MIL-STD-2001
14 January 1987

MILITARY STANDARD

MANUALS, TECHNICAL, SYSTEMS OPERATOR'S INTERFACE: PROCEDURES FOR WRITING

AMSC N/A

TMSS

MIL-STD-2001

Department of Defense

Washington, DC 20301

Procedures for Writing Systems Operator's Interface Technical Manuals

1. This military Standard is approved for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this documet should be addressed to: Commandant of the Marine Corps, Headquarters, U.S. Marine Corps, (Code LMA-2), Washington, DC 20380-0001, by using the self addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FOREWORD

The increasing complexity and modularization of electronic equipment and the increasing necessity to adapt equipment systems for multiple uses has resulted in the development of new interface equipment and systems. These new items are cost effective developments since they often enable communications equipment to be used for more than just one purpose.

This standard establishes procedures for developing Systems Operator's Interface Technical Manuals. It is not intended to duplicate other standards, specifications or manuals.

CONTENTS

CONTENTS - Continued.

FIGURES

FIGURES - Continued.

TABLES

1. SCOPE

1.1 Scope. This standard establishes uniform style and format requirements for preparation of Systems Operator's Interface Technical Manuals. It also specifies all electrical, mechanical, software, and Man Machine Interface (MMI) requirements necessary to provide an operational communications network. This standard does not duplicate operator or maintenance manual data. (All related equipment manuals and Interface Design Specifications will be provided as Government-furnished property (GFP) to the contractor upon award of contract.)

1.2 Applicability. Requirements and procedures established by this standard will be applied to all communication electronic interface equipment manual acquisitions, and may be applied to any Department of Defense acquisition for communications electronics interface equipment manual development and production. It is not intended that all requirements be applied to every communications electronics manual development program. Acquiring activities shall tailor requirements to the minimum needs of each acquisition and shall encourage contractors to submit cost effective tailoring recommendations when applicable.

1.3 Purpose. This standard serves two purposes. First it provides a standard format and guide for writing Systems Operator's Interface Technical Manuals. Secondly, it directs the focus of these manuals so they will serve operators and users of communications-electronics equipment in the performance of equipment interface related tasks not covered in existing operator or maintenance manuals.

2. REFERENCED DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified, the following specifications, standards, and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this standard to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-M-15071	Technical Manual, Content Requirements for Equipment and Systems
MIL-M-38784	Technical Manual, General Style and Format Requirements

(Copies of specifications, standards, handbooks, drawings, and publications required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

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

3. DEFINITIONS

NOT APPLICABLE

4. GENERAL REQUIREMENTS

4.1 Requirements. General requirements listed in Section 3 of MIL-M-38784 govern the mechanics for production of Systems Operator's Interface Technical Manuals.

4.1.1 Quality assurance provisions. Quality and content of the Systems Operator's Interface Technical Manual shall conform to quality assurance provisions listed in Section 4 of MIL-M-38784 and MIL-M-15071. Validation of the Systems Operator's Interface Technical Manual will require use of GFP to accomplish required tasks by the contractor. Method and location for validation/verification will be decided after contract award.

4.1.2 Preparation for delivery. Organizations developing the Systems Operator's Interface Technical Manual shall conform to preparation for delivery requirements listed in Section 5 of MIL-M-38784.

4.1.3 Warnings, cautions and notes. Preparation and use of warnings, cautions and notes shall conform to requirements listed in MIL-M-15071 and MIL-M-38784.

4.1.4 Target population. This manual shall include instructions required by personnel who have been training, and are familiar with, similar or related equipment.

5. DETAILED REQUIREMENTS

5.1 Detailed requirements. Requirements that relate only to Systems Operator's Interface Technical Manuals are specified in this section. Specific equipment data or operating, hookup, maintenance, and other similar procedures shall be included in the section for the specific equipment interfaces. Design data not pertinent to the operator and crew shall not be included. Information contained in Systems Operator's Interface Technical Manuals shall pertain to MMI items and relevant requirements pertaining to all equipment required to accomplish the interfaces.

5.1.1 Front matter. Front matter shall be as specified in MIL-M-15071 and MIL-M-38784 and as described below.

5.1.1.1 Title. The title for a Systems Operator's Interface Technical Manual, written for specific equipment, shall accurately describe the principal equipment to be interfaced. The scope and limits of the interfaces described shall be apparent in the title. Examples of typical titles are: "Radio Set AN/PRC-68, Operator's Interface Technical Manual," "Special Communications Center AN/MSC-63, Operator's Interface Technical Manual," "Digital Subscriber Voice Terminals (DSVTs) KY-68, KY-78, or KY-68/78 Operator's Interface Technical Manual." Each of the above titles lists the name of the communications-electronics equipment, its assigned military item designator, and a clear and concise statement of the scope and limits of information contained in the manual. This form of title nomenclature permits operators of equipment to quickly locate the required interface manuals from technical libraries. The issue date of the document, issuing agency, and the point of contact for update and discrepancy reporting shall be documented on the title page. Examples and general details of title nomenclature may be found in MIL-M-15071.

5.1.2 Table of contents and chapter headings. The Systems Operator's Interface Technical Manual shall contain a Table of Contents which lists the titles and subtitles of chapters, sections, and any applicable appendices. The Table of Contents shall provide operators with a succinct and concise index of subject topics discussed in the manual. The uniform and logical presentation of topic information listed below shall be used in writing Systems Operator's Interface Technical Manuals.

Chapter 1. Introduction.

Chapter 2. Equipment Interfaces SECTION I thru ( ).

Appendix -- Acronyms and abbreviations
Applicable documents.

5.1.3 Chapter 1. Introduction. This chapter shall specify interface introductory comments, remarks, and other pertinent information to be included in Systems Operator's Interface Technical Manuals. Divide this chapter as follows:

- General Information
- Security Procedures
- General Safety Precautions Pertaining to Interface of the Equipment
- How to Use the Equipment Operator's Interface Manual

5.1.3.1 General information. The following information of a general nature shall be included:

a. A general explanation of the purpose, scope, supersedure data, and applicability of the manual.

b. Nomenclature, Model and Serial Numbers with information as to which topic or configurations of equipment are covered in the manual.

c. General information to describe and illustrate how the topic or main equipment fits into the overall system or network.

d. The intended mission of the topic or main equipment in the system or network, unless classified. If the mission is classified, provide the title of the classified reference document (if the title is not classified) where the intended mission can be found.

e. A definition of the relationship of the Systems Operator's Interface Technical Manual to other existing manuals on individual items of equipment. References and sources for obtaining other publications such as systems manuals, operator's manuals, and maintenance manuals shall be provided in both this section and the applicable documents section.

5.1.3.2 Security procedures. The following security procedures shall be identified in the manual:

a. Personnel security clearance requirements.

b. General security procedures applicable to the equipment.

Specific security applicable to a specific interface will be provided in Chapter 2 for that interface.

5.1.3.2.1 Destruction of equipment and access keys to prevent enemy use. Instruction shall be provided which explains methods of destroying the interface equipment, thereby preventing enemy use in the event of capture. Several methods shall be presented for using tools, equipment, or explosives normally available to the user. The following standard destruction paragraphs shall be included:

a. Destruction by mechanical means.

b. Demolition by explosives or weapons.

c. Other destruction methods such as erasing magnetic media, ignition of flash paper, destruction of code books and removal of sensitive data from interface equipment.

5.1.3.3 Safety precautions pertaining to interface of the equipment. The manual shall include the following safety precautions pertaining to interface of the equipment:

a. General safety precautions applicable to all interface considerations.

b. Interface of two or more items of equipment shall be specifically addressed. Specific safety precautions shall be included where applicable in each interface section.

5.1.3.4 How to use the equipment operator's interface manual. Guidance pertaining to use of the operator's interface manual shall be provided as follows.

a. An explanation of the contents of the operator's interface manual.

b. An explanation of the intended use of the information in the operator's interface manual.

(1) General information will include:

(a) List of applicable technical manuals and documents for this particular interface.

(b) Brief description of interface equipment.

(c) Management data required (data entry forms (worksheets) etc.) (both ends). Data entry forms (worksheets) will be provided by the Government.

(d) Liaison required prior to employment of equipment.

(e) COMSEC information (unclassified). Classified COMSEC information may be contained in a classified supplement to the manual.

(f) Diagrams or illustrations of equipment as used in a sample system or network.

(g) Safety precautions.

(2) Operational information will include:

(a) Connections and installation requirements of both the equipment and the interface equipment.

(b) Diagrams and switch settings required for operation (both ends).

(c) Operator functions/inputs (both ends).

(d) Automatic processor functions.

(e) Special and unusual instructions or procedures.

(f) Normal traffic operation.

(3) Troubleshooting information will include:

(a) The equipment BITE and the interface equipment built-in test procedures.

(b) Assistance for circuit restoration.

(c) Return to normal traffic.

(d) Workarounds.

5.1.4 Chapter 2: Equipment Interface. Chapter 2 shall consist of sections provided for each item of interface equipment. Sections shall be "stand-alone" documents that can be removed from the Systems Operator's Interface Technical Manual without infringing or removing information concerning interfaces described in the other sections. This is to allow for easy updating of the manual.

5.1.4.1 Section organization. Sections shall contain information required to allow the equipment operator to prepare for, hookup, operate, troubleshoot and breakdown the interface. Sections shall be identified by "Section" (with appropriate roman numberal following) and immediately after the number will be the name/nomenclature of equipment which will interface with main (title) equipment. The number of sections will equal the number of interfaces.

5.1.4.1.1 General information.

5.1.4.1.1.1 List of applicable technical manuals and documents for this particular interface. A list of the operator's technical manuals and other pertinent documents applicable to the equipment which is interfacing with the main (title) equipment shall be provided.

5.1.4.1.1.2 Brief description of interface equipment. This description shall provide operating characteristics which may affect the interface connection of operations. The contractor may suggest that pictures or diagrams should be used to allow a more descriptive image for the operator.

5.1.4.1.1.3 Management data required. This section shall provide completed data entry forms (worksheets/diagrams)(if applicable) and equipments required to accomplish the particular interface. The data entry forms (worksheets) shall be shown for both ends of the operation, (i.e., AN/TTC-39 to AN/TTC-42 interface). This section shall, as a minimum, address the following:

a. Major units of the interface equipment.

b. Relative size of each unit.

c Basic interconnections between units that highlight network configuration.

d. Number and type of channels in each interconnection.

e. Where channels are used for data or control purposes.

f. Channel medium (Ex. hardware, microwave, radio frequency, fiber optic, laser and acoustic).

g. Modes of operation (if applicable) (may be in tabular form).

5.1.4.1.1.4 Liaison required prior to employment of equipment. This section shall contain requirements to provide information such as the requirement for frequencies to be obtained/used; who is in charge; other units involved; whether additional equipment, ancillary equipment, key list, etc., is required.

5.1.4.1.1.5 COMSEC information (unclassified). Unclassified COMSEC procedures (if specified by the acquiring activity) shall be provided in this section. All classified COMSEC procedures (if specified by the acquiring activity) shall be provided in a classified supplement to the System Operator's Interface Technical Manual. The classified supplement shall be sectionalized in the same manner as chapter 2. Reference to classified COMSEC procedures contained in other classified documents is acceptable if the instructions for the COMSEC procedures required of this specific interface are applicable and clear.

5.1.4.1.1.6 Narrative and diagrams or illustrations of equipment as used in a sample system or network. This paragraph shall provide narratives with a graphic of the equipments that are interfacing which describe and depict their location and hookup in a sample system or network. (See figures 1 and 2.)

5.1.4.1.1.7 Safety precautions. This paragraph shall contain all safety precautions pertinent to the interface of the equipments if required by the acquiring activity.

5.1.4.1.2 Operations

5.1.4.1.2.1 Connections and installation requirements of both the equipment and the interface equipment. Detailed text, line drawings, diagrams and illustrations shall be used to depict and explain connections which are required to interface the equipments. (See figure 2). This deals mainly with the cabling, grounding, and wire connections required for installation and setup of equipment for interface. If sequential steps are required and prior checks are to be made, they shall be included in a checklist format (i.e., a. Connection of cables; b. Power on; c. Input data; d. etc).

5.1.4.1.2.2 Diagrams and switch settings required for operation (both ends). This paragraph shall contain text and line drawings/diagrams of knob and switch settings pertinent to the interface on a equipments required in the interface. If there are required sequential steps or checks, they will be listed in the required order with full explanations. One illustration of each control panel for interfacing equipment is required. (See figure 3).

5.1.4.1.2.3 Operator functions and data inputs (both ends). This paragraph shall delineate, in order, functions and data inputs of the operator(s) at both ends to install, setup, make operable and cause equipments involved in the interface to function properly. This includes software data base inputs/changes as well as hardware involvement. All information required by an operator to effect the interface which is currently covered in equipment manuals shall be referenced if more than two pages are required to incorporate that information. (See figures 2 and 4.)

5.1.4.1.2.4 Automatic process functions. This paragraph shall identify automatic processor functions that take place in the equipments that are applicable to the interface, operation of the interface, or troubleshooting procedures for the interface.

5.1.4.1.2.5 Special and unusual operating instructions or procedures. This paragraph shall identify and delineate any special or unusual operating instructionsrequired to restore normal operation of the interface.

5.1.4.1.2.6 Normal traffic operation. This paragraph shall identify the requirements for normal operation as applicable to the interface of all equipments involved in the interface to include:

- input signals
- output signals
- control signals
- other signals

These requirements shall be limited to the scope of the operator's authorized installation, operation and maintenance procedures of the equipments involved in the interface. This paragraph shall also include operator actions to implement changes (other than those in the operator's technical manuals for the equipment) which affect the interface.

5.1.4.2 Troubleshooting

5.1.4.2.1 Equipment BITE and interface equipments built-in test procedures. This section shall include alarms, recognition of problems/equipment outage, circuit malfunction and in general any problems with the equipments involved in interface. It shall also include how to recognize problems using all the troubleshooting tools (BITE, BIT, fault diagnosis diagrams, etc.) available to the operators on both ends as applicable to this interface. (See figure 5 and Table I.)

5.1.4.2.2 Assistance for circuit restoration. This paragraph shall delineate steps that operators shall follow after using all means available to initially install or restore the interface to operation. A checklist of information to be provided by the operator to the assisting unit shall be used listed in this paragraph.

5.1.4.2.3 Return to normal traffic. This paragraph shall provide the sequence of all actions required by the operator(s) to restore an interface to normal operation.

5.1.4.2.4 Workarounds. This paragraph shall provide all actions and data necessary to allow degraded performance, alternative circuit routing or other possible workarounds. All actions and data necessary to accomplish the workaround shall be provided for each workaround listed.

5.1.5 Illustrations. Illustrations shall be a full page or foldout page (never backed up). If it is a foldout page, it shall be assigned the FO page number in accordance with MIL-M-38784.

6. NOTES

6.1 Intended use. This standard is intended to provide a standard format and guide for writing Systems Operator's Interface Technical Manuals.

6.2 Subject term (key word) listing.

Format
Interface
Operator's Manual
Systems Manual
Technical Manual

6.3 Government-furnished property. The contracting officer should arrange to furnish the property indicated in 1.1, 4.1.1 and 5.1.4.1.2.2.

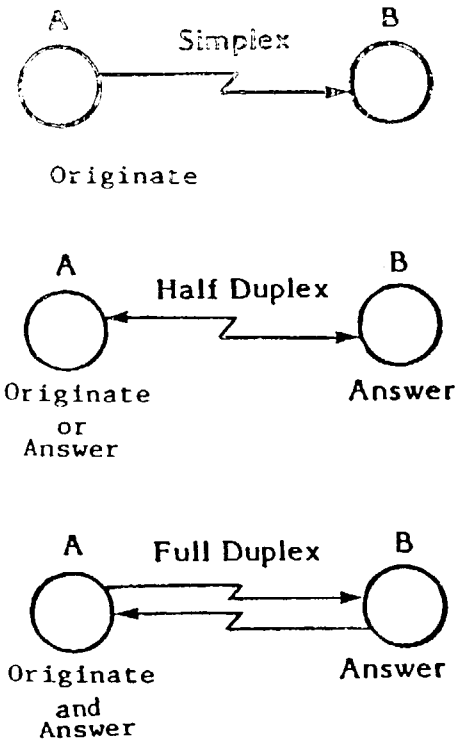
Custodians:
Army - TM
Navy - MC

Preparing activity:
Navy-MC
Project No. TMSS-N181

Review activities:
Army - TM
Navy - AS, EC, TD
DLA - CS

User activities:
Navy - YD

Types of channels with originate/answer specifications.



Network Configurations

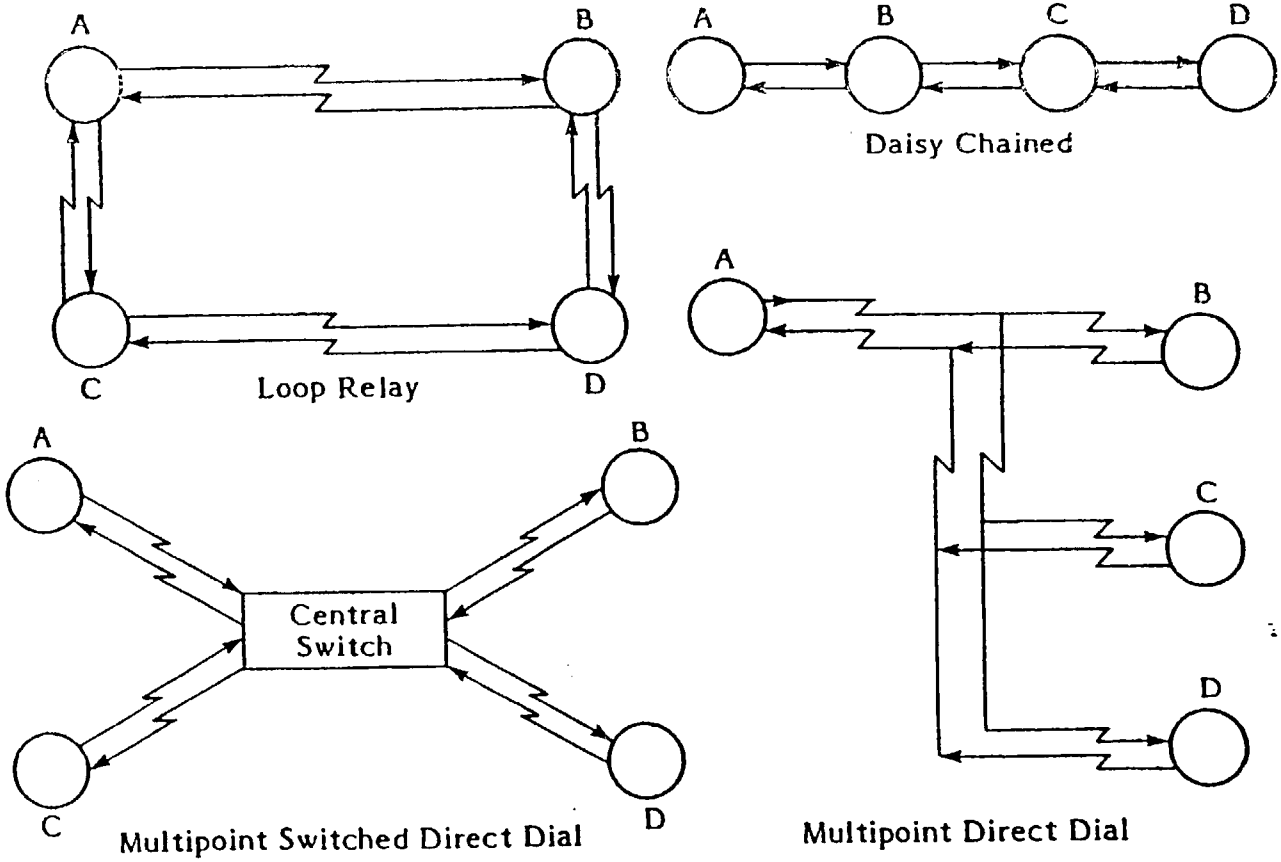
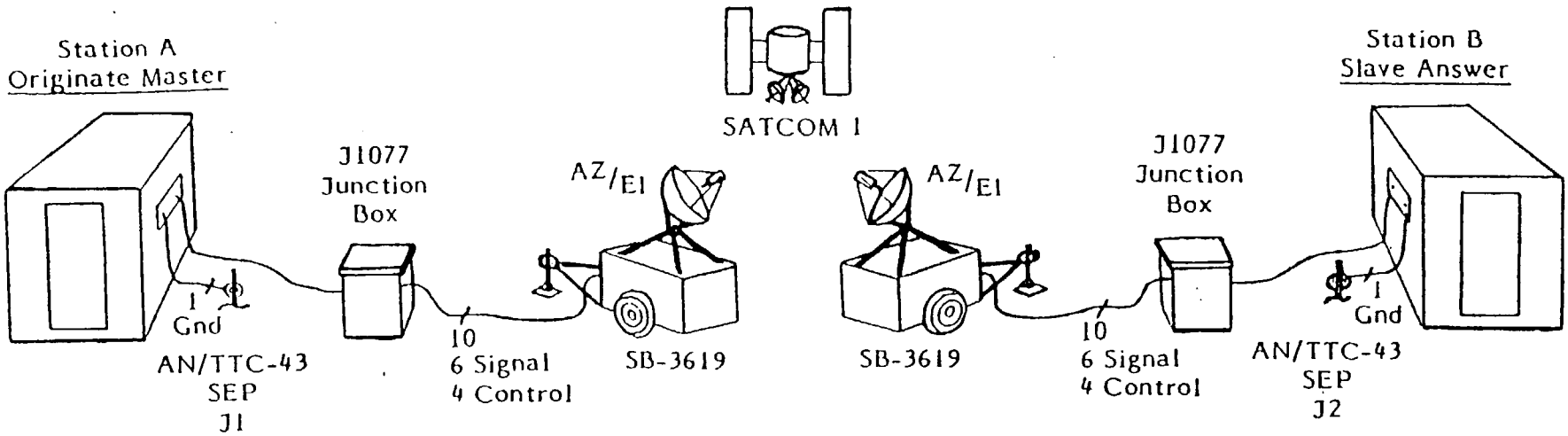


FIGURE 1. Samples of network equipment operating modes and configurations.

Example AN/TTC-43 to SB-3619 to SATCOM 1 to SB-3619 to AN/TTC-43 Interface



AN/TTC-43 Interface Procedures (Input Data Requirements)

Mode IDX 2,3,1,1
Trunk Group

Trunk Group Number	: 001-259
Trunk Group Type	: 2
Switch Code	: NNXX7
Maximum Precedence	: R, P, I, F, FO, Z
Zone Restriction	: 0-8,14
Trunk Barring	: Yes or No
Conference Privilege	: Yes
Subscriber Type	: 2-wire
Spill Forward Out	: No
Satellite Link	: Yes
Search Order	: Bottom Up
Mark for Intercept	: Yes or No
Channel Codes	: 12 and 24
Polarization XMIT	: Vertical
Polarization RCVR	: Horizontal
Uplink	: 5.6 GHz
Downlink	: 2.3 GHz

Mode IDX 2,3,1,3
Add Trunk

Trunk Group Number	: 001-259
Terminal Number	: HY-CH
Status	: IN-SVC

Mode IDX 2,4,2,1
Add/Change NNXX Routing

Switch Code	: NNXX8
Switch Type	: 3 (Other)
Primary TG	: 001-259
1st Alt TG	: 000-259
2nd Alt TG	: 000-259

FIGURE 2. Sample of system/network equipment interface illustrations.

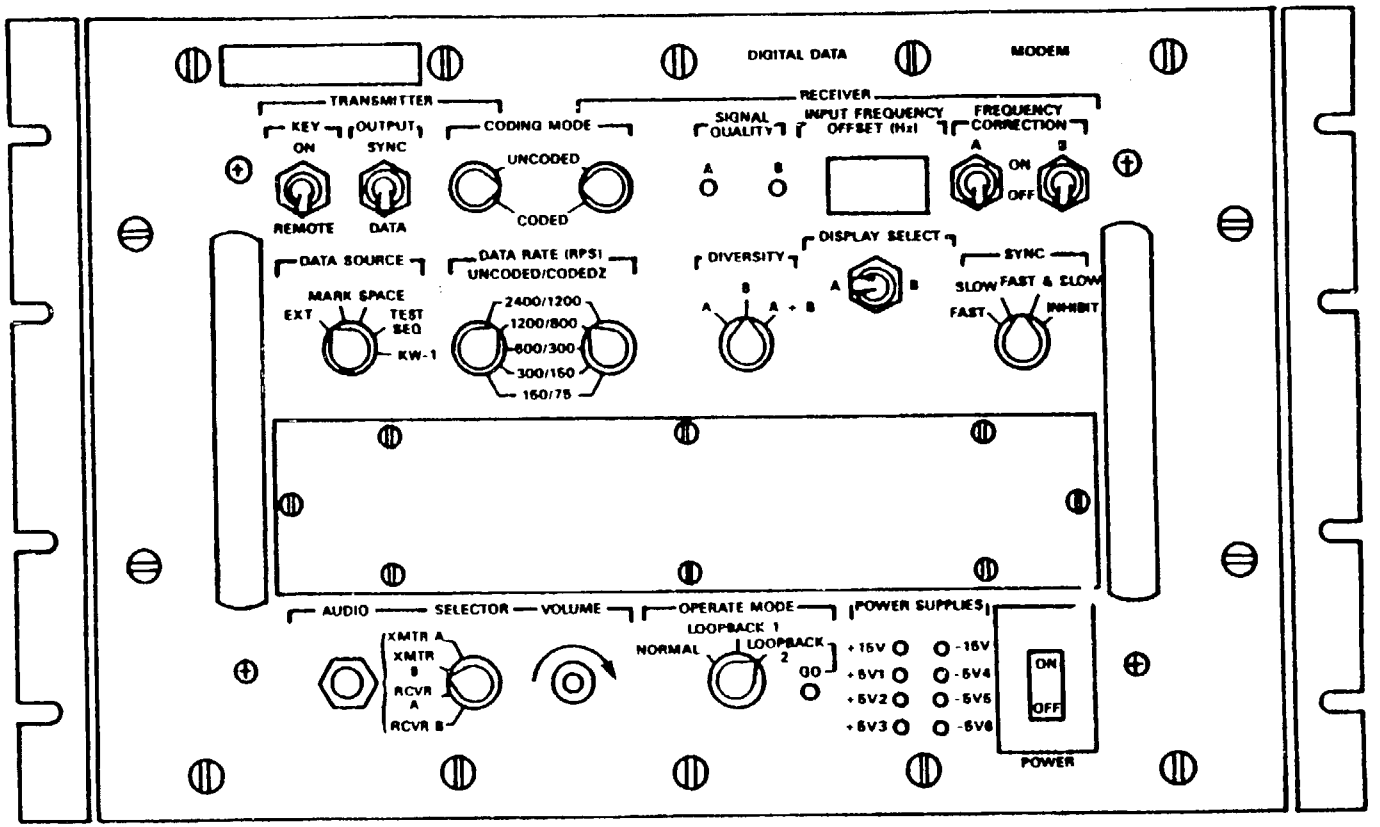


FIGURE 3. Sample equipments control front panel and display of knob and switch settings.

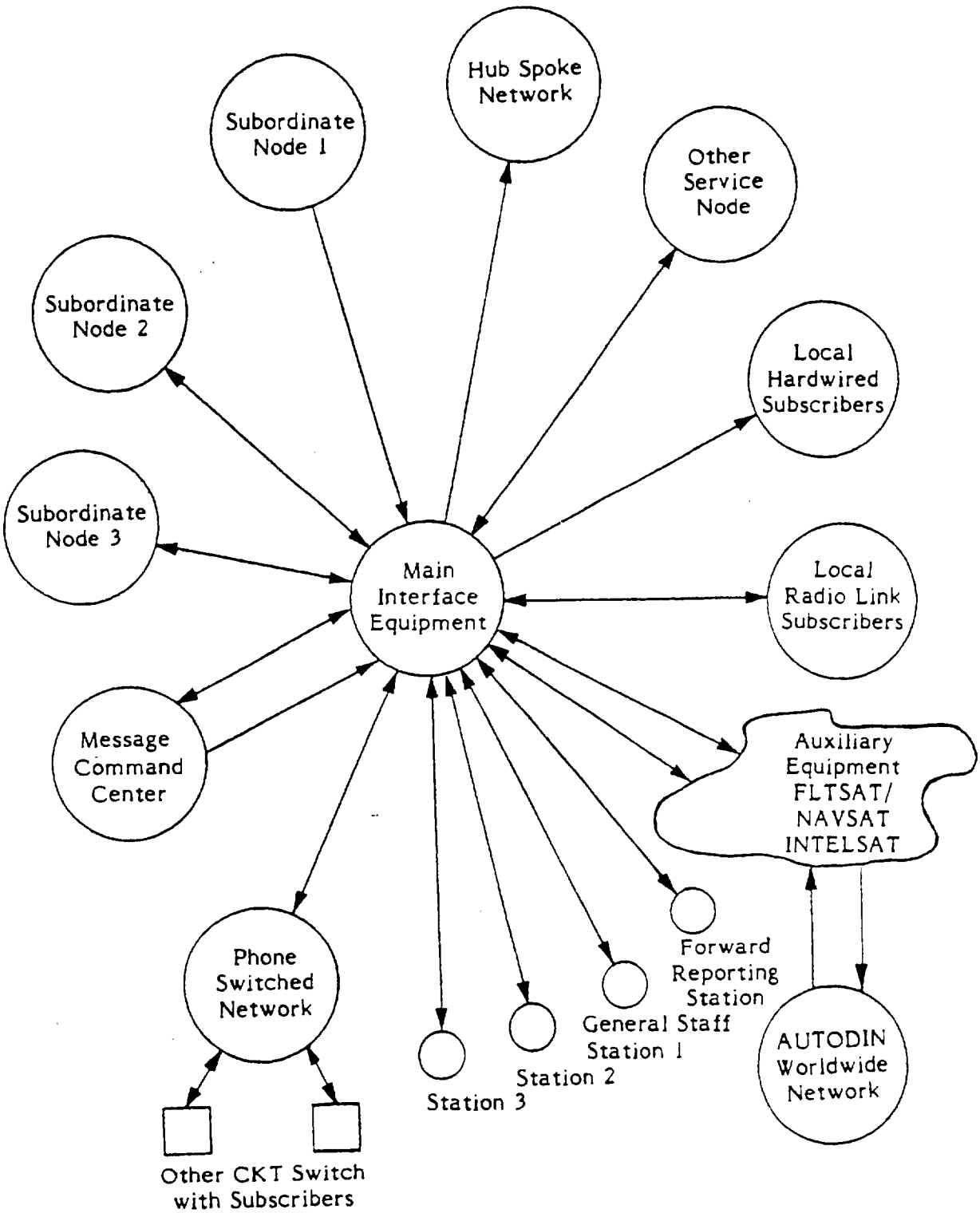


FIGURE 4. Typical figure showing inputs and outputs to interface equipment.

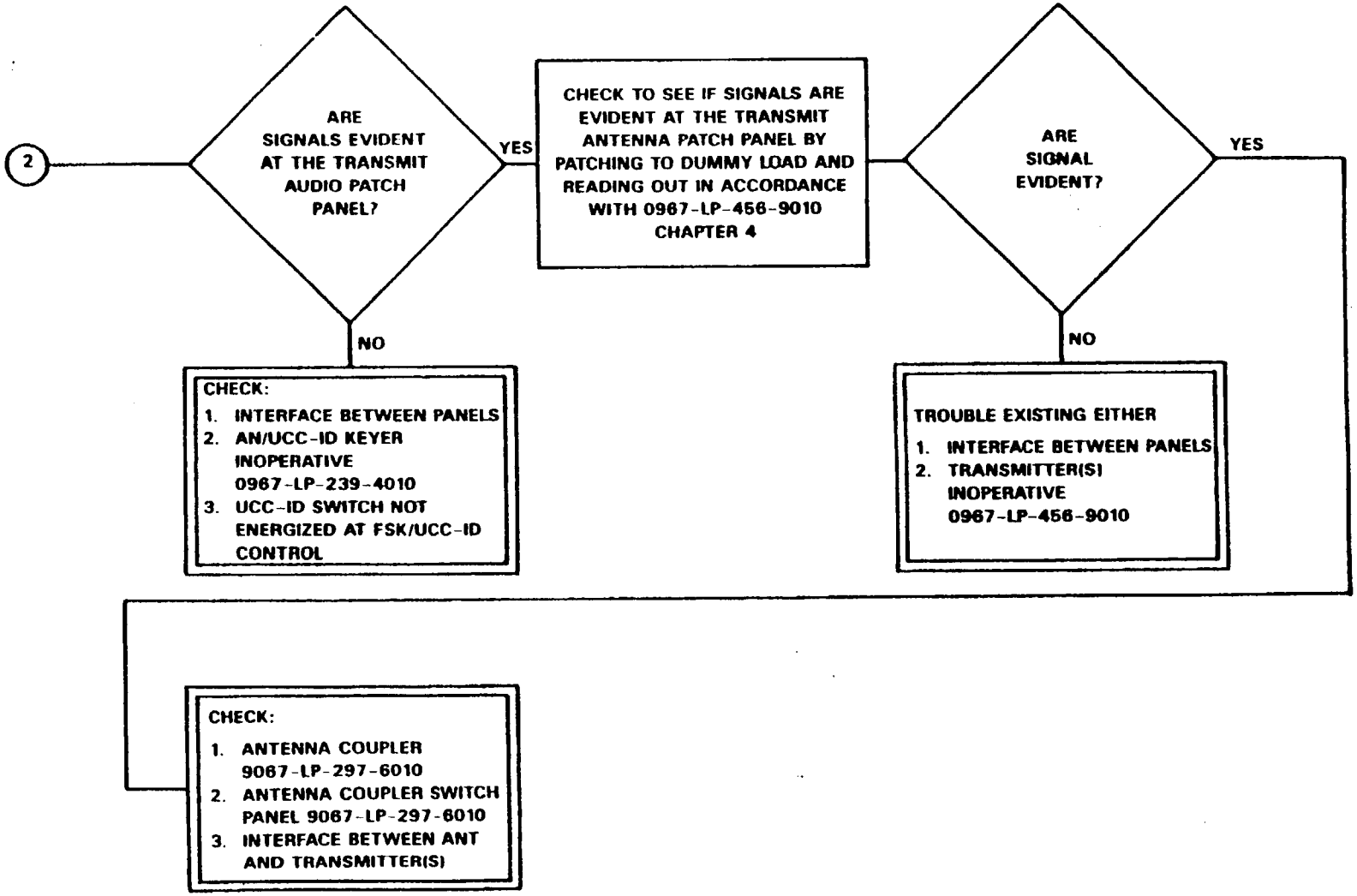


FIGURE 5. Sample of operator's fault logic diagram for troubleshooting.

TABLE I. Sample of special tools and test software.

Item	NSN or JAN No.	REF. Fig.	Application
Compressor/ Transmitter TSEC/HY-2	5810007532397	4-7	Bypass SAT LINK
Noise, injector Terminal, Telegraph TH-22/TG	5805009078300	4-5	Measure S/N Ratio
Generator, align-ment, controlled VCO AN/USM-323	6625001156768	4-42	Realignment generator
Spectrum Analyzer AN/USM-394/U	6625001399053	4-48	Line analysis
Loop-back connector with jumper pins	6625007650982	4-1	Local loop-back
Built-in test program -1	6625005101839	4-2	Provide test se-quence characters uncoded
Transistor 2N2222A	JAN/TX 2N2222	4-41	Level Shifter

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1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-STD-2001	MANUALS, TECHNICAL, SYSTEMS OPERATOR'S INTERFACE, FT

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR ☐ USER ☐ MANUFACTURER ☐ OTHER *(Specify)*:
b. ADDRESS *(Street, City, State, ZIP Code)*	

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

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