STP 11-24A-OFS

HEADQUARTERS
DEPARTMENT OF THE ARMY

Officer Foundation Standards (OFS) Manual

AOC 24A

TELECOMMUNICATION SYSTEMS ENGINEERING

Ranks Captain (CPT), Major (MAJ), Lieutenant Colonel (LTC), Colonel (COL), General (GEN), Brigadier General (BG), and Major General (MG)

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OFFICER FOUNDATION STANDARDS (OFS) MANUAL

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PREFACE

The Mission: The mission of the Signal Corps is to provide rapid and reliable information to support the command and control of the Army's combat forces during both peace and war. Signal support is the collective, integrated, and synchronized use of information systems, services and resources and it encompasses the following disciplines: communications, automation, visual information, records management, and printing and publications.

The Role of the Signal Officer: Inherent with the Signal Corps' mission are command, supervisory, managerial, and technical leadership for the engineering, acquisition, design, programming, installation, operation, and maintenance of information systems in both fixed and mobile configurations. From the foxhole to the White House, Signal officers plan, direct, control, and manage signal support at all levels of the Army, which include tactical, strategic, and sustaining base operations. This requires the integration and/or interconnection of diverse types of automation, communications, visual information, records management, and printing and publications equipment and systems into local area and wide area information networks.

This manual applies to both Active and Reserve Component soldiers.

The proponent for this publication is the Signal School. Users of this publication are encouraged to report errors, recommend changes, and submit comments on its improvement. Comments should be keyed to the specific page, paragraph, and line of text in which the change is recommended. Reasons will be provided for each comment to ensure understanding and complete evaluation. Comments should be made on DA Form 2028 directly to Commander, US Army Signal Center and Fort Gordon, ATTN: ATZH-DTM-I, Fort Gordon, Georgia 30905-5074.

Unless this manual states otherwise, masculine pronouns do not refer exclusively to men.

CHAPTER 1

Introduction

1-1. GENERAL

Professional Development Objectives. A broad spectrum of opportunities exists within the Signal Corps. The majority of Signal officers will progress by concentrating their career development on the operational aspects of the branch. Officers train for and seek repetitive command and staff assignments within operational signal units at all levels of command. All Signal officers must be prepared to perform their wartime duties, both on and off the battlefield. Every officer may be called upon to perform his or her role as an Army officer and, in particular, as a Signal officer. At the company grade level, all Signal officers are required to obtain a mixture of troop leading and Signal operational experience. Ultimately, Signal officers must develop and maintain a blend of tactical and technical competence throughout their careers.

1-2. TASK SUMMARIES

a. Task summaries outline the wartime performance requirements of each critical task in the soldier's manual (SM). They provide the soldier proficiency on training. As a minimum, task summaries include information you must know and the skills that you must perform to standards for each task. The format for the task summaries included in this SM is as follows:

(1) **Task title**. The task title identifies the action to be performed.

(2) **Task number**. A 10-digit number identifies each task or skill. Include this task number, along with the task title, in any correspondence relating to the task. To determine which tasks are testable at each skill level, refer to Chapter 2, Part 2, Critical Tasks. The first two numbers of the last four of each task DO NOT indicate the skill levels testable for that particular task.

(3) **Conditions**. The task conditions identify all the equipment, tools, references, job aids, and supporting personnel that the soldier needs to perform the task in wartime. This section identifies any environmental conditions that can alter task performance, such as visibility, temperature, and wind. This section also identifies any specific cues or events (a chemical attack or identification of a threat vehicle) that trigger task performance.

(4) **Standards**. The task standards describe how well and to what level you must perform a task under wartime conditions. Standards are typically described in terms of accuracy, completeness, and speed.

(5) **Training and Evaluation Guide**. This section contains–

(a) The task performance steps that provide details required to perform the task.

(b) The performance evaluation guide that contains–

1. The evaluation preparation, which provides special setup procedures and instructions for evaluating task performance (if required).

2. Performance measures with GO/NO GO criteria.

3. Evaluation guidance, which indicates requirements for receiving a GO and other special guidance (if required).

(6) **References**. This section identifies references that provide more detailed and thorough explanations of task performance requirements than that are given in the task summary description.

b. Additionally, some task summaries include safety statements and notes. Safety statements (danger, warning, and caution) alert user to the possibility of immediate death, personal injury, or damage to equipment. Notes provide a small, extra supportive explanation or hint relative to the performance measures.

CHAPTER 2

MOS Training Plan

2-1. GENERAL

The MOS Training Plan (MTP) identifies the essential components of a unit-training plan for individual training. Units have different training needs and requirements based on differences in environment, location, equipment, dispersion, and similar factors. Therefore, the MTP should be used as a guide for conducting unit training and not a rigid standard. The MTP consists of two parts. Each part is designed to assist the commander in preparing a unit training plan which satisfies integration, cross training, training up, and sustainment training requirements for soldiers in this MOS.

(1) Part One of the MTP shows the relationship of an MOS skill level between duty position and critical tasks. These critical tasks are grouped by task commonality into subject areas.

(a) Section I lists subject area numbers and titles used throughout the MTP. These subject areas are used to define the training requirements for each duty position within an MOS.

(b) Section II identifies the total training requirement for each duty position within an MOS and provides a recommendation for cross training and train-up/merger training.

- **Duty Position column**. This column lists the duty positions of the MOS, by skill level, which have different training requirements.
- **Subject Area column**. This column lists, by numerical key (see Section I), the subject areas a soldier must be proficient in to perform in that duty position.
- **Cross Train column**. This column lists the recommended duty position for which soldiers should be cross-trained.
- **Train-up/Merger column**. This column lists the corresponding duty position for the next higher skill level or MOSC the soldier will merge into on promotion.

(2) Part Two lists, by general subject areas, the critical tasks to be trained in an MOS and the type of training required (resident, integration, or sustainment).

- **Subject Area column**. This column lists the subject area number and title in the same order as Section I, Part One of the MTP.
- **Task Number column**. This column lists the task numbers for all tasks included in the subject area.
- **Title column**. This column lists the task title for each task in the subject area.
- **Training Location column**. This column identifies the training location where the task is first trained to soldier training publications standards. If the task is first trained to standard in the unit, the word “Unit” will be in this column. If the task is first trained to standard in the training base, it will identify, by brevity code (ANCOC, BNCOC, etc.), the resident course where the task was taught. Figure 2-1 contains a list of training locations and their corresponding brevity codes.

OAC	Officer Advanced Course

Figure 2-1. Training Locations

- **Sustainment Training Frequency column**. This column indicates the recommended frequency at which the tasks should be trained to ensure soldiers maintain task proficiency. Figure 2-2 identifies the frequency codes used in this column.

BA	- Biannually
AN	- Annually
SA	- Semiannually
QT	- Quarterly
MO	- Monthly
BW	- Bi-weekly
WK	- Weekly

Figure 2-2. Sustainment Training Frequency Codes

- **Sustainment Training Skill Level column**. This column lists the skill levels of the MOS for which soldiers must receive sustainment training to ensure they maintain proficiency to soldier's manual standards.

2-2. SUBJECT AREA CODES

Skill Level 3

1 COMMERCIAL
2 JOINT
3 ECHELONS ABOVE CORPS (EAC)
4 ECHELONS CORPS AND BELOW (ECB)

2-3. CRITICAL TASKS LIST

MOS TRAINING PLAN

CRITICAL TASKS

Subject Area	Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
Skill Level 3					
1. COMMER-CIAL	113-336-9001	Monitor Compliance to a Commercial Telecommunications Network Design	OAC	QT	3
	113-336-9002	Validate a Commercial Telecommunications Network	OAC	QT	3
	113-336-9003	Restore a Commercial Telecommunications Network	OAC	QT	3
	113-523-9001	Engineer Commercial and Other Telecommunications Systems into a Seamless Network	OAC	QT	3

CRITICAL TASKS

Subject Area	Task Number	Title	Training Location	Sust Tng Freq	Sust Tng SL
2. JOINT	113-520-9001	Monitor Compliance to a Network Design that Integrates Joint and Other Telecommunications Systems	OAC	QT	3
	113-520-9002	Validate a Network that Integrates Joint and Other Telecommunications Systems	OAC	QT	3
	113-520-9003	Restore a Network that Integrates Joint and Other Telecommunications Systems	OAC	QT	3
	113-523-9004	Engineer Joint and Other Telecommunications Systems into a Seamless Network	OAC	QT	3
3. ECHELONS ABOVE CORPS (EAC)	113-521-9001	Monitor Compliance to a Network Design that Integrates TRI-TAC and Other Telecommunications Systems	OAC	QT	3
	113-521-9002	Validate a Network that Integrates TRI-TAC and Other Telecommunications Systems	OAC	QT	3
	113-521-9003	Restore a Network that Integrates TRI-TAC and Other Telecommunications Systems	OAC	QT	3
	113-523-9002	Engineer TRI-TAC and Other Telecommunications Systems into a Seamless Network	OAC	QT	3
4. ECHELONS CORPS AND BELOW (ECB)	113-519-9001	Monitor Compliance to a Network Design that Integrates MSE and Other Telecommunications Systems	OAC	QT	3
	113-519-9002	Validate a Network that Integrates MSE and Other Telecommunications Systems	OAC	QT	3
	113-519-9003	Restore a Network that Integrates MSE and Other Telecommunications Systems	OAC	QT	3
	113-523-9003	Engineer MSE and Other Telecommunications Systems into a Seamless Network	OAC	QT	3

CHAPTER 3

MOS/Skill Level Tasks

Skill Level 3

Subject Area 1: COMMERCIAL

Engineer Commercial and Other Telecommunications Systems into a Seamless Network

113-523-9001

Conditions: Given subscriber service requirements, subscriber locations, resource list (equipment, personnel, budget), and applicable references (Vendor Manuals, Title 47 US Code, EIA/TIA Standards, ITU-T and ITU-R Standards); C, Ku, and Ka Band Satellite Terminals; Alcatel Microwave Systems (DS1, 4xDS1, DS3); VHF and UHF Radio Systems; Automatic Link Establishment (ALE) HF Radio Systems; Analog and Digital Cellular Phone Systems; ATM switches, IDNX Intelligent MUXES, CODEMs, and CISCO Routers; CSU/DSU; Picturetel VTC Systems; PBXs and Key Systems; and Analog and Digital Phones.

Standards: Met all subscriber requirements and the commander approved the network diagram.

Performance Steps

1. Translate subscriber requirements into technical requirements (Voice, Data, Video, Special) .
2. Assess site/physical location.
3. Determine switching requirements (ATM, Intelligent MUXES, Switches, Routers).
4. Develop switching plan.
5. Determine transmission requirements (Copper, Fiber, Satellite, TROPO, LOS Microwave, Packet Radio, Cellular).
6. Develop transmission plan.
7. Determine ancillary requirements (HVAC, Power Distribution, Grounding, EMI, Security and Crypto, Timing and Synchronization, and Interfaces).
8. Incorporate ancillary requirements into transmission and switching plans.
9. Produce draft network diagram.
10. Develop system metrics (switching, transmission, ancillary, user services)
11. Analyze network plan to ensure user requirements and interoperability standards are met.
12. Submit final network plan for approval. (Statement of Work (SOW), Telecommunication Service Order (TSO), Request for Proposal (RFP), Engineering Change Proposal (ECP), Rough Order of Magnitude (ROM) Request for Service (RFS).)

Performance Measures	**GO**	**NO GO**
1. Developed a switching plan IAW user requirements and resource availability.	____	____
2. Developed transmission plan IAW user requirements and resource availability.	____	____
3. Developed draft network diagram IAW switching, transmission, and ancillary requirements.	____	____

Performance Measures	**GO**	**NO GO**
4. Developed system metrics (switching, transmission, ancillary, user services).	____	____
5. Developed final network plan IAW user requirements and resource availability.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0070453462	
ISBN 0130843709	
ISBN 0133374866	
ISBN 0135225833	
ISBN 0139737448	
ISBN 0471345717	
ISBN 0534374824	
ISBN 1578700698	
ITU-R STANDARDS	
ITU-T STANDARDS	
TITLE 47 US CODE	
VENDOR MANUALS	

Validate a Commercial Telecommunications Network

113-336-9002

Conditions: Given an operational commercial telecommunications network; network design plan; test, measurement, and diagnostic equipment (TMDE); and applicable regulations and commercial standards (Vendor Manuals, Title 47 US Code, EIA/TIA Standards, ITU-T and ITU-R Standards, etc.); C, Ku, and Ka Band Satellite Terminals; Alcatel Microwave Systems (DS1, 4xDS1, DS3); VHF and UHF Radio Systems; Automatic Link Establishment (ALE) HF Radio Systems; Analog and Digital Cellular Phone Systems; ATM switches, IDNX Intelligent MUXES, CODEMs, CISCO Routers; CSU/DSU; Picturetel VTC Systems; PBXs and Key Systems; and Analog and Digital Phones

Standards: A commercial telecommunications network met user requirements and applicable regulatory standards.

Performance Steps

1. Review network design specifications.
2. Review system metrics (transmission, switching, user services, ancillary).
3. Review implementation plan.
4. Develop System Acceptance Test Plan.
5. Supervise System Acceptance Test.
6. Review System Acceptance Test results.
7. Initiate corrective action.
8. Certify network performance.

Performance Measures	**GO**	**NO GO**
1. Developed System Acceptance Test Plan IAW design specification, system metrics, and system implementation plan.	____	____
2. Initiated corrective action IAW System Acceptance Test Report.	____	____
3. Certified network performance IAW System Acceptance Test Report.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	Related
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0130843709	
ISBN 0133374866	
ISBN 0135225833	
ISBN 0471345717	
ITU-R STANDARDS	
ITU-T STANDARDS	
TITLE 47 US CODE	
VENDOR MANUALS	

Monitor Compliance to a Commercial Telecommunications Network Design

113-336-9001

Conditions: Given an approved commercial telecommunications network design and implementation plan; C, Ku, and Ka Band Satellite Terminals; Alcatel Microwave Systems (DS1, 4xDS1, DS3); VHF and UHF Radio Systems; Automatic Link Establishment (ALE) HF Radio Systems; Analog and Digital Cellular Phone Systems; ATM switches, IDNX Intelligent MUXES, CODEMs, and CISCO Routers; CSU/DSU; Picturetel VTC Systems; PBXs and Key Systems; and Analog and Digital Phones; Vendor Manuals, Title 47 US Code, EIA/TIA Standards, and ITU-T and ITU-R Standards.

Standards: Implemented the network IAW design specifications.

Performance Steps

1. Review network design specifications.
2. Review implementation plan.
3. Review system metrics (measurable hands-on system performance standards).
4. Verify implementation IAW network design specifications, implementation plan, and system metrics.
5. Initiate action to correct deficiency.

Performance Measures	**GO**	**NO GO**
1. Initiated action to correct network deficiency.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0135225833	
ISBN 0201485346	
ITU-R STANDARDS	
ITU-T STANDARDS	
TITLE 47 US CODE	
VENDOR MANUALS	

Restore a Commercial Telecommunications Network

113-336-9003

Conditions: Given nonoperational or degraded services of a commercial telecommunications network; network design plan; test, measurement, and diagnostic equipment (TMDE); applicable regulations; and commercial standards; Vendor Manuals, Title 47 US Code, EIA/TIA Standards, ITU-T and ITU-R Standards; C, Ku, and Ka Band Satellite Terminals; Alcatel Microwave Systems (DS1, 4xDS1, DS3), VHF and UHF Radio Systems; Automatic Link Establishment (ALE) HF Radio Systems; Analog and Digital Cellular Phone Systems; ATM switches, IDNX Intelligent Multiplexers, CODEMs, CISCO Routers; CSU/DSU; Picturetel VTC Systems; PBXs and Key Systems; and Analog and Digital Phones.

Standards: Restored services to design plan/specifications.

Performance Steps

1. Verify problem.
2. Analyze problem.
3. Determine possible causes of problem.
4. Develop troubleshooting plan.
5. Execute troubleshooting plan.
6. Engineer solution to outage.
7. Direct the implementation of the solution.
8. Validate implementation of solution.
9. Document the solution.

Performance Measures	**GO**	**NO GO**
1. Planned troubleshooting procedures to isolate fault.	____	____
2. Executed troubleshooting procedures to isolate fault.	____	____
3. Validated implementation of solution to design plan/specifications.	____	____
4. Documented the solution.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0133374866	
ITU-R STANDARDS	
ITU-T STANDARDS	
TITLE 47 US CODE	
VENDOR MANUALS	

Subject Area 2: JOINT

Monitor Compliance to a Network Design that Integrates Joint and Other Telecommunications Systems
113-520-9001

Conditions: Given an approved network design and implementation plan that integrates Joint and other telecommunications systems.

Standards: Implemented the network IAW design specifications.

Performance Steps

1. Review network design specifications.
2. Review Implementation plan.
3. Review system metrics (measurable hands-on system performance standard).
4. Verify implementation IAW network design specifications, implementation plan, and system metrics.
5. Initiate action to correct deficiency.

Performance Measures	**GO**	**NO GO**
1. Initiated action to correct network deficiency.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
APPLICABLE TM	
ISBN 0135225833	
ISBN 0201485346	

Restore a Network that Integrates Joint and Other Telecommunications Systems
113-520-9003

Conditions: Given nonoperational or degraded services in a network that integrates Joint and other telecommunications systems; a network design plan; test, measurement, and diagnostic equipment (TMDE); and applicable regulations and standards.

Standards: Restored services to design plan/specifications.

Performance Steps

1. Verify problem.
2. Analyze problem.
3. Determine possible causes of problem.
4. Develop troubleshooting plan.
5. Execute troubleshooting plan.
6. Engineer solution to outage.
7. Direct the implementation of the solution.
8. Validate implementation of the solution.
9. Document the solution.

Performance Measures	**GO**	**NO GO**
1. Planned troubleshooting procedures to isolate fault.	____	____
2. Executed troubleshooting procedures to isolate fault.	____	____
3. Validated implementation of the solution to design plan/specifications.	____	____
4. Documented the solution.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
EIA/TIA STANDARDS	
ISBN 0133374866	
ISBN 1578700698	
ITU-R STANDARDS	
ITU-T STANDARDS	
TITLE 47 US CODE	

Validate a Network that Integrates Joint and Other Telecommunications Systems
113-520-9002

Conditions: Given an operational telecommunications network consisting of Joint and other telecommunications systems; network design plan; test, measurement, and diagnostic equipment (TMDE); and applicable regulations and standards.

Standards: The telecommunications network met user requirements and applicable regulatory standards.

Performance Steps

1. Review network design specifications.
2. Review system metrics (transmission, switching, user services, ancillary).
3. Review implementation plan.
4. Develop System Acceptance Test Plan.
5. Supervise System Acceptance Test.
6. Review System Acceptance Test results.
7. Initiate corrective action.
8. Certify network performance.

Performance Measures	**GO**	**NO GO**
1. Developed System Acceptance Test Plan IAW design specification, system metrics, and system implementation plan.	____	____
2. Initiated corrective action IAW System Acceptance Test Report.	____	____
3. Certified network performance IAW System Acceptance Test Report.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
EIA/TIA STANDARDS	
ISBN 0133374866	
ISBN 0135225833	
ISBN 0471345717	
ITU-R STANDARDS	
ITU-T STANDARDS	
TITLE 47 US CODE	

Engineer Joint and Other Telecommunications Systems into a Seamless Network
113-523-9004

Conditions: Given subscriber service requirements, subscriber locations, a resource listing of Joint and other available telecommunications resources (equipment, personnel, budget), and applicable references.

Standards: Met all subscriber requirements and the commander approved the network diagram.

Performance Steps

1. Translate subscriber requirements into technical requirements.
2. Assess site/physical location.
3. Determine switching requirements.
4. Develop switching plan.
5. Determine transmission requirements.
6. Develop transmission plan.
7. Determine ancillary requirements.
8. Incorporate ancillary requirements into transmission and switching plans.
9. Produce draft network diagram.
10. Develop system metrics (switching, transmission, ancillary, user services).
11. Analyze network plan to ensure user requirements and interoperability standards are met.
12. Submit final network plan for approval. (Statement of Work, (SOW), Telecommunication Service Order (TSO), Request for Proposal (RFP), Engineering Change Proposal (ECP), Rough Order of Magnitude (ROM) Request for Service (RFS).)

Performance Measures	**GO**	**NO GO**
1. Developed a switching plan IAW user requirements and resource availability.	____	____
2. Developed transmission plan IAW user requirements and resource availability.	____	____
3. Developed draft network diagram IAW switching, transmission, and ancillary requirements.	____	____
4. Developed system metrics (switching, transmission, ancillary, user services).	____	____
5. Developed final network plan IAW user requirements and resource availability.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	Related
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0133374866	
ISBN 0135225833	
ISBN 0471345717	
ISBN 1578700698	
ITU-R STANDARDS	
ITU-T STANDARDS	
TITLE 47 US CODE	

Subject Area 3: ECHELONS ABOVE CORPS (EAC)

Engineer TRI-TAC and Other Telecommunications Systems into a Seamless Network

113-523-9002

Conditions: Given subscriber service requirements, subscriber locations, a listing of TRI-TAC and other available telecommunications resources (equipment, personnel, budget), applicable references and technical manuals (TMs); AN/TRC-170, 173, 174, 175, and 138; AN/TTC-39D and 39D(P/S); AN/TTC-48 SEN and AN/TTC-47 LEN, RMC-RLGM, DSVT, DNVT, CSCE (ISYSCON); TSC-93 and 85; FCC-100, TYC-39A, AN/TRC-191, and RT-1539.

Standards: Met all subscriber requirements and the commander approved the network diagram.

Performance Steps

1. Translate subscriber requirements into technical requirements.
2. Assess site/physical location.
3. Determine switching requirements.
4. Develop switching plan.
5. Determine transmission requirements.
6. Develop transmission plan.
7. Determine ancillary requirements.
8. Incorporate ancillary requirements into transmission and switching plans.
9. Produce draft network diagram.
10. Develop system metrics (switching, transmission, ancillary, user services).
11. Analyze network plan to ensure user requirements and interoperability standards are met.
12. Submit final network plan for approval. (Statement of Work (SOW), Telecommunication Service Order (TSO), Request for Proposal (RFP), Engineering Change Proposal (ECP), and Rough Order of Magnitude (ROM) Request for Service (RFS).)

Performance Measures	**GO**	**NO GO**
1. Developed a switching plan IAW user requirements and resource availability.	____	____
2. Developed transmission plan IAW user requirements and resource availability.	____	____
3. Developed draft network diagram IAW switching, transmission, and ancillary requirements.	____	____
4. Developed system metrics (switching, transmission, ancillary, user services).	____	____
5. Developed final network plan IAW user requirements and resource availability.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	Related
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0070453462	
ISBN 0130843709	
ISBN 0133374866	
ISBN 0135225833	
ISBN 0139737448	
ISBN 0471345717	
ISBN 1578700698	
ITU-R STANDARDS	
ITU-T STANDARDS	

Restore a Network that Integrates TRI-TAC and Other Telecommunications Systems
113-521-9003

Conditions: Given nonoperational or degraded services in a network that integrates TRI-TAC and other telecommunications systems; a network design plan; test, measurement, and diagnostic equipment (TMDE); applicable regulations, standards, and technical manuals (TMs); AN/TRC-170, 173, 174, 175, 138; AN/TTC-39D and 39D(P/S); AN TTC-48 SEN and 47 LEN; RMC-RLGM, DSVT, DNVT, CSCE (ISYSCON); TSC-93 and 85; FCC-100; TYC-39A; AN/TRC-191; and RT-1539.

Standards: Restored services to design plan/specifications.

Performance Steps

1. Verify problem.
2. Analyze problem.
3. Determine possible causes of problem.
4. Develop troubleshooting plan.
5. Execute troubleshooting plan.
6. Engineer solution to outage.
7. Direct the implementation of the solution.
8. Validate implementation of the solution.
9. Document the solution.

Performance Measures	**GO**	**NO GO**
1. Planned troubleshooting procedures to isolate fault.	____	____
2. Executed troubleshooting procedures to isolate fault.	____	____
3. Validated implementation of the solution to design plan/specifications.	____	____
4. Documented the solution.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0133374866	
ITU-R STANDARDS	
ITU-T STANDARDS	

Validate a Network that Integrates TRI-TAC and Other Telecommunications Systems
113-521-9002

Conditions: Given an operational telecommunications network consisting of TRI-TAC and other telecommunications systems; network design plan; test, measurement, and diagnostic equipment (TMDE); applicable regulations, standards, and technical manuals (TMs); AN/TRC-170, 173, 174, 175, 138; AN/TTC-39D and 39D(P/S); AN TTC-48 SEN and 47 LEN; RMC-RLGM, DSVT, DNVT, CSCE (ISYSCON); TSC-93 and 85; FCC-100; TYC-39A; AN/TRC-191; and RT-1539.

Standards: The network met user requirements and applicable regulatory standards.

Performance Steps

1. Review network design specifications.
2. Review system metrics (transmission, switching, user services, ancillary).
3. Review implementation plan.
4. Develop System Acceptance Test Plan.
5. Supervise System Acceptance Test.
6. Review System Acceptance Test results.
7. Initiate corrective action.
8. Certify network performance.

Performance Measures	**GO**	**NO GO**
1. Developed System Acceptance Test Plan IAW design specification, system metrics, and System implementation plan.	____	____
2. Initiated corrective action IAW System Acceptance Test Report.	____	____
3. Certified network performance IAW System Acceptance Test Report.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0133374866	
ISBN 0135225833	
ISBN 0471345717	
ITU-R STANDARDS	
ITU-T STANDARDS	

Monitor Compliance to a Network Design that Integrates TRI-TAC and Other Telecommunications Systems

113-521-9001

Conditions: Given an approved network design and implementation plan that integrates TRI-TAC and other telecommunications systems; AN/TRC-170, 173, 174, 175, and 138; AN/TTC-39D and 39D(P/S); AN/TTC-48 SEN and AN/TTC-47 LEN, RMC-RLGM, DSVT, DNVT, CSCE (ISYSCON), TSC-93 and 85, FCC-100, TYC-39A, AN/TRC-191, RT-1539, and applicable technical manuals (TMs).

Standards: Implemented the network IAW design specifications.

Performance Steps

1. Review network design specifications.
2. Review implementation plan.
3. Review system metrics (measurable hands-on system performance standard).
4. Verify implementation IAW network design specifications, implementation plan, and system metrics.
5. Initiate action to correct deficiency.

Performance Measures	**GO**	**NO GO**
1. Initiated action to correct network deficiency.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
APPLICABLE TM	
ISBN 0135225833	

Subject Area 4: ECHELONS CORPS AND BELOW (ECB)

Monitor Compliance to a Network Design that Integrates MSE and Other Telecommunications Systems

113-519-9001

Conditions: Given an approved network design and implementation plan that integrates MSE and other telecommunications systems, DA Form 2406, Dead Line Report, applicable technical manuals (TMs); AN/TTC-46, 47, and 48; AN/TRC-190, V1, 2, 3, and 4 (SHF); AN/TRC-191, AN/VRC-97 SHF, RMC, DSVT, DNVT, NPT/ISYSCON, TSC-93 and 85, DMS, Tactical Internet (TI), and UXC-7.

Standards: Implemented the MSE network IAW design specifications.

Performance Steps

1. Review network design specifications.
2. Review implementation plan.
3. Review system metrics (measurable hands-on system performance standard).
4. Verify implementation IAW network design specifications, implementation plan, and system metrics.
5. Initiate action to correct deficiency.

Performance Measures	**GO**	**NO GO**
1. Initiated action to correct network deficiency.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
APPLICABLE TM	
ISBN 0135225833	
ISBN 0201485346	

Restore a Network that Integrates MSE and Other Telecommunications Systems
113-519-9003

Conditions: Given nonoperational or degraded services in a network that integrates MSE and other telecommunications systems; a network design plan; test, measurement, and diagnostic equipment (TMDE); applicable regulations, technical manuals (TMs), and standards; DA Form 2406, Dead Line Report; AN/TTC-46, 47, and 48; AN/TRC-190, V1, 2, 3, and 4 (SHF); AN/TRC-191, AN/VRC-97 SHF, RMC, DSVT, DNVT, NPT/ISYSCON, TSC-93 and 85, DMS, Tactical Internet (TI), and UXC-7.

Standards: Restored services to design plan/specifications.

Performance Steps

1. Verify problem.
2. Analyze problem.
3. Determine possible causes of problem.
4. Develop troubleshooting plan.
5. Execute troubleshooting plan.
6. Engineer solution to outage.
7. Direct the implementation of the solution.
8. Validate implementation of solution.
9. Document the solution.

Performance Measures	**GO**	**NO GO**
1. Planned troubleshooting procedures to isolate fault.	____	____
2. Executed troubleshooting procedures to isolate fault.	____	____
3. Validated implementation of solution to design plan/specifications.	____	____
4. Documented the solution.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0133374866	
ISBN 1578700698	
ITU-R STANDARDS	
ITU-T STANDARDS	

Validate a Network that Integrates MSE and Other Telecommunications Systems
113-519-9002

Conditions: Given an operational telecommunications network consisting of MSE and other telecommunications systems; network design plan; test, measurement, and diagnostic equipment (TMDE); applicable regulations, technical manuals (TMs), and standards; DA Form 2406, Dead Line Report; AN/TTC-46, 47, and 48; AN/TRC-190, V1, 2, 3, and 4 (SHF); AN/TRC-191, AN/VRC-97 SHF, RMC, DSVT, DNVT, NPT/ISYSCON, TSC-93 and 85, DMS, Tactical Internet (TI), and UXC-7.

Standards: The network met user requirements and applicable regulatory standards.

Performance Steps

1. Review network design specifications.
2. Review system metrics (transmission, switching, user services, ancillary).
3. Review implementation plan.
4. Develop System Acceptance Test Plan.
5. Supervise System Acceptance Test.
6. Review System Acceptance Test results.
7. Initiate corrective action.
8. Certify network performance.

Performance Measures	**GO**	**NO GO**
1. Developed System Acceptance Test Plan IAW design specification, system metrics, and systems implementation plan.	____	____
2. Initiated corrective action IAW System Acceptance Test Report.	____	____
3. Certified network performance IAW System Acceptance Test Report.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	**Related**
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0133374866	
ISBN 0135225833	
ISBN 0471345717	
ITU-R STANDARDS	
ITU-T STANDARDS	

Engineer MSE and Other Telecommunications Systems into a Seamless Network
113-523-9003

Conditions: Given subscriber service requirements, subscriber locations, a listing of MSE and other available telecommunications resources (equipment, personnel, budget), applicable references and technical manuals (TMs), DA Form 2406, Dead Line Report; AN/TTC-46, 47, and 48; AN/TRC-190, V1, 2, 3, and 4 (SHF); AN/TRC-191, AN/VRC-97 SHF, RMC, DSVT, DNVT, NPT/ISYSCON, TSC-93 and 85, DMS, Tactical Internet (TI), and UXC-7.

Standards: Met all subscriber requirements and commander approved the network diagram.

Performance Steps

1. Translate subscriber requirements into technical requirements.
2. Assess site/physical location.
3. Determine switching requirements.
4. Develop switching plan.
5. Determine transmission requirements.
6. Develop transmission plan.
7. Determine ancillary requirements.
8. Incorporate ancillary requirements into transmission and switching plans.
9. Produce draft network diagram.
10. Develop system metrics (switching, transmission, ancillary, user services).
11. Analyze network plan to ensure user requirements and interoperability standards are met.
12. Submit final network plan for approval. (Statement of Work (SOW), Telecommunication Service Order (TSO), Request for Proposal (RFP), Engineering Change Proposal (ECP), and Rough Order of Magnitude (ROM) Request for Service (RFS).)

Performance Measures	**GO**	**NO GO**
1. Developed a switching plan IAW user requirements and resource availability.	____	____
2. Developed transmission plan IAW user requirements and resource availability.	____	____
3. Developed draft network diagram IAW switching, transmission, and ancillary requirements.	____	____
4. Developed system metrics (switching, transmission, ancillary, user services).	____	____
5. Developed final network plan IAW user requirements and resource availability.	____	____

Evaluation Guidance: Score the soldier GO if all steps are passed. Score the soldier NO-GO if any step is failed. If the soldier fails any steps, show what was done wrong and how to do it correctly. Have the soldier practice until he can correctly perform the task.

References

Required	Related
APPLICABLE REGULATIONS	
APPLICABLE TM	
EIA/TIA STANDARDS	
ISBN 0133374866	
ISBN 0135225833	
ISBN 0471345717	
ISBN 1578700698	
ITU-R STANDARDS	
ITU-T STANDARDS	
TITLE 47 US CODE	

GLOSSARY

Section I
Abbreviations

(C)	CONFIDENTIAL
(S)	SECRET
(TS)	TOP SECRET
(U)	Unclassified
(V)	version
A/D	analog to digital
ABEND	abnormal software production halt
ABS	aggregate bit stream
ABT	assign bulk transfer
ACP	Allied Communication Publication
ACT	automatic continuous tuning
ADG	automatic degaussing
ADL	Army Doctrine Literature
ADMSC	Automatic Digital Message Switching Center
ADP	Automated Data Processing
ADPE	automatic data processing equipment
AFC	automatic frequency control; Army functional course
AFI	automatic fault isolation
AIF	automated information facility
AIG	address indicator group
AIS	automated information system
ALE	automatic link establishment
ALTNCT	alternate network control terminal
AMDF	Army Master Data File
AMIM	Army Modernization Information Memorandum

ANCD	automated net control device
APIU	adaptive programmable interface unit
ASSIST	automated special information systems terminal
AT&T	American Telephone and Telegraph
ATACS	Army tactical communications system
ATM	Asynchronous Transfer Mode; Adobe Type Manager
AUEL	automated unit equipment listing
AUTOVON	automatic voice network
AWG	American Wire Gauge
BADD	battlefield awareness and data dissemination
BAS	battlefield automated system
BCIS	Battlefield Combat Identification System
BCS	battery computer system
BCU	battery computer unit
BECS	Battlefield Electronic CEOI System
BER	bit error rate
BIT	built-in test
BITE	built-in test equipment
C/KT	carrier-to-noise density ratio
C/Ku	commercial satellite band
CBCS	common baseline circuit switch
CHS	common hardware/software
CIK	crypto ignition key
CIR/Cir	Circular
CMOS	configuration memory operating system
COMM R/T	communications receiver-transmitter
COR	Contracting Officer's Representative; corps office of record
COSR	place channel out of service

COTR	Contracting Officer's Technical Representative
COTS	commercial-off-the-shelf
CSCE	Communications System Control Element
C-SIGINT	counter-signal intelligence
CSL	Carrier Signal Level
CSU	control synchronization unit
CT	control terminal
CTCD	ciphertext carrier detect
CTRS	ciphertext request to send
CTTR	ciphertext terminal ready
CUI	Controlled unclassified information
D/A	digital to analog
DACS	Digital Access and Cross-Connect System
DAG	digital addressee group
DBA	database administrator
DBMS	data base management system
DCE	data communications equipment
DDM	digital data modem
DDN	Defense Data Network
DIF	Difficulty, Importance, Frequency
DISA	Defense Information Systems Agency
DMS	Defense Message System
DNVT	digital nonsecure voice telephone
DOIM	Directorate of Information Management
DSVT	digital subscriber voice terminal
EAC	echelons above corps
ECB	echelons corps and below
ECP	Engineering Change Proposal; emergency command precedence

ED/Ed	edition
EIA	Electronic Industries Alliance
EIDS	Electronic Information Delivery System
EMI	electromagnetic interference
etc	et cetera (and so forth)
EUCOM	US European Command
EURSAT	European Satellite
FAMSIM	Family of Simulations
FCC	Federal Communications Commission
FTP	File Transfer Protocol
GTA	Graphic Training Aid
GTE	General Telephone and Electronics
GUI	Graphical User Interface
HP-IB	Hewlett Packard - interface bus
HTML	Hyper Text Markup Language (and a file extension)
http	hypertext transfer protocol
HUS	hardened unique storage
HVAC	high voltage alternating current
IAW	in accordance with
IC	integrated circuit; installation and configuration
ICOM	integrated communications
ICW	Interactive Courseware
INMARSAT	International Maritime Satellite
INSCOM	US Army Intelligence and Security Command
IPR	In-Progress Review
IRC	Internet Relay Chat
ISBN	International Standard Book Number
ISDN	Integrated Services Digital Network

ISSO	information system security office(r)
ISYSCON	Integrated System Control
ITU-R	International Telecommunication Union - Radiocommunication
ITU-T	International Telecommunication Union - Telecommunication
JCS PUB	Joint Chiefs of Staff Publication
JINTACCS	Joint Interoperability of Tactical Command and Control Systems
JSCP	Joint Strategic Capabilities Plan
JSOI	Joint Signal Operating Instructions
JSPS	Joint Strategies Planning System
JTIDS	Joint Tactical Information Distribution System
JTTP	Joint Tactics, Techniques, and Procedures
JUH-MTF	Joint User Handbook for Message Text Formats
JWG	Joint Working Group
LCM	local country modulation
LEN	large extension node
LES	land earth station; leave and earnings statement
LOS	line of sight
MCSE	Microsoft Certified Systems Engineer
MCU	main computer unit
MFG	manufacturer
MIL-STD	Military Standard
MOUT	Military Operations on Urban Terrain
MS	Microsoft; methyl salicylate
MSE	mobile subscriber equipment
MTTLBCI	mean time to loss of bit count integrity
MUXES	multiplexers
NATO	North Atlantic Treaty Organization
NC	node center

NCA	National command authority
NCB	network configuration book
NCD	net control device
NCE	net control element
NCS	net control station
NCT	net control terminal
NIPRNET	Non-Secure Internet Protocol Routing Network
NIT	NATO interface terminal
NIU	NATO interface unit
NPT	network planning terminal
NSM	network security manager
NT	network terminal; New Technology (Microsoft Windows Operating System)
OBT	one-button tuning
OCR	optical character reader/optical character recognition
OCRE	optical character recognition equipment
OFS	Officer Foundation Standards
OPFAC	operational facility
OR	Ocean Region
OTAR	over-the-air-rekey
OTP	one-time pad
OTT	one-time tape
PBX	private branch exchange
PCKT	packet
PHS	Primary Heavy Shelter
PS	packet switch/point of sight
PTDM	plaintext data mode
PUB/pub	publication
REF	reference

RFP	Request for Proposal
RFS	Request for Service
RLGM	remote loop group multiplexer
RMC	remote multiplexer combiner
RMON	remote monitoring
ROM	read only memory; Rough Order of Magnitude
RSS	routing subsystem
SAMS	satellite automatic monitoring subsystem
SAR	satellite access request
SAT	Systems Approach to Training; satellite
SATC	satellite characteristics routine
SATCOM	satellite communication(s)
SATNET	satellite network
SATRAN	Satellite Reconnaissance Advance Notice Report
SC	Signal Corps; single-channel; supply catalog; subcarrier; Service Code
SCCE	satellite configuration control element
SEN	small extension node; Satellite Education Network
SER	SATCOM equipment report
SHF	super high frequency
SIPRNET	Secure Internet Protocol Routing Network
SNMP	simple network management protocol
SOW	Statement of Work
STANAG	Standardization Agreement
STARPUBS	Standard Army Publications System
SUM	Software User's Manual
SUP/Suppl	Supplement
TACLAN	tactical local area network

TACSAT	tactical satellite
TACSATCOM	tactical satellite communications
TB	technical bulletin
TCO	telecommunications certification officer
TI	Tactical Internet; test instrument; technical inspection
TIA	Telecommunications Industry Association; Training Impact Analysis
TM	technical manual
TMDE	test, measurement, and diagnostic equipment
TRI-TAC	tri-service tactical
TROPO	tropospheric scatter
TSO	telecommunications service order
UNAAF	Unified Action Armed Forces
US	United States
V	version; volt; nerve agent; vertical
VICAS	North Atlantic Treaty Organization (NATO) Standardization
VTC	video teleconference
WIN-MS	Warfighter Information Network Management System
WWMCCS	Worldwide Military Command and Control System
WWW	World Wide Web

Section II
Terms

American National Standards Institute (ANSI)
Also sometimes called the American Standards Association (ASA). An organization that helps assure that the products of various manufacturers are compatible.

American Standard Code for Information Interchange (ASCII)
The most widely used coding system to represent data, primarily on personal computers and many minicomputers.

analog
An analog signal that fluctuates exactly like the original stimulus.

Analog Computers
Computers designed to process continuously variable data, such as electrical voltage.

Analog Signal
A signal used in communications lines that consists of a continuous electrical wave.

analog transmission
Transmission of a continuously variable signal as opposed to a discretely variable signal.

Archie
FTP search tool that is used to find files on a particular subject.

Army Battle Command System (ABCS)
Transition of all fielded and developmental Army C2 systems into one fully integrated and interoperable system with seamless connectivity from the NCA to the foxhole.

Band
A group of radio channels assigned to a particular type of radio use or any group or range of frequencies within two definite limits.

bandwidth
Term used to define the frequency occupied by a signal and required for the effective transfer of information to be carried by that signal.

Basic Input Output System (BIOS)
A set of instructions that provides the interface between the operating system and the hardware devices, stored on ROM chip.

Bernoulli Disk Cartridge
Removable hard disk storage device that works by using a cushion of air to keep the flexible disk surface from touching the read/write head.

bias
(1) A voltage applied to a device (as a transistor controlled electrode) to establish a reference level for operation. (2) A high frequency voltage combined with an audio signal to reduce distortion in tape recording.

Bus Network
A communications network that has all devices connected to and sharing a single data path.

commercial software
Those software packages optionally purchased through a contract or from third party vendors. Not usually provided with the computer system for which they will be used.

common user circuit
A circuit allocated to furnish communications paths between switching centers to provide communications service on a common basis to all connected stations or subscribers.

communications software
Programs that perform data communications tasks such as dialing, file transfer, terminal emulation, and Internet access, allowing data to be transmitted from one computer to another.

Cosmic disturbance
Interference caused by electromagnetic energy received from sources in outer space.

data compression
Method of storing data on a disk that reduces storage requirements by substituting codes for repeating patterns of data.

database server
Network server that provides selected information from files stored on the server, but does not run the application software; contrast with application server.

Digital European Backbone System (DEB)
A system consisting of first level multiplexers and second level multiplexers (AN/FCC-97, AN/FRC-162(V) or AN/FRC-165(V), and TSEC/CY-104( )).

Federal Communications Commission (FCC)
Agency of the US Government that is responsible for the allocation of frequencies for radio communications and broadcasting within the US. The FCC is also responsible for the enforcement of the laws concerning telecommunications.

Gopher
Menu-driven program that assists users in locating and retrieving files on the Internet.

hyperlinks
In web documents, built-in links to other related documents, allowing user to move quickly from one document to another.

Initial Planning Conference (IPC)
The first gathering of all players involved in a specific exercise, used to set ground work and requirements for the exercise.

Integrated System Control (ISYSCON)
The Army system that will provide overall automated system command and management for Army communication systems at the corps and division levels. ISYSCON will mange the time/frequency resource allocation, geographic deployment and citing, key management, CONOPS, and the common library of data.

Joint Mission Essential Task List (JMETL)
A compilation of critical mission tasks a joint unit must be able to perform. The task must be measurable.

node
A point where one or more functional units interconnect transmission lines; a physical device that allows for the transmission of data within a network; an endpoint of a link or junction common to two or more links in a network; typically includes host processors, communications controllers, cluster controllers, and terminals.

Officer Foundation Standards (OFS) System
A system that standardizes officer institutional training and provides a tool for use by commanders and individual officers. It supports officer training and leader development. Training products are distributed electronically.

Protocol
Call setup procedures as it pertains to timing and synchronization.

query
The capability to retrieve database information in a report, based on criteria specified by the user.

task summary (TS)
A statement of the task in an action-verb format plus all essential performance measures. A standard format fully describes the task for the soldier in the field. It will accommodate any product or process task whether it is in fixed sequence, alternate sequence, or combination. The task summary is used both to train the soldier to perform the task and to evaluate the soldier's ability to perform the task (within testing constraints).

TEMPEST
An unclassified short name referring to investigations and studies of comprising emanations. It includes both emanations as security and emission security.

uplink
Earth station transmitter used to send television signals from the earth to a satellite.

wireless transmission
In communications systems, used to connect devices in the same general area such as an office or business park, using one of three transmission techniques: infrared light beams, radio waves, or carrier-connect radio.

REFERENCES

Required Publications

Required publications are sources that users must read in order to understand or to comply with this publication.

Graphic Training Aids

GTA 11-4-24	Fiber Optic Transmission System MOS 31L. 1 February 1994

Interactive Courseware

ICW-01	Technical Manuals. 10 August 1997
ICW-02	Electronic Safety. 15 November 1996
ICW-03	Electronic Fundamentals, Terms, and Symbols. 15 October 1996
ICW-04	Grounding Techniques. 3 September 1996
ICW-05	Introduction to Combat Net Radios (CNRs) Version 1.1. 9 June 1997
ICW-06	Introduction to Tactical Satellite Communications. 1 October 1997
ICW-07	Install, Operate, Maintain and Troubleshoot Radio Set AN/PRC-104A (IHFR). 15 May 1998

Joint Publications

CJCSM 6231.02A	Manual for Employing Joint Tactical Communications: Joint Voice Communications Systems. 1 August 1998
CJCSM 6231.04A	Manual for Employing Joint Tactical Communications: Joint Transmission Systems. 29 February 2000
JOINT PUB 0-2	Unified Action Armed Forces (UNAAF). 10 July 2001
JOINT PUB 1	Joint Warfare of the Armed Forces of the United States. 14 November 2000
JOINT PUB 6231.03	Joint Data Communications. 1 March 1998

Other Product Types

APPLICABLE REGULATIONS	Applicable Regulations
APPLICABLE TSO	Telecommunications Service Order
CSCE REF GUIDE	CSCE Quick Reference (REF) Guide for CSCE-QRG for the Communications System Control Element (CSCE) Version 2.4. 30 April 1995
EIA/TIA STANDARDS	Electronic Industries Alliance/Telecommunications Industry Association (EIA/TIA) Standards
FCC STANDARDS	Federal Communications Commission (FCC) Standards
GLOBAL REF GUIDE	Global Circuit Switch Quick Reference (REF) Guide Version 3.1. 1 March 1998
GTE REF GUIDE	GTE Reference (REF) Guide for Network and Nodal Managers Version 3.0. 1 March 1996
GTE REFERENCE GUIDE	Reference (REF) Guide for Network and Nodal Managers, Version 4.0.2
HTML GUIDE	Hypertext Markup Language Guide. 5 October 1998
IDNX MANUAL	IDNX Contractor Manual.
ISBN 0070453462	ATM Theory and Applications by David E. McDysan and Darren L. Spohn. 1 September 1998
ISBN 0072122269	Networking: A Beginner's Guide by Bruce A. Hallberg. 22 December 1999

ISBN 0072337451	More Excellent HTML: With an Introduction to JavaScript by Timothy T. Gottleber/Timothy N. Trainor.
ISBN 0130843709	Data and Computer Communications (6th Edition) by William Stallings. 2 November 1999
ISBN 0133374866	Security in Computing (2nd Edition) by Charles P. Pfleeger. 16 September 1996
ISBN 0135225833	Digital and Analog Communication Systems (5th Edition) by Leon W. Couch, II. 7 November 1996
ISBN 0139737448	ISDN and Broadband ISDN With Frame Relay and ATM (4th Edition) by William Stallings. 9 October 1998
ISBN 0201485346	SNMP, SNMPV2, SNMPV3, and RMON 1 and 2 (3rd Edition) by William Stallings. 1 January 1999
ISBN 0471345717	Digital Telephony (Wiley Series in Telecommunications and Signal Processing) (3rd Edition) by John C. Bellamy. 1 March 2000
ISBN 0534374824	Computer Science: A structured Programming Approach Using C (2nd Edition) by Behrouz A. Forouzan and Richard F. Gilberg. 3 March 2000
ISBN 0782122612	MCSE: Exchange Server 5.5 Study Guide. 17 April 1998
ISBN 0789710536	Repairing and Upgrading PCs. 10 January 1995
ISBN 1562057499	MCSE Training Guide Networking Essentials. 15 September 1997
ISBN 1562057685	MCSE Training Guide: Windows NT Server and Workstation 4
ISBN 1562763644	How Computers Work. 10 January 1995
ISBN 1575212285	Teach Yourself How to Become a Webmaster in 14 Days. 10 January 1997
ISBN 1578700698	Top-Down Network Design (1st Edition) by Priscilla Oppenheimer. 15 August 1999
ITU-R STANDARDS	International Telecommunication Union-Radiocommunication (ITU-R) Standards
ITU-T STANDARDS	International Telecommunication Union-Telecom Standardization (ITU-T) Standards
LCM STANDARDS	Local Country Modulation (LCM) Standards
LES, OR, AND SC	Land Earth Station (LES), Ocean Region (OR), and Services Codes (SC)
MF 11-5670	Tactical Satellite Communication (TACSATCOM)
MFG DATA SHEETS	Manufacturer's (MFG) Data Sheets
MFG INSTRUCTION SHEETS	Manufacturer's (MFG) Instruction Sheets
MFG MANUALS	Manufacturer's (MFG) manuals, issued with initial issue of equipment
MIL-STD-188/154A	Subsystem, Equipment, and Interfaces Standards for Common Long Haul and Tactical Telecommunications Control Facilities. 31 December 1997
SAT REF DATA HANDBOOK	Satellite (SAT) Reference (REF) Data Handbook (Volume 2)
SAT STATION (EURSAT)	Satellite (SAT) Station (EURSAT)
SATCOM ARCHITECTURE	The Army Satellite Communications (SATCOM) Architecture. 1 April 1997
STANAG-4206 ED.2	The NATO Multi-Channel Tactical Digital Gateway - System Standards. 15 November 1993
STANAG-4212 ED.2	The NATO Multi-Channel Tactical Digital Gateway - Radio Relay Link Standards. 15 November 1993
STANAG-4214 ED.1(1)	International Routing and Directory for Tactical Communications Systems. 10 December 1985

STANAG-5040 ED.3(3)	NATO Automatic and Semi-Automatic interfaces Between the National Switched Telecommunications Systems of the Combat Zone and Between Those Systems and NATO Integrated Communications System (NIC) - Period from 1979 to the 1990s. 3 May 1994
STANAG-5042 ED.1(5)	Military Telecommunications - Diagram Symbols. 8 October 1985
SUM NSM	Software User's Manual (SUM) for the Network Security Manager (NSM) Version 4.2.1. 1 March 2000
TITLE 47 US CODE	Title 47 - Telegraphs, Telephones, and Radiotelegraphs 23 January 2000
VENDOR MANUALS	Vendor Manuals for the Equipment Issued

Technical Manuals

APPLICABLE TM	Applicable Technical Manuals (TMs)
IC-ADUA04	Installation and Configuration (IC) Procedures for DMS Product Number ADUA04, Version 2.2.1.0. 14 April 2000
IC-DSA003 AND 4	Installation and Configuration (IC) for DMS Product Number DSA003 and DSA004, Version 2.2.2.0. 14 April 2000
IC-GWS004 AND 5	Installation and Configuration (IC) for DMS Product Numbers GWS004 and GWS005, Version 2.2.2.0. 28 April 2000
IC-HPUX-OS10.20	Installation and Configuration (IC) for HP-UX Operating System 10.20, Version 2.2.2.0. 26 May 2000
IC-LOTUS	Installation and Configuration (IC) for Lotus Notes/DMS Server, Version 2.2.1.0. 14 April 2000
IC-MFG003	Installation and Configuration (IC) for DMS Product Number MFG003, Version 2.2.2.0. 15 June 2000
IC-MLA002	Installation and Configuration (IC) for DMS Product Number MLA002, Version 2.2.2.0. 15 June 2000
IC-MWS002	Installation and Configuration (IC) for DMS Product Number MWS002, Version 2.2.1.0. 14 April 2000
IN-LOTUS	Installation Notes (IN) for Lotus Notes/DMS Client, Version 2.2.1.0. 14 April 2000
WINNT ON-LINE DOC	Microsoft Windows NT (WINNT) On-line Documentation

STP 11-24A-OFS
16 DECEMBER 2002

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:

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Administrative Assistant to the
Secretary of the Army
0232502

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