature

## APPENDIX C

## RECOMMENDED MODELS FOR MAINTENANCE CERTIFICATES AND CLOTH INSIGNIA FOR UNIFORMS

# DEPARTMENT OF THE ARMY

# CERTIFICATE OF PROFICIENCY

**This is to certify that**

**has successfully qualified**

AT PROFICIENCY LEVEL THROUGH PERFORMANCE

OF SELECTED REPAIR TASKS ON EQUIPMENT

GIVEN AT_____ON_____AUTHORITY_____

Model for Level A and B Certificates.

# DEPARTMENT OF THE ARMY

# CERTIFICATE OF PROFICIENCY

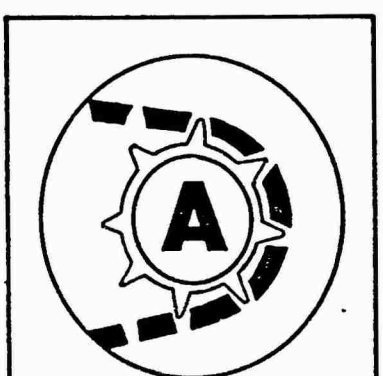
**This is to certify that**

**has successfully qualified**

AS A UNIT MAINTENANCE TRAINER BY COMPLETION OF
THE TRAINERS WORKSHOP AND DEMONSTRATED PERFORMANCE

GIVEN AT_____ON_____AUTHORITY_____

Model for Unit Maintenance Trainer Certificate.



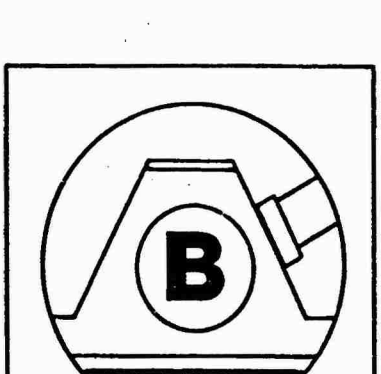

## TRACK SECTION

INSERT LETTER DESIGNATING LEVEL:

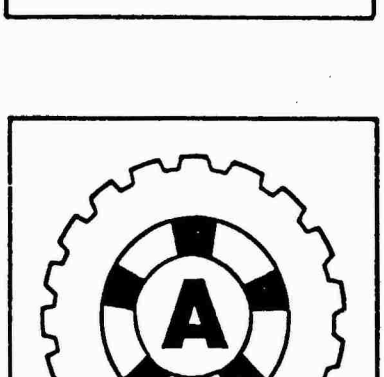
**A**: LEVEL A

**B**: LEVEL A

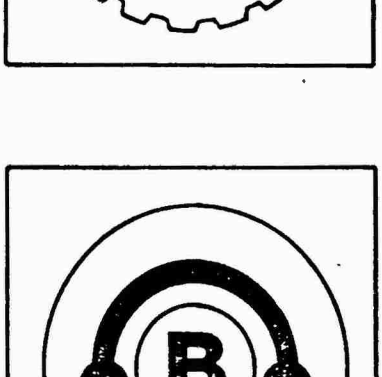
**T**: TRAINER




## TURRET SECTION




## WHEEL SECTION




## COMMO SECTION

Models for cloth insignia to be worn on uniforms.