



DEPARTMENT OF THE NAVY
HEADQUARTERS, UNITED STATES MARINE CORPS
WASHINGTON, DC 20380-0001

NORMAL

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U. S. MARINE CORPS TECHNICAL INSTRUCTION

AN/USM-646 AND AN/USM-674 TEST STATION
GOLD DISK AND SILVER DISK PROGRAM

1. Purpose. To provide information, organizational responsibilities, and procedures concerning the utilization of the AN/USM-646(V) and/or the AN/USM-674(V) Electrical Electronic Test Station, and the Navy Gold Disk and Silver Disk Program within the Marine Corps.

2. Information

a. The Marine Corps is participating in the Navy's Gold and Silver Disk Program that utilize the AN/USM-646(V) and AN/USM-674(V) Electrical Electronic Test Station. The Army, Air Force and Coast Guard are also participants in this program. The AN/USM-646(V) and AN/USM-674(V) Test Stations are comparison type testers that measure impedance signals of electrical components on a circuit card or module (also known as the Unit Under Test) and compares them to a set of known good measurements (called signatures), from identical components on known good circuit cards. These signatures are stored in electronic format on a Gold or Silver Disk.

b. A Gold Disk is a paperless product containing component signature data, logistics information, assembly drawings, and schematics. Gold Disk standards in TM 09810A-50/5 require signatures from at least three known good circuit card assemblies (CCA) for subsequent use in testing suspected failed CCA's. Gold Disks are developed and submitted by certified Gold Disk developers only. Only the Multi-Commodity Maintenance Centers at MCLB Albany and Barstow are certified Gold Disk developer organizations within the Marine Corps. There are many other certified developer organizations within the Navy, Air Force, Coast Guard, Army, or contractor facilities. Once certified and accepted by the Naval Undersea Warfare Center (NUWC), Field Engineering Office, Detachment, Norfolk, VA the individual Gold Disks are stored on a CD-ROM/DVD and distributed to the Marine Corps maintenance activities/units that have AN/USM-646 and/or AN/USM-674 Test Stations on a quarterly basis. Due to the time and expertise required to develop Gold Disks, Fleet Marine Force units are not expected to develop Gold Disks nor is it desired that they attempt to do so. These units should concentrate on developing Silver Disks, if they desire, as they can develop these Silver Disks close to the Gold Disk standard as they have time or expertise to accomplish.

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c. A Silver Disk, like a Gold Disk, is a paperless product containing component signature data, but does not require that complete logistics information, assembly drawings, or schematics be developed. A Silver Disk only requires a learned signature from one known good CCA and does not need to be certified. Standards for Silver Disk development are in TM 09810A-40/6. Silver Disks can be developed by school trained technicians at Marine Corps field activities utilizing the AN/USM-646(V) and or AN/USM-674(V). While the criteria for a Silver Disk is very lenient, developers are encouraged to provided as much information and signatures as possible. Silver Disks can be stored locally on hard drives or floppy disks or shared with other units or users. Silver Disks can also be submitted to NUWC for inclusion on a Silver Disk CD-ROM/DVD that may be published from one to four times per year, depending upon the number of Silver Disks completed, and distributed in conjunction with the Gold Disk CD-ROM/DVD. All Silver Disks (included the ones distributed by the Navy on a CD-ROM/DVD) are to be used at the discretion of the user with the understanding that they have not been verified and may contain inaccurate signatures or information. Please note that this ability to develop Silver Disks allows Fleet Marine Force units the in-house capability to meet their needs without relying on or waiting for support from external support activities.

d. The AN/USM-646(V) and/or AN/USM-674(V), along with Gold/Silver Disk's provides the user with a stand-alone diagnostic troubleshooting capability for CCA's. It has proven itself as a cost-effective method to troubleshoot defective CCA's. Since the AN/USM-646(V) and/or AN/USM-674(V) are static type testers and do not provide functional testing, repaired CCA's must be verified operational by placing back into the equipment/system and verified good or be tested functionally using an Automatic Test System prior to use. Gold Disks can also be utilized as an adjunct to Automatic Test Equipment (along with associated Test Program Sets), to provide a cost-effective method to effect the diagnosis and repair of a CCA.

3. Module Test Repair Station (MTRS) Tracking Software and Responsibilities

a. The NUWC has developed a Module Test and Repair Station (MTRS) Tracking Software as part of the Gold Disk Program. Since the introduction of Miniature/Microminiature (2M) repair capabilities, technicians have not had an automated means of documenting the category of 2M repairs, the diagnostic equipment utilized, or the piece parts required to accomplish the maintenance action. The MTRS Tracking Software is stand-alone reporting software, providing technicians and supervisors with the capability to document, track, and generate reports of maintenance actions related to the fault isolation and 2M repairs of CCA's. The Marine Corps version of the MTRS (MCMTRS) Tracking Software (version 1.0) was developed in accordance with TM 4700-15/1 and NAVMC 10245. The purpose is to automate documentation and provide detailed reports for subject areas not readily available from MIMMS.

b. If the required data is properly entered for each maintenance action, the summary reports generated from the MCMTRS will provide:

- (1) Automated reports structured for local maintenance managers.
- (2) An aid in measuring funding expenditures and contribution of the Module Test and Repair Station effort toward battle force readiness/operational availability via metrics resident in the Outgoing Summary Report.
- (3) SYSCOM (Program Managers/Logistics Managers) feedback relative to system maintainability and life cycle costs.
- (4) A measure of the effectiveness of the 2M/MTR Program in maintaining the self-sustainability of forces ashore and afloat.

c. Collection of the 2M/MTR maintenance action data will provide end user feedback of historical component failures, effective piece parts provisioning, and statistics required to measure the effectiveness of the progressive repair concept. The MTRS Data will directly affect the quantity and mix of 2M piece parts and components authorized for the site specific allowance, including re-provisioning of range/depth for the piece parts carried both in Supply Issue Points and Pre-Expended Bins (PEBs).

d. The terminology used in the Marine Corps version of the MTRS Tracking Software tried to be as similar as possible with the terms used in MIMMS and ATLASS reporting systems at this time.

4. Material Required. (one or both of the following.)

<u>Item</u>	<u>Description</u>	<u>NSN</u>	<u>PN</u>	<u>I.D. No.</u>
(1)	Test Station, Electrical-Electronic Equipment	6625-01-371-4275	AN/USM-646	09810A
(2)	Test Station, Electrical-Electronic Equipment	6625-01-484-9160	AN/USM-674(V)1	10793A

5. Applicable Publications. Refer to the SL-1-2 for all applicable publications under ID Number's 09810A or 10793A

6. Organizational Responsibilities

a. The Program Manager for Test, Measurement, and Diagnostics Equipment (TMDE), Marine Corps Systems Command (MARCORSYSCOM) will provide overall program management of the Gold and Silver Disk programs within the Marine Corps. Acquire and field required AN/USM-646(V) and/or AN/USM-674(V) hardware and software. Coordinate funding to upgrade select Silver Disks to the Gold Disk standard. And provide guidance for Gold Disk candidate prioritization. Coordinate with the Navy Program Manager (Code 04M), Naval Sea Systems Command, Washington, DC.

b. Other MARCORSYSCOM Program Managers will recommend candidate CCA's for Gold Disk development to the Gold Disk Coordinator. They will also provide funding and manage the development of Gold Disks for CCA's under their responsibility if they determine it necessary to support the maintenance concept or to reduce the total support costs of the weapon system.

c. The NUWC Detachment, Field Engineering Office, Norfolk is the In-Service Engineering Agent for the AN/USM-646(V), AN/USM-674(V), and the Gold/Silver Disk Program. In addition to being the technical focal point within the Department of Defense, they are responsible for the AN/USM-646(V) and AN/USM-674(V) configuration management (hardware and software), technical manuals, Gold/Silver Disk criteria and format, approval of Gold Disks, distribution of Gold/Silver Disk CD-ROM/DVD's, and initial training during fielding. They are also responsible for receiving information from the Module Test and Repair (MTR) Tracking software and preparing reports. The Navy maintains a website at <https://www.nor.nuwc.navy.mil> describing the program.

d. The Fleet Support Section, Automatic Test Equipment Program (ATEP) Branch, Electronics Business Center (EBC), Marine Corps Multi-Commodity Maintenance Center, Marine Corps Logistics Base (MARCORLOGBASES), Albany, Georgia, has been assigned as the Marine Corps Software Support Activity and Gold/Silver Disk Coordinator. The EBC is responsible for providing assistance to Marine Corps electronic technicians concerning operation (software and hardware) of the AN/USM-646(V) and/or AN/USM-674(V), providing assistance concerning questions or problems with Marine Corps Gold Disks, providing liaison between Marine Corps users and NUWC, keeping a data base of existing Marine Corps Gold Disks and Silver Disks that are reported or submitted by using units. The EBC will also maintain a database of candidate CCA's that may require development of Gold Disks (to include upgrade of Silver Disks to Gold Disks). This list will be based on Marine Corps usage data of CCA's as well as those CCA's that are recommended to be added by Marine Corps organizations. This candidate list will be coordinated within the Marine Corps Automatic Test Systems Program. Priority of Gold Disk development will be based on funding availability and source.

e. Marine Corps organizations/units who have AN/USM-646(V) and/or AN/USM-674(V) Test Stations are to use them just like any other test equipment they have on hand. These systems are provided to effect maintenance actions on electrical/electronic equipment in accordance with equipment manuals and maintenance policy. In addition, these organizations/units are required to use the MTR Tracking software resident on the Test Station controllers and to submit the data electronically to NUWC on a quarterly basis.

7. Special Instructions

a. All Gold and Silver Disk development and Quality Assurance Testing (QAT) will be in accordance with TM 09810A-50/5 for Gold Disks and TM 09810A-40/6 for Silver Disks.

b. Before Marine Corps organizations develop Gold or Silver Disks they will inform the Marine Corps Gold Disk Coordinator (EBC, MCLB Albany) to ensure that the CCA does not already have a Gold/Silver Disk developed or under development. EBC MCLB, Albany will maintain a list of all Gold/Silver Disk candidates and the organization working to develop.

c. All references to NAVUNSEAWARCEN DET FEO NORFOLK within the technical manuals concerning correspondence and communications shall be disregarded and shall be redirected to the EBC MCLB, Albany, GA at the address listed below.

Commander Code 883
Attn: Gold Disk Coordinator
Marine Corps Logistics Bases
814 Radford Blvd
Albany, Georgia 31704-1128
Phone Comm: (229) 639-6338/40
DSN: 567-6338/40 or 1-800-248-8527
Fax: (229) 639-6172
DSN: 567-6172

8. Procedures

a. NAVUNSEAWARCEN DET FEO NORFOLK will:

(1) Collect, maintain, and publish MTRS data base information quarterly as directed by Marine Corps Systems Command (Code TMDE).

(2) Accomplish certification of all Gold Disks submitted by the Marine Corps.

(3) Maintain, publish, and distribute on a quarterly basis a CD-ROM/DVD containing all Gold Disks certified from all sources.

b. EBC Gold Disk Coordinator will:

(1) Serve as the central Marine Corps coordination point for the AN/USM-646(V), and/or AN/USM-674(V) along with the Gold/Silver Disk programs.

(2) Maintain a list of CCA's that are a candidate for Gold/Silver Disks efforts, their status, and who requested the action. Make recommendations, based on FMF input, to MARCORSSYSCOM (TMDE) of those CCA's that already have Silver Disks and require upgrading to the Gold Disk level. Coordinate with NUWC to track Gold/Silver Disks in production to avoid duplication.

(3) Redistribute all Gold Disks/Silver Disks received from an FMF unit to like FMF units for their immediate use prior to inclusion on the Gold Disk/Silver Disk CD-ROM/DVD's by the Navy.

(4) Publish/distribute semi-annual status of all Marine Corps Gold and Silver Disks to FMF using units.

(5) Maintain a Web site dedicated to Gold Disk Program Support.

c. Marine Corps Gold Disk/Silver Disk Developers will:

(1) Prior to starting a Gold Disk/Silver Disk development, the developing activity will coordinate with the Gold Disk Coordinator at EBC MCLB Albany, GA in order to eliminate any unnecessary duplication of effort.

(2) Develop Gold Disks when directed/funded by MARCORSSYSCOM.

(3) Forward any completed Silver Disks, to NAVUNSEAWARCEN DET FEO NORFOLK, Va. for inclusion onto the Silver Disk CD-ROM/DVD and provide a copy to the Gold Disk Coordinator at EBC MCLB, Albany, GA.

(4) Upon completion of Gold Disk, contact the NAVUNSEAWARCEN DET FEO NORFOLK for certification and inclusion onto the Gold Disk CD-ROM/DVD. Notify the Gold Disk Coordinator at EBC MCLB, Albany, GA of actions for cognizant.

(5) Contact the Gold Disk Coordinator at EBC MCLB, Albany, GA with any difficulties encountered with the AN/USM-646(V) or the AN/USM-674(V), associated technical manuals, Gold Disks, Silver Disks or the CD-ROM/DVD's in general.

d. FMF, Base, Post, Station, and Supporting Establishment users will:

(1) Prior to starting a Gold Disk/Silver Disk development, the developing activity will coordinate through the Gold Disk Coordinator at EBC MCLB Albany, GA to eliminate any unnecessary duplication of effort.

(2) Upon completion of a Silver Disk, forward a copy to the Gold Disk Coordinator at EBC MCLB Albany, GA.

(3) Contact the Gold Disk Coordinator at EBC MCLB Albany, GA with any difficulties encountered with the AN/USM-646(V) or the AN/USM-674 Test Stations, associated technical manuals, Gold Disks, Silver Disks or the CD-ROM/DVD's in general.

(4) Make recommendations, via the chain of command, to the Gold Disk Coordinator at EBC MCLB Albany, GA of those CCA's that may require Gold/Silver Disks. The recommendations will be prioritized by (1) Mission Capability, (2) Cost Avoidance, (3) Future Concerns.

(5) In addition to telephones, utilize the e-mail system to the fullest extent possible when communicating with the Gold Disk Coordinator at EBC MCLB Albany, GA regarding all aspects of the Gold Disk and Silver Disk programs.

(6) Within 10 days of the end of each calendar quarter, users of AN/USM-646(V) and/or AN/USM-674(V) Test Stations will submit MTRS Tracking Software data to NUWC via electronic mail at the following address: usmcdata@nuwc.nor.navy.mil.

9. Applicability. This technical instruction is applicable to the Marine Corps Reserve. This technical instruction is not applicable to Marine Corps aviation units whose maintenance policies and directives are promulgated via the Navy. The Naval Aviation Systems Command (NAVAIRSYSCOM) is responsible for managing the Gold Disk and Silver Disk Programs (hardware and software) for these units.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

OFFICIAL

A handwritten signature in black ink that reads "R. P. Shockey". The signature is written in a cursive, slightly slanted style.

R. P. SHOCKEY
Director, Program Support
Marine Corps Systems Command

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