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MIL-HDBK-1350-2
Volume 2
28 July 1994

MILITARY HANDBOOK

DATA COMMUNICATIONS PROTOCOL CONFORMANCE AND INTEROPERABILITY TESTING AND REGISTRATION

VOLUME 2

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FOREWORD

1. This military handbook (MIL-HDBK) is approved for use by all Department and Agencies of the Department of Defense (DoD).

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this MIL-HDBK should be addressed to:

Joint Interoperability and Engineering
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Squire Hall, Building 283
Fort Monmouth, New Jersey 07703-5613

by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this MIL-HDBK or by letter.

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TABLE OF CONTENTS

PARAGRAPH		PAGE
1.	SCOPE	1
1.1	Purpose	1
1.2	Background	1
2.	APPLICABLE DOCUMENTS	2
2.1	Government documents	2
2.1.1	Specifications, standards, and handbooks	2
2.1.2	Other Government documents, drawings, and publications	3
2.2	Non-Government documents	3
2.3	Order of precedence	4
3.	DEFINITIONS	5
3.1	Acronyms used in this MIL-HDBK	5
4.	GENERAL REQUIREMENTS	7
4.1	Overview of the Joint Conformance and Interoperability Testing program	7
4.2	Conformance Testing Program Description	7
4.2.1	The US GOSIP Profile	7
4.2.1.1	Standard Protocols	7
4.2.1.2	The US GOSIP and DoD Conformance Testing Program Requirements	9
4.2.2	Military Features and Extensions to the US GOSIP Profile	10
4.2.2.1	Conformance Testing of Military Extensions to US GOSIP	11
4.2.3	Protocols not covered by the US GOSIP profile or military extensions	11
4.3	Interoperability Testing Program Description	12
4.3.1	Role of Interoperability Testing	12
4.3.2	Requirements for DoD Interoperability Testing	13
4.4	DoD Conformance and Interoperability Test Laboratory Accreditation	14
4.4.1	Role of laboratory accreditation within the DoD Conformance and Interoperability Testing Program	14
4.4.2	Laboratory Accreditation Requirements	15
4.4.3	Requirements incumbent upon DoD accredited laboratories	15
4.5	Product, Service, and Test Tool Registration	16
4.6	Program Administration	18
4.6.1	Funding Responsibilities	18
4.6.2	Responsibilities of Principal Participants	18

TABLE OF CONTENTS (Continued)

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PARAGRAPH **PAGE**

4.6.2.1 United States Army 19
4.6.2.2 United States Navy 20
4.6.2.3 United States Air Force 21
4.6.2.4 United States Marine Corps 21
4.6.2.5 Defense Information Systems Agency 22
4.6.2.6 The Joint Staff 23
4.6.2.7 Deputy Director, Defense Research and Engineering (Test and Evaluation) 23

5. DETAILED REQUIREMENTS 24
This section is not applicable to this MIL-HDBK. 24

6. NOTES 25
6.1 Intended Use 25
6.2 Subject Term (Keyword) Listing 25

APPENDIXES

A. CONFORMANCE TEST PROCEDURES 26

B. SYSTEM CONFORMANCE TEST REPORT 37

C. PROTOCOL CONFORMANCE TEST REPORT 44

D. DOD INTEROPERABILITY TEST PROCEDURES 50

E. INTEROPERABILITY TEST REPORT FORMAT 61

F. DOD CONFORMANCE AND INTEROPERABILITY TEST LABORATORY ACCREDITATION AND REGISTRATION PROCEDURES 68

G. DEPARTMENT OF DEFENSE DATA COMMUNICATIONS TEST REGISTER REGISTRATION PROCEDURES 77

Concluding Material 81

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TABLE OF CONTENTS (Concluded)

FIGURES **PAGE**

1. Government open systems interconnection profile, version 2 8

2. Conformance test procedure flow chart 27

3. Interoperability test procedures 51

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1. SCOPE

1.1 Purpose. The purpose of this volume of MIL-HDBK-1350 is to provide the guidance for requirements, responsibilities, procedures, and structure of the conformance and interoperability testing of data communications protocols within the Department of Defense (DoD). This MIL-HDBK provides the guidance relevant to data communications protocol testing and the details of protocol testing necessary to ensure uniformity and consistency of execution. The protocols affected include those conforming to FIPS-146-1 and taken from the US GOSIP Register for DoD use, other adopted protocols, US GOSIP protocols or other adopted protocols extended for use or protocols developed specifically for use by the DoD in accordance with MIL-HDBK-829-2. This MIL-HDBK is also designed to ensure testability of protocols and profiles in accordance with ISO/IEC 9646/CCITT X.290 at the earliest possible point in their development and to provide early feedback, in the form of Engineering Change Proposals (ECPs), to the DTMP and protocol developers when protocol errors or inadequacies are uncovered during conformance or interoperability testing.

1.2 Background. The structure of this MIL-HDBK is based upon the United States Government Open Systems Interconnection Profile (GOSIP) Testing Program as it was developed at the National Institute for Standards and Technology (NIST) with the Joint Interoperability Test Center (JITC) as its executive agent for testing and registration. The program originally established has been expanded and modified to cover the unique requirements of the DoD. The testing and registration program and procedures described in this volume MIL-HDBK-1350 are intended to work in concert with volume 1.

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2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this MIL-HDBK to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplements thereto, cited in the solicitation.

STANDARDS

FEDERAL

FIPS 146-1	Federal Information Processing Standard Publication 146-1, *Government Open Systems Interconnection Profile (GOSIP)*, 3 April 1991

HANDBOOKS

MILITARY

MIL-HDBK	MIL-HDBK-829-2 *Guidelines for Data Communications Protocol Standards (DCPS) DOD Standardized Profiles (DSPs), Volume 2*, 23 April 1993
	MIL-HDBK-1350-1 *Validation of Data Communications Protocol Standards for Military Applications (DRAFT), Volume 1*, July 1994

(Copies of FIPS are available to DoD activities from the Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA, 19120-5099. Others must request copies of FIPS from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161-2171.)

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, ATTN: NPODS, 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

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(Copies of MIL-HDBK-829, Volumes 1, 2, and MIL-HDBK-1350-1, are available from the Defense Information Systems Agency (DISA)/Joint Interoperability and Engineering Organization (JIEO), ATTN: TBBD, Fort Monmouth, NJ 07703-5613.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this MIL-HDBK to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

Department of Commerce

National Institute for Standards and Technology (NIST)

NIST Technical Report NCSL/SNA-91/1	NIST Technical Report, *Open Issues in OSI Protocol Development and Conformance Testing, The U.S. GOSIP Testing Program*, January 1991

(Copies of the Department of Commerce, NIST documents are available from NIST, Technical Building, Gaithersburg, Maryland 20899.)

2.2 Non-Government documents. The following non-Government documents form a part of this MIL-HDBK to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD-adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of the documents not listed in the DoDISS are the issues of the documents cited in the solicitation.

International Standards Organization (ISO)/Consultative Committee for International Telegraph and Telephone (CCITT)

ISO 9646-1/2 CCITT X.290, Part 4	*OSI Conformance Testing Methodology and Framework for Protocol Recommendations for CCITT Applications*, Melbourne, 1988.
ISO 9646-5	*Information Technology Open Systems Interconnection Conformance Testing Methodology and Framework: Requirements for Test Laboratories and Clients for Conformance Assessment*, July 1991.

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(Application for copies of this document should be addressed to ISO, Van Demonstrate 94, 1013 CN Amsterdam, Netherlands.)

2.3 Order of precedence. In the event of a conflict between the text of this MIL-HDBK and the references cited herein, the text of this MIL-HDBK takes precedence. Nothing in this MIL-HDBK, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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3. DEFINITIONS

3.1 Acronyms used in this MIL-HDBK. The following acronyms are used in this MIL-HDBK.

ACSE	Association Control Service Element
AF/SC	U.S. Air Force Deputy Chief of Staff/Systems for Communications/Computers
ATM	Abstract Test Methods
ATS	Abstract Test Suites
CINC	Commander-in-Chief
CLNP	Connectionless Protocol
CNO	Chief of Naval Operations
CSMA/CD	Carrier Sense Multiple Access/Collision Detection
DCSOPS	Deputy Chief of Staff of the Army for Operations and Plans
DDDRE(T&E)	Deputy Director, Defense Research and Engineering (Test & Evaluation)
DISA	Defense Information Systems Agency
DOD	Department of Defense
DTMP	Data Communications Protocol Standards Technical Management Panel
FTAM	File Transfer Access and Management
GOSIP	Government Open Systems Interconnection Profile
HDLC	High level Data Link Control
IEC	International Electrotechnical Commission
ISDN	Integrated Services Digital Network
ITS	Interoperability Test Suite
ISO	International Standards Organization
ITR	Interoperability Test Report
IUT	Implementation Under Test
JIEO	Joint Interoperability Engineering Organization
JITC	Joint Interoperability Test Center
MARCORSYSCOM	Marine Corps Systems Command
MHS	Message Handling System
MOT	Means of Test
NAVTELCOM	Naval Telecommunications Command
NCSL	NIST - Computer Systems Laboratory
NIST	National Institute for Standards and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
ODA	Open Document Architecture
OSI	Open Systems Interconnection

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PCTR	Protocol Conformance Test Report
PETS	Parameterized Executable Test Suite
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation Extra Information for Testing
PTC	Protocol Test Center
SCS	System Conformance Statement
SCTR	System Conformance Test Report
SUT	System Under Test
TIC	Technology Integration Center
TSARC	Test Scheduling and Review Committee
TTCN	Tree and Tabular Combined Notation
USAISC	United States Army Information Systems Command
VT	Virtual Terminal

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4. GENERAL REQUIREMENTS

4.1 Overview of the Joint Conformance and Interoperability Testing program. The DoD Data Communications Protocol Conformance and Interoperability Testing Program is designed to work in conjunction with a similar program developed at the Department of Commerce, NIST. The process is based on the methodology described in NIST Technical Report NCSL/SNA-91/1. The US GOSIP Testing Program is administered by the NIST - Computer Systems Laboratory (NCSL), in response to a federal government mandate that all government agencies procure only GOSIP compliant data communications protocols after August 1990. The DoD program is mandated by Memorandum, Assistant Secretary of Defense, Command, Control, Communications and Intelligence, dated 22 December 1988. A major difference between the two programs is found in the recognition that because of the special nature of defense systems, some data communications protocols may be required to exceed the capabilities of the US GOSIP profile or of other protocols which may be adopted for federal government use. As a result, the techniques, procedures, and methods used for the testing of US GOSIP protocols will be used within the DoD to test extensions to OSI protocols, and protocols which fall completely outside the purview of the US GOSIP testing program.

4.2 Conformance Testing Program Description. This section describes the DoD program for the conformance testing of data communications protocols used within the department. The protocols covered by this program can be taken from the US GOSIP profile. They can be US GOSIP protocols extended for use by the DoD, they can be other protocols adopted for federal government use, or they can be protocols developed exclusively for use by the DoD. Protocol errors or inadequacies uncovered during conformance testing are reported to the DTMP and protocol developers in the form of Engineering Change Proposals (ECPs).

4.2.1 The US GOSIP Profile. The US GOSIP profile forms the basis from which the DoD Data Communications Protocol Standardization Program is constructed. This MIL-HDBK relies on the US GOSIP Testing Program as a starting point.

4.2.1.1 Standard Protocols. In recognition of the need to develop a set of common data communications protocols based on the ISO's seven layer Open System Interconnection (OSI) Basic Reference Model, the Department of Commerce selected a set of ISO standard protocols for use within the federal government. The DoD further mandated the use of these protocols in procurement actions initiated within the department. The GOSIP profile is shown in Figure 1 and a complete description of the profile can be found in the FIPS 146-1, Version 2.

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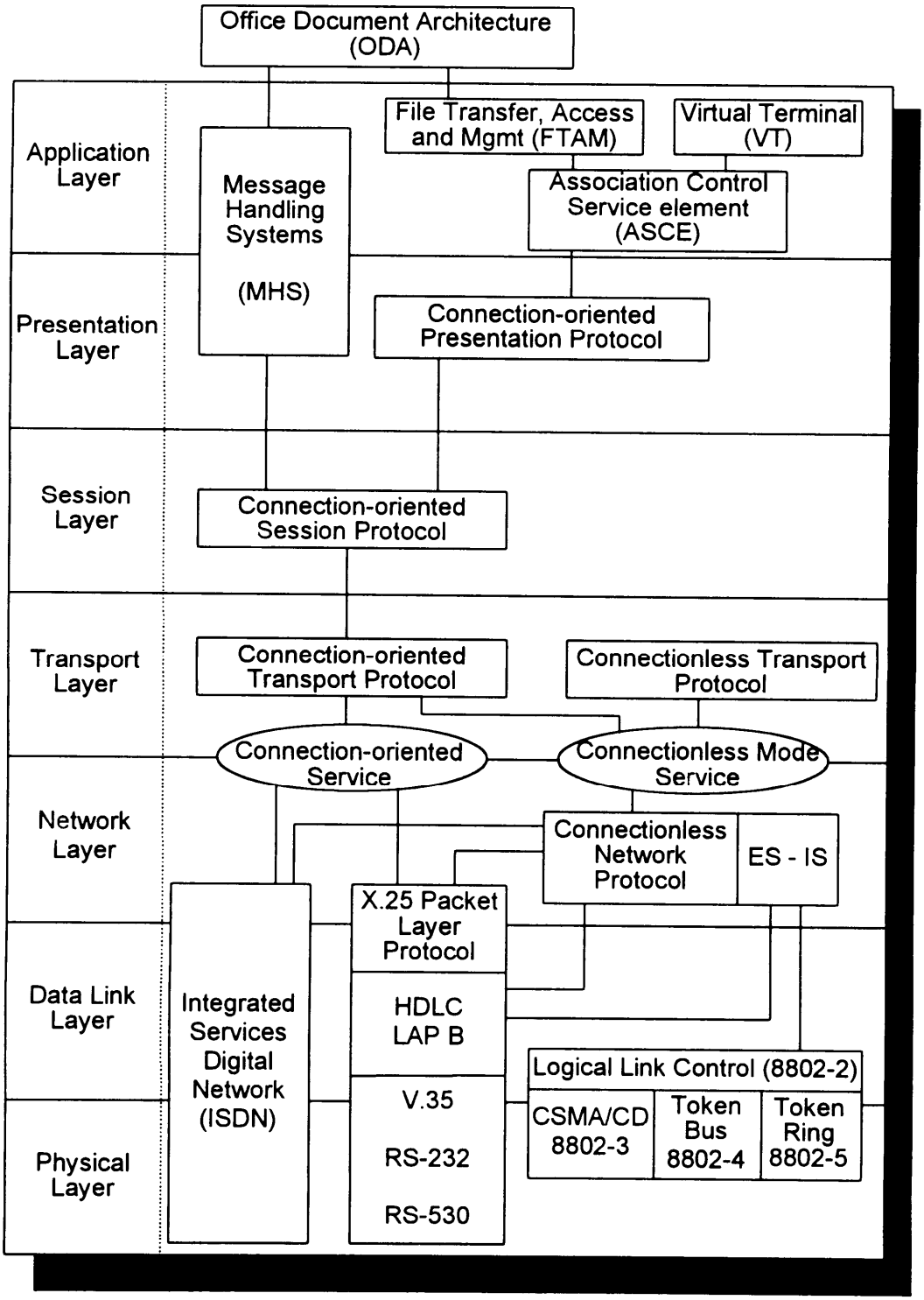

Figure 1. Government Open Systems Interconnection Profile, Version 2.

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4.2.1.2 The US GOSIP and DoD Conformance Testing Program Requirements. The products, services, and procedures available through the Department of Commerce's US GOSIP testing program should be used to provide a basis for the DoD Data Communications Protocol Testing Program whenever possible. Abstract Test Suites (ATSs), Means of Testing (MOT), and the US GOSIP Register should form the basis and starting point for all conformance test efforts within the DoD. Additions, extensions, and expansions used in the DoD program are specified in this MIL-HDBK. The requirements of the US GOSIP Testing Program are located in Department of Commerce NIST Interoperability Report (NISTIR) 4594.

a. Abstract Test Suites. The approach used in the DoD data communications protocol testing program for the development and use of ATSs should parallel that of the Department of Commerce US GOSIP Testing Program. This development and use is outlined in subsequent paragraphs.

(1) The ATSs developed in response to the US GOSIP Testing Program should form the core of those used in the DoD Data Communication Protocol Conformance and Interoperability Testing Program. All of the ATSs on the US GOSIP Register should be included in the DoD ATS Register.

(2) Any ATSs or test cases which cover military features or extensions to the US GOSIP profile which are not on the US GOSIP Register should be approved by the Data Communications Protocol Standards Technical Management Panel (DTMP). This should be accomplished as outlined in MIL-HDBK-1350-1, Validation of Data Communications Protocol Standards for Military Applications.

(3) All ATSs should be written in Tree and Tabular Combined Notation (TTCN). Exceptions to this requirement can be considered on a case by case basis by either the Department of Commerce for ATSs placed on the US GOSIP Register or by the DTMP for the DoD ATS Register.

(4) Only one ATS should be applicable for a given protocol. For those protocols covered completely on the US GOSIP Register, the ATS from the US GOSIP Register should be used. For military features or extensions, only one set of Abstract Test Cases should be used. These should be the test cases to be assessed and approved by the DTMP. These test cases should also be listed on the DoD ATS Register.

(5) Protocols which are unique to the DoD and those protocols which have been adopted for federal government use or extended for DoD use should also require one unique, registered ATS per protocol. The ATSs which provide the basis for the testing of these protocols should be developed by the developing Service or Agency in accordance with MIL-

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HDBK-1350-1 and should be registered on the DoD ATS Register.

b. Means of Testing. As in other aspects of data communications protocol testing, the development and use of MOT should parallel that of the Department of Commerce US GOSIP Testing Program. The development and use of MOTs within the DoD Data Communications Protocol Conformance and Interoperability Testing Program is outlined in the paragraphs that follow.

(1) The MOTs developed in response to the US GOSIP Testing Program should form the core of those used in the DoD Data Communications Protocol Conformance and Interoperability Testing Program. All of the MOTs listed on the US GOSIP Register should also be on the DoD MOT Register. To be registered on the US GOSIP Register a MOT must be assessed by the DISA(JITC). MOTs placed on the DoD MOT Register should also be assessed by DISA(JITC) prior to registration. Only those MOTs on the US GOSIP Register or the DoD Register will be used for conformance testing.

(2) Any MOTs or executable test cases which cover military features or extensions to the US GOSIP profile, and are not on the US GOSIP Register should be approved by the DTMP. This should be accomplished by the testing working group of the panel in accordance with MIL-HDBK-1350-1. Additionally, these MOTs or executable test cases should be assessed by DISA(JITC) prior to registration.

(3) Protocols which are unique to the DoD or other protocols adopted for use by the federal government should also require assessed and registered MOTs for conformance testing. The MOTs used in the testing of these protocols should be listed on the DoD MOT Register and should be assessed and registered by DISA(JITC).

(4) Any of the MOTs on the US GOSIP Register can be used in DoD conformance testing, and any number of MOTs can be registered for a single protocol or system. This is also true for specialized MOTs developed for testing unique DoD protocols or other protocols adopted for use by the federal government.

4.2.2 Military Features and Extensions to the US GOSIP Profile and other Adopted Protocols. The suite of protocols and the inherent architecture of the US GOSIP profile and other adopted protocols may provide insufficient features and functions to satisfy the needs of the military services and the DoD agencies. This may necessitate extension of some protocols or profiles.

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4.2.2.1 Conformance Testing of Military Extensions to US GOSIP and other Adopted Protocols. The military features and extensions to the protocols included in the US GOSIP profile and other adopted protocols should be conformance tested in the same manner as those protocols included in the profile. The only expected difference in the development and execution of conformance testing should be the physical location at which the activities will take place.

Test tools for conformance testing of military features and extensions probably will not be developed in the commercial market place. Rather, the development of ATS Test Cases, executable test cases, and the registration of test products is expected to occur through the actions of DoD Conformance and Interoperability Test Laboratories.

The development of all of the products associated with successful conformance testing should follow the same life cycle as those for the protocol features which comprise the US GOSIP profile.

4.2.3 Protocols not covered by the US GOSIP profile, other adopted protocols, or military extensions. Some military requirements are so unique that the mere extension of protocols within the US GOSIP profile or other adopted protocols will not meet them. When this is the case, entirely unique protocols probably will require development. For these protocols the entire process of the protocol development and testing is expected to occur within the DoD. This development and testing process must be at least as rigorous as that used for the protocols in the US GOSIP profile.

a. This category of protocols includes any protocol not currently in the US GOSIP profile or other adopted protocols, but which is required for DoD use. These are not extensions. They are complete stand-alone protocols specific to defense use.

b. The following actions should occur for these protocols to be registered as compliant with standards adopted by the DoD.

(1) An ATS should be developed for the protocol. This ATS should be on the DoD ATS Register, and it should be written in TTCN.

(2) Executable Test Cases should be available for each test case in the ATS. These test cases should be assessed for completeness and accuracy by the DISA(JITC) prior to their use in the conformance testing of the protocol. Certification of such an assessment should be on record at the DISA(JITC) prior to use of the test cases. These test cases normally should be grouped in a MOT, usually an automated test tool used in the conformance test laboratory.

(3) A Protocol Implementation Conformance Statement (PICS) should exist for the

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military protocol. This statement should identify what aspects of the protocol have been implemented in the version about to undergo testing. It should be available to the conformance test laboratory prior to testing.

(4) A Protocol Implementation Extra Information for Testing (PIXIT) should be available for the military protocol. The PIXIT should identify the variable parameters, such as addresses, which should be set to specific values in order to test the protocol. It should be available to the conformance test laboratory prior to testing.

(5) The military protocol should undergo a static and dynamic analysis during the test process. Both the static and dynamic analyses should include all required features of the protocol as given in the protocol standard and the ATS.

(6) A report (protocol or system) should be prepared by a DoD accredited conformance test laboratory. This report should provide sufficient details of testing to allow for assessment of the results prior to action by the DoD Registration Authority (DISA/JITC).

4.3 Interoperability Testing Program Description. This section describes the DoD program for the interoperability testing of data communications protocols used within the department. The protocols covered by this program can be taken from the US GOSIP profile. They can be US GOSIP protocols extended for use by the DoD, they can be other protocols adopted for federal government use, or they can be protocols developed exclusively for use by the DoD. Protocol errors or inadequacies uncovered during interoperability testing are reported to the DTMP and protocol developers in the form of Engineering Change Proposals (ECPs).

4.3.1 Role of Interoperability Testing. Compliance of protocol implementations and systems with data communications standards is a major step toward interoperability. It also is a major step toward the ability to insert a system or implementation into a network or system with the confidence that it will operate properly and will not degrade the operation of implementations already functional in the network or system. Unfortunately, conformance testing alone will not always produce such results. It has been demonstrated that interoperability between two protocol implementations (or systems) can only be assured by performing interoperability tests between the two implementations (or systems) in question. Even the performance of interoperability tests between two separate implementations under test (IUT) and a reference implementation will not guarantee that the two IUTs are interoperable. Only testing of protocol implementations in combination with another implementation will validate interoperability. Only those pairs of implementations tested with each other can be determined to be interoperable and registered accordingly. Testing of an IUT against a Reference Implementation will provide valuable information about the IUT but will result only in the registration of the IUT and the Reference Implementation as an

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interoperable pair. To ensure interoperability of multiple implementations operating in the same system or network, each implementation should be tested pair-wise with all other implementations in the system or network.

To the greatest extent practical, DoD should use the program of interoperability testing established within the US GOSIP Testing Program. This should promote maximum use of interoperability test results derived from the commercial sector. The transfer of test results from the commercial sector should primarily be the responsibility of the JITC, but Commanders-in-Chief (CINCs), services, or agencies may petition the JITC for the inclusion of interoperability test results obtained from the commercial sector and other parts of the United States government.

4.3.2 Requirements for DoD Interoperability Testing. The following requirements apply to all interoperability testing expected to result in interoperable pairs of products being added to the DoD Interoperable Products Register.

a. The test laboratory which conducts the interoperability testing should be a DoD registered interoperability test laboratory, or the laboratory should be an accredited facility under the Department of Commerce's National Voluntary Laboratory Accreditation Program (NVLAP).

b. Both implementations or systems to be interoperability tested should be conformance tested products and should be compliant with pertinent DoD or US GOSIP standards.

c. Only assessed and registered interoperability test suites (ITSs) should be used for DoD interoperability testing. These test suites should be assessed by the JITC and found on the DoD ITS Register.

d. Any ITS listed on the DoD ITS Register may be used to test an implementation or system. Like MOTs, ITSs may be provided from a variety of sources such as vendors or DoD agencies. The sole assessor of ITSs within the DoD is the JITC. Any ITS to be placed on the register should be forwarded to the JITC with all accompanying documentation for assessment and placement.

e. Test laboratories should conduct both a static and dynamic analysis of the pair of IUTs or systems under test (SUTs). The static analysis should be used to select the appropriate sub-set of interoperability test cases needed to establish interoperability between the two IUTs or SUTs. This selection should be documented in the Interoperability Test Report (ITR). The dynamic analysis should consist of the execution and evaluation of the selected test cases from the static analysis.

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f. When testing occurs at two separated locations (one implementation or system residing in each of the two locations), ideally both of the locations should be DoD accredited conformance and interoperability test laboratories. As a minimum, the controlling facility should be accredited.

g. At the conclusion of testing, the test facility should provide an ITR to the JITC. This report should be prepared in the format shown in Appendix B. As a minimum, this report should contain all test cases excluded from the ITS (with rationale), the results of the static analysis, the results of the dynamic analysis, the outcome of each executed test case, and an overall assessment of the interoperability of the two implementations or systems. In the event that multiple pairs of implementations or systems are tested, a separate report should be prepared for each tested pair.

4.4 DoD Conformance and Interoperability Test Laboratory Accreditation.

4.4.1 Role of laboratory accreditation within the DoD Conformance and Interoperability Testing Program. Like the US GOSIP Testing Program, the DoD Conformance and Interoperability Testing Program should have a means of assurance that the testing of protocols is conducted competently and objectively. This should be accomplished by the DoD Data Communications Protocol Laboratory Accreditation Program. This program establishes a central authority for the accreditation of laboratories to conduct conformance and interoperability testing on data communications protocols to be used within the DoD. This central authority should be free from the constraints of the military services and competent for the conduct of protocol testing. The DISA(JITC) performs this function within the DoD. The objectives of this role are as follows:

a. Identify technically competent laboratories within the DoD to perform the appropriate conformance and interoperability testing.

b. Ensure that the identified laboratories have adequate quality control, facilities, equipment, and personnel to conduct testing.

c. Determine whether the test laboratory staff at each accredited facility is adequately trained in the use of the appropriate, registered MOT and ITSs in accordance with established procedures.

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d. Ensure adequate records are maintained by the test laboratories to support the testing performed and test reports are produced to provide the necessary information for determining conformance to GOSIP and DoD Standards and pair-wise interoperability between implementations and systems.

e. Notify the accredited laboratories performing testing of deficiencies in testing immediately.

f. Establish criteria and procedures for test laboratories to obtain and maintain accreditation.

4.4.2 Laboratory Accreditation Requirements. In the event that a military service or DoD Agency desires that a laboratory or test facility become accredited, the steps listed in Appendix C (DoD Test Laboratory Accreditation Procedures) should be followed. Any laboratory or test facility which participates in the accreditation process should fully comply with all requirements of the program.

4.4.3 Requirements incumbent upon DoD accredited laboratories. The following requirements on accredited laboratories are necessary for the successful operation of the accreditation program and the competent accomplishment of conformance and interoperability testing.

a. The organization with which the laboratory or test facility is affiliated should designate a person(s) to act as the Authorized Representative and Laboratory Signatory. This person(s) should have sufficient organizational authority to commit the laboratory to actions necessary to carry out all duties inherent in being an accredited laboratory.

b. The signatory should sign all laboratory reports (conformance and interoperability).

c. The signatory should ensure all reports of testing expected to result in a registered product are forwarded to DISA(JITC).

d. The signatory should ensure that the accredited test laboratory makes the results of testing available to other DoD Agencies if the outcome could affect procurement actions sponsored by another agency or military service.

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4.5 Product, Service, and Test Tool Registration. The result of the efforts in the DoD Data Communications Protocol Testing Program is the DoD Data Communications Protocol Register. The register is maintained at the DISA(JITC). The JITC is the Registration Authority. The register contains the following items:

Abstract Test Suites (ATS)
Abstract Test Cases (Military Extensions)
Means of Testing (MOT)
Executable Test Cases (Military Extensions)
Conformance Tested Products
Interoperable Product Pairs
Accredited Test Laboratories
Interoperability Test Suites (ITS)
Test Tool Assessment Authority

a. Abstract Test Suites. All of the ATSs included in the US GOSIP Register should be included on the DoD ATS Register. ATSs which cover unique DoD protocols should be included on this register in their entirety. Only one ATS should be registered for each protocol. Candidates for registration should be forwarded to the JITC in accordance with the procedures outlined in Appendix D. ATSs developed within the DTMP should be forwarded by the appropriate working group.

b. Abstract Test Cases (Military Extensions). All Abstract Test Cases developed for military extensions to GOSIP protocols or other adopted protocols should be registered on the DoD ATS Register after submission to the JITC in accordance with the procedures outlined in Appendix D. Abstract Test Cases developed within the DTMP should be forwarded by the appropriate working group.

c. Means of Testing. All of the MOT included on the US GOSIP Register should be automatically included on the DoD MOT Register. MOTs which cover unique DoD protocols should be included on this register in their entirety. All MOTs which have been assessed by the JITC (sole assessor within the DoD) should be registered. Candidates for registration should be forwarded to the JITC in accordance with the procedures in Appendix D. MOTs developed within the DTMP should be forwarded by the appropriate working group.

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d. Executable Test Cases (Military Extensions). All Executable Test Cases developed for military extensions to GOSIP protocols or other adopted protocols should be registered on the DoD MOT Register after submission to the JITC in accordance with the procedures outlined in Appendix D. Executable Test Cases developed within the DTMP should be forwarded by the appropriate working group.

e. Conformance Tested Products. All products on the US GOSIP Register should automatically be included on the DoD Product Register. DoD Accredited Test laboratories which test products not on the US GOSIP Register should forward System Conformance Test Reports (SCTR) and Protocol Conformance Test Reports (PCTR) to the Registration Authority (JITC) in accordance with checklist or application forms developed at the DISA(JITC) for each type of registration. All products should be tested with registered MOT or Executable Test Cases for DoD registration to occur.

f. Interoperable Product Pairs. All interoperable product pairs on the US GOSIP Register should be included automatically on the DoD Interoperable Product Register. DoD Accredited Test laboratories which have test products not on the US GOSIP Register should forward to the Registration Authority (JITC) appropriate ITRs. Procedures are outlined in Appendix D. All registered interoperable pairs of products should be tested with registered ITSs.

g. Accredited Test Laboratories. The Accredited Test Laboratory Register should contain all laboratories and test facilities accredited in accordance with the policies and procedures in section 4.4 and Appendix C.

h. Interoperability Test Suites. All of the ITSs included on the US GOSIP Register should be included automatically on the DoD ITS Register. ITSs which cover unique DoD protocols should be included on this register in their entirety. All (and only) ITSs assessed by the JITC (sole assessor within the DoD) should be registered. Candidates for registration should be forwarded to the JITC in accordance with the procedures contained in Appendix D. ITSs developed within the DTMP should be forwarded by the appropriate working group.

i. Test Tool Assessment Authority. The DISA(JITC) should be the sole test tool (MOT, Executable Test Cases, ITS) assessment authority for the DoD Data Communications Protocol Testing Program. However, there may be instances when it is not possible for the JITC to provide assessment services for the entire DoD. Two alternate facilities should be named. Application for this role should be forwarded to DISA (Center for Testing). Alternates must be accredited test laboratories and have demonstrated additional expertise necessary to assess automated protocol test suites.

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4.6 Program Administration.

4.6.1 Funding Responsibilities. This section describes the responsibilities for funding the conformance and interoperability testing program. The intent of this program, modeled after the US GOSIP testing program, is to provide a framework of fee for service. The intention of the fee for service program is to provide the requisite incentives to minimize duplication of unnecessary testing services within the DoD.

The requirements placed upon the participants in the program are intended to ensure that all CINCs, services, and agencies within the DoD benefit to the greatest extent from the comprehensive testing of data communications protocols to be used within the DoD.

a. Development of ATSs, MOTs, and ITSs. In general the cost of developing the prerequisites for testing should be borne by one of two sources: the individual Military Services and DoD Agencies.

b. Conduct of Conformance and Interoperability Testing. The cost of conducting conformance and interoperability testing should be borne by the Military Service or DoD Agency which requires the service to aid in the procurement of GOSIP or DoD unique protocols.

c. Registration of Products, Services, and Test Tools. The cost of registering products, services, and test tools should be borne by the Military Service or DoD Agency which requires the service to aid in the procurement of data communications protocols. These registration services should be conducted to the greatest possible extent on a fee for service basis by the DoD Data Communications Protocol Registration Authority, DISA(JITC).

4.6.2 Responsibilities of Principal Participants. The type of management structure used by the Military Departments to support the Data Communications Conformance and Interoperability Testing Program will vary within each of the departments. In general, the services and agencies which participate in the conformance and interoperability testing program should have designated points of contact in each Military Department or Agency headquarters to assist in providing liaison and to assist with policy issues related to the program. The test organizations within each service or agency should provide field level support to assist in the actual administration of the program, the allocation of resources, and participation in the scheduling, planning, and conduct of conformance and interoperability testing.

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4.6.2.1 United States Army. The Army's needs relative to the test, certification and registration of data communications protocols should be determined within the Department of Army Test Schedule and Review Committee (TSARC). This body, which is chartered to provide high-level centralized resource management for user testing in the Army, should determine the requirements for protocol testing capabilities within the Army. This is important, especially in light of the testing capabilities already existing in the DISA.

a. Headquarters Level Responsibilities. The Deputy Chief of Staff of the Army for Operations and Plans (DCSOPS) is responsible at the headquarters level for the US Army. DCSOPS include the following as a minimum:

(1) Provide sufficient resources to the US Army Information Systems Command (USAISC) to support Army participation in the conformance and interoperability testing program, including funds required by DISA JITC for the conduct of testing and registration activities.

(2) Provide Army liaison to the Office of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence on matters relating to the testing of data communications protocols.

(3) Monitor Army participation in the DoD Data Communications Protocol Testing Program.

b. Field Level Responsibilities. The USAISC oversees the resources dedicated to the assurance of conformance and interoperability of data communications protocols within the Army. The USAISC provides field level support to the Defense Data Communications Protocol Testing Program on behalf of the Department of the Army. These responsibilities include the following:

(1) Determine Army conformance and interoperability test requirements.

(2) Sponsor Army test facilities which participate in the Defense Data Communications Protocol Testing Program.

(3) Monitor all Army activity in the Defense Data Communications Protocol Testing Program and participate in all standards bodies with interest in data communications protocol testing.

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4.6.2.2 United States Navy.

a. Headquarters Level Responsibilities. The Chief of Naval Operations (CNO) serves as the headquarters level responsible agency within the Department of the Navy. This responsibility should be accomplished primarily by the Office of the Director of Research, Development Requirements, Test, and Evaluation (OP-098) in the Test and Evaluation Division (OP-983). These headquarters level responsibilities include the following:

(1) Provide sufficient resources to Navy Telecommunications Command (NAVTELCOM) to support US Navy participation in the conformance and interoperability testing program, including funds required by DISA JITC for the conduct of testing and registration activities.

(2) Provide Navy liaison to the Office of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence on matters relating to the testing of data communications protocols.

(3) Monitor Navy participation in the DoD Data Communications Protocol Testing Program.

b. Field Level Responsibilities. NAVTELCOM oversees the resources dedicated to the assurance of conformance and interoperability of data communications protocols within the Navy. The NAVTELCOM provides field level support to the Defense Data Communications Protocol Testing Program on behalf of the Department of the Navy. These responsibilities include the following:

(1) Determine Navy conformance and interoperability test requirements.

(2) Sponsor Navy test facilities which participate in the Defense Data Communications Protocol Testing Program.

(3) Monitor all Navy activity in the Defense Data Communications Protocol Testing Program and participate in all standards bodies with interest in data communications protocol testing.

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4.6.2.3 United States Air Force.

a. Headquarters Level Responsibilities. The US Air Force Deputy Chief of Staff/Systems for Communications/Computers (AF/SC) serves as the headquarters level responsible agency for the US Air Force. The responsibilities of this organization include the following:

(1) Provide sufficient resources to the US Air Force Technology Integration Center (TIC) to support Air Force participation in the conformance and interoperability testing program, including funds required by DISA JITC for the conduct of testing and registration activities.

(2) Provide Air Force liaison to the Office of the Assistant Secretary of Defense for Command Control Communications and Intelligence on matters relating to the testing of data communications protocols.

(3) Monitor Air Force participation in the DoD Data Communications Protocol Testing Program.

b. Field Level Responsibilities. The Air Force TIC oversees the resources dedicated to the assurance of conformance and interoperability of data communications protocols within the Air Force. The TIC provides field level support to the Defense Data Communications Protocol Testing Program on behalf of the Department of the Air Force. These responsibilities include the following:

(1) Determine Air Force conformance and interoperability test requirements.

(2) Sponsor Air Force test facilities which participate in the Defense Data Communications Protocol Testing Program.

(3) Monitor all Air Force activity in the Defense Data Communications Protocol Testing Program and participate in all standards bodies with interest in data communications protocol testing.

4.6.2.4 United States Marine Corps.

a. Headquarters Level Responsibilities. The Commandant of the Marine Corps accomplishes headquarters level responsibilities for the US Marine Corps. The responsibilities of this organization include the following:

(1) Provide sufficient resources to the Marine Corps Systems Command

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(MARCORSYSCOM) to support Marine Corps participation in the conformance and interoperability testing program, including funds required by DISA JITC for the conduct of testing and registration activities.

(2) Provide Marine Corps liaison to the Office of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence on matters relating to the testing of data communications protocols.

(3) Monitor Marine Corps participation in the DoD Data Communications Protocol Testing Program.

b. Field Level Responsibilities. The Director of C4I2, MARCORSYSCOM oversees the resources dedicated to the assurance of conformance and interoperability of data communications protocols within the Marine Corps. MARCORSYSCOM provides field level support to the Defense Data Communications Protocol Testing Program on behalf of the Marine Corps. These responsibilities include the following:

(1) Determine Marine Corps conformance and interoperability test requirements.

(2) Sponsor Marine Corps test facilities which participate in the Defense Data Communications Protocol Testing Program.

(3) Monitor all Marine Corps activity in the Defense Data Communications Protocol Testing Program, and participates in all standards bodies with interest in data communications protocol testing.

4.6.2.5 Defense Information Systems Agency. DISA provides DoD administration of the Defense Data Communications Protocol Testing Program. This programmatic oversight should be accomplished by the DISA JITC. This is true for both the conformance and interoperability testing portions of the program.

a. DISA Program Manager Responsibilities. The Program Managers accomplish headquarters level responsibilities for DISA. The responsibilities of this organization include the following:

(1) Provide sufficient resources to support DISA participation in the conformance and interoperability testing program, including funds required by DISA JITC for the conduct of testing and registration activities.

(2) Determine DISA conformance and interoperability test requirements.

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b. Joint Interoperability Test Center (JITC). The JITC should be the focal point of DISA participation in the protocol testing program. The JITC performs the following actions:

(1) Maintain the DoD Data Communications Protocol Registers. This responsibility includes the review of applications for the inclusion of products, laboratories, ATSs and Abstract Test Cases, and MOTs and Executable Test Cases in the registers.

(2) Serve as the responsible agency for the administration of the DoD Laboratory Accreditation Program.

(3) Assess all MOTs used in the DoD Data Communications Protocol Testing Program.

(4) Assess all ITSs to be registered in the testing program.

4.6.2.6 The Joint Staff. The Joint Staff maintains cognizance of the entire DoD participation in the US GOSIP Testing Program to include the administration of the DoD Data Communications Protocol Testing Program. This includes the facilitation of funding for the program in conjunction with the Office of the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence. Additionally the Joint Staff ensures that to the greatest extent possible only compliant and registered data communications products are procured and used within the DoD. Finally the Joint Staff provides membership to the DTMP to stay abreast of the testing program.

4.6.2.7 Deputy Director, Defense Research and Engineering (Test and Evaluation). The DDDRE(T&E) has overall responsibility for the high level administration of the DoD Data Communications Protocol Testing Program. Inherent in these responsibilities are the following:

a. Appoint the lead Service/Agency responsible for the field level administration of the testing program.

b. Provide guidance to the DISA in the administration of the testing program.

c. Provide the resources necessary for the administration of the testing program by the DISA.

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5. DETAILED REQUIREMENTS

This section is not applicable to this MIL-HDBK.

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6. NOTES

6.1 Intended Use. Documents, products or processes conforming to the requirements of this handbook are intended for use in the development and implementation of Military Data Communications Protocols. The purpose of this handbook is to provide guidance in the validation of Data Communication Protocol Standards and in the testing and registration of products professign conformance with those protocols.

6.2 Subject Term (Keyword) Listing.

Abstract Test Suite (ATS)
Conformance Testing
Data Communication Protocol
Formal Description Technique (FDT)
Implementation Under Test (IUT)
Interoperability
Interoperability Testing
Interoperation
Means Of Testing (MOT)
Open Systems Interconnection (OSI)
Parameterized Executable Test Suite (PETS)
Protocol
Protocol Conformance Test Report (PCTR)
Protocol Formalization
Registration
Requirements Definition
Standards
System Under Test (SUT)
Test Case
Tree and Tabular Combined Notation (TTCN)
US GOSIP
Validation

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APPENDIX A

CONFORMANCE TEST PROCEDURES

10. SCOPE. This Appendix is a mandatory part of this MIL-HDBK. The information contained herein is intended for compliance.

20. APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

30. PROCEDURES. The following procedures should be followed at all DoD Test Facilities which are accredited to perform conformance testing of data communications protocols to be registered for procurement by DoD Components and Agencies. The procedures are specific and should be followed explicitly during the execution of test campaigns. The portions of these procedures which are particularly relevant to SUT operators are noted in italics.

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APPENDIX A

30.1 Flow chart of Test Procedures. The following is a flow chart for all conformance test procedures.

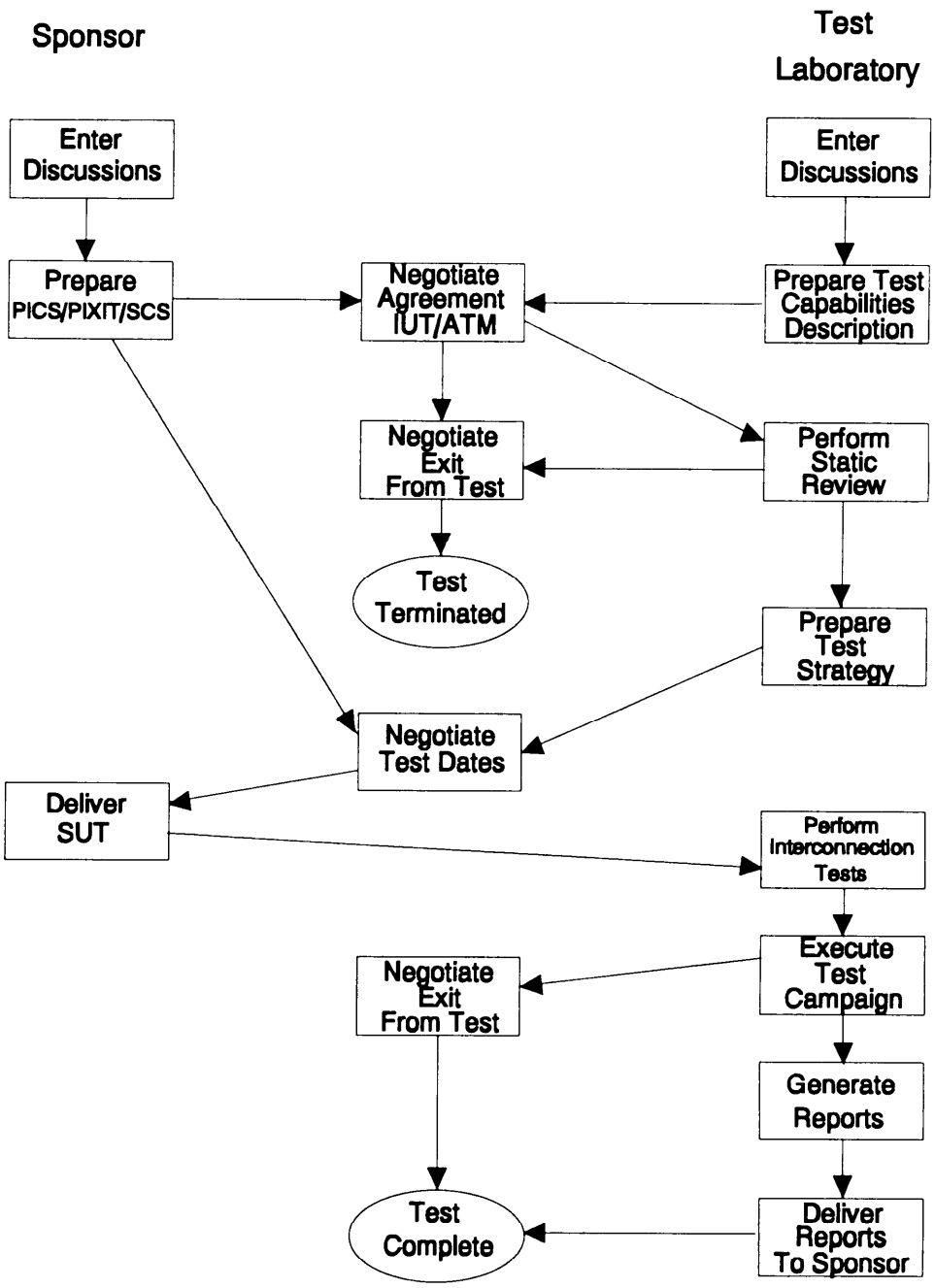

Figure 2. Conformance test procedure flow chart.

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APPENDIX A

30.2 Test Preparation Administrative Procedure. After a client and testing laboratory agree in principle to conduct a test, the following sequence of procedures should be followed to prepare for actual testing. Informal contact between the client and the laboratory manager is encouraged during this phase. In particular, the laboratory manager should explain the policies and procedures that govern various stages of the process.

a. The laboratory manager should furnish the client with a statement of the test facility capabilities and limitations as they apply to the testing of the client's SUT. Included is information on the documentation, resources, and actions required of the client to facilitate testing of the SUT.

b. The client must furnish to the test laboratory a description of the SUT specifically identifying those portions of the SUT to be considered IUTs. This data must include a System Conformance Statement (SCS) and sufficient PICS and PIXIT to describe the complete SUT.

c. Subsequent to the exchange of information, the client and the test laboratory must reach an agreement regarding the ATS and the Abstract Test Methods (ATM) to be used for each IUT.

d. The test laboratory then performs a static review of the client documentation, verifies that the documentation reflects a system suitable for testing, selects the tests to be performed, and prepares and delivers to the client a test strategy. In the event the client documentation is faulty, or the client system is not suitable for testing, the test laboratory notifies the client and assists the client in remedying the shortfalls.

e. When all of the above steps are successful, the client and the test laboratory negotiate a mutually acceptable time and setting to perform the testing.

f. If an agreement cannot be reached between the client and the test laboratory on the ATS and ATM, or if the shortfalls from the static review are not resolved, the client and the test laboratory may negotiate a mutually acceptable exit from the testing process.

30.3 Static Review Procedures. In the course of completing the test preparation administrative procedures, the test laboratory technical personnel should conduct a static review of the client's SUT, based on the submitted PICS and PIXIT. The objective is to determine whether the product is technically suitable for testing. The following steps are accomplished in the review.

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a. Ensure all elements identified in the Proforma, except those identified as optional, have been checked by the client as supported in their product. If any elements, other than those identified as optional, are not implemented in the product, the product fails the Static Review. All such elements are itemized and provided to the client for resolution. Conformance testing for the product is then deferred pending resolution.

b. Note all elements identified as optional (O) and then note if these elements have been implemented in the product. Also indicate if these elements have been implemented as originator or recipient or both. Note any constraints that the client has provided on any element implemented.

30.4 Test Strategy Preparation Procedures. In the course of completing the test preparation procedures, the test laboratory technical personnel prepare a test strategy. This strategy includes a description of the required interconnections and a listing of the test cases that are to be conducted. The bulk of MOTs available have automated tools to assist in the selection of test cases. When such automated tools exist, they are used in the preparation of a test plan. For those cases for which the MOT does not have automated tools, the Test Engineer prepares the list of test cases manually. The following steps are accomplished.

a. Develop an overall test strategy for the client's SUT. This includes selecting a test method and MOT for each protocol and identifying the elements of the test system infrastructure that are required. It also identifies the locations of elements of the total test configuration and identifies communications required.

b. Prepare a draft SCTR for the client's SUT. Include pertinent information from the test strategy.

c. Note the set of test cases known to be defective. Mark and reference the known defect.

d. Select all test cases for features other than those identified as optional.

e. Select test cases for optional features only if client documentation states that they have been implemented.

f. Create a draft PCTR for each protocol to be tested, and attach the test case table to this PCTR.

g. Place a comment in the PCTR document explaining why cases were not selected as applicable.

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h. Develop a test strategy for each protocol identifying the projected test configuration including the locations of all elements of the test.

i. Determine from the PIXIT the parameters to be used for each test case and prepare the Parameterized Executable Test Suite (PETS).

30.5 Basic Interconnection Testing. Assuming all preliminary procedures have been successfully completed, the client and the test laboratory initiate testing on the appointed date. The initial action is to perform basic interconnection testing. The purpose of this testing is to determine whether the SUT and the MOT can interact using the parameters identified in the PETS. The test laboratory, in concert with client technical personnel, accomplishes the following procedures.

a. Connect the systems hosting the SUT and the MOT to the agreed-on communications medium.

b. Set the parameters (such as addresses, connection and end point identifiers, counters, timers, and encoding strategies) that should be used to govern interactions between the SUT and the MOT.

c. Verify that the SUT and the MOT can communicate.

d. To the extent feasible, test the validity of the different values of parameters.

e. In the event of a failure of basic interconnection testing, the test laboratory should attempt to determine the cause of the failure. In the event of a basic incompatibility or an inappropriate parameter, the client and the test laboratory should negotiate an exit from testing, using the negotiated exit procedures.

Successful completion of the basic interconnection tests is required prior to continuing with the execution of the test campaign on a base platform. In the case of a derived platform no further testing beyond the basic interconnection tests is required.

30.6 Testing Order Policy. All protocols should be verified from the bottom up. No protocol at any level should be tested unless the protocols underlying it have been deemed compliant with relevant standards. There are two exceptions. No requirement exists for GOSIP testing of the physical layer or the Local Area Network interface underlying connectionless protocol (CLNP). The client may have the test laboratory test and verify an

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entire stack or the client may present evidence that the stack underlying the IUT has been determined to be compliant as a result of testing elsewhere. To establish the status of underlying protocols in an SUT, the following procedures are followed.

a. The test laboratory engineer reviews the client documentation on the SUT and determines whether: (1) the client states all protocols providing services to the IUT have been determined to be compliant with the standards by an accredited test facility or (2) whether it should be necessary for the test laboratory to perform multi-layer testing from the bottom up.

b. If the client states the service provider layers have been certified compliant with the relevant standards, the client must present documentation (such as PCTRs) showing: (1) evidence of certification by prior testing and (2) evidence that the service provider layers have not been modified since the prior testing was completed.

c. The test laboratory engineer examines the service provider layers of the SUT and verifies they match the results from previous testing.

d. If the test laboratory engineer cannot determine that the service provider layers of the SUT are identical to the previously tested version, the test laboratory cannot continue conformance testing.

30.7 Test Execution Procedures. The following procedures govern all test laboratory conformance testing.

a. The test laboratory should assure that the MOT and a test operator are available for the full duration of the scheduled testing period.

b. Each test campaign begins from an initial start point in which all previous log files have been purged.

c. The automated test execution capabilities of the MOT are used to execute the PETS for each IUT to the extent that tests should execute.

d. The test laboratory engineer uses the resources of the MOT to log real-time observations during the execution of a test campaign. Additionally, the test laboratory engineer maintains a log of test data.

e. If a test case terminates abnormally, the test case is restarted and rerun. If the same result is produced, the test case is logged as "not run".

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f. The PICS may not be changed once testing on an IUT has begun. The PIXIT may be changed to correct typographical errors, but may not be changed due to aberrant behavior on the part of the IUT.

g. At the completion of a test campaign, the entire IUT account should be archived to magnetic media and a backup of the account made to a separate magnetic media. These media should be maintained in a secure place accessible to the test laboratory.

h. After both the archive and the backup have been accomplished, the entire IUT account is purged from the test system.

30.8 Negotiated Exit Procedures. Circumstances may arise during a test campaign which result in either the client or the test laboratory engineer desiring to exit testing. The following policies and procedures should govern such cases.

a. The client or test laboratory engineer may request a negotiated exit from official testing any time. In such event, testing is immediately suspended and no test report is generated.

b. An agreement between the test laboratory and the client must be signed containing the following information:

(1) Date and time when negotiated exit took place.

(2) Exit point

(3) Reason for the negotiated exit.

(4) Conditions for client's re-entry into testing.

c. The client may reschedule further testing with the test laboratory following any negotiated exit.

d. After a negotiated exit, testing is not restarted except by starting a new test campaign or by initiating a new conformance assessment process.

30.9 Test Verdict Assessment Procedures. The test laboratory should assign verdicts for all test cases run during a conformance test campaign. In general, these verdicts are assigned

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automatically by the MOT. In the case of "Pass" verdicts assigned by the MOT, samples of those verdicts are examined in the log files. For other circumstances, the following procedures are used.

a. In the event of a "Fail" verdict, the test laboratory engineer examines the log files, verifies the "Fail" verdict, determines the cause of the failure, and documents the cause of failure. For all test cases in which the log file data indicate the IUT is at fault, the test laboratory informs the client formally of intent to assign a "Fail" verdict. In the event of a "Fail" verdict that is not the fault of the IUT, the test laboratory engineer should attempt to isolate the cause of the problem. The results of this investigation should be brought to the attention of the appropriate party.

b. In the event of a test case error, the verdict of "Not Run" is assigned, and the test laboratory should generate an action to update the ATS.

c. In the event of an "Inconclusive" verdict, the test laboratory engineer should attempt to determine whether the problem is in the IUT and reproducible, or in some other element of the SUT or test assembly. If the problem can be identified as a reproducible error in the IUT, then the test case is listed as "Inconclusive." Otherwise, the test case should be run again. If re-running the test case produces a "Pass" or "Fail", then the latter should be the assigned verdict. Otherwise, the test case remains "Inconclusive". Findings are documented as observations.

d. In the event of an abnormal termination, the test case should be re-run. If the test case terminates abnormally again, the test case is listed as "Not Run".

e. The test laboratory engineer should be alert for any circumstance that indicates a fault in either the ATS or the MOT. If such a fault is detected, the test engineer should note the fault and the test laboratory should initiate sufficient action to report the fault to the DISA(JITC), Department of Commerce (NIST), and the manufacturer of the MOT. The proper reporting channel for MOT faults is through the test laboratory system administrator to the MOT supplier; for ATS faults, through the test laboratory signatory to the NIST.

30.10 Test Report Generation Procedures. For each conformance test campaign not terminated by a negotiated exit, the test laboratory should produce a SCTR and a PCTR. These reports are produced in accordance with the following procedures.

a. Each SCTR uses the DoD format based on the proforma contained in Annex A of ISO 9646-5 and provides all data by that proforma. The DoD SCTR format is shown at Appendix B.

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b. Each SCTR includes information describing any distributions or restrictions agreed upon between the client and the test laboratory.

c. Each SCTR should clearly state whether non-conformance, or cause for concern, has been demonstrated by any test case. The SCTR should also state whether any test cases repeatedly demonstrated inconclusive behavior.

d. Each PCTR uses the DoD format based on the proforma contained in Annex B of ISO 9646-5 and provides all data implied by that proforma. The PCTR lists all test cases selected for the PETS, all test cases run during the test campaign, the verdict assigned to each test case run, and any observations made during the test campaign. The DoD PCTR format is shown at Appendix C.

e. The test laboratory engineer should generate professional, accurate, and timely test reports.

f. The test laboratory technical manager is responsible for the approval or completion of the conformance statement, and Product/Tester sections of the PCTR.

g. Test reports remain confidential and the property of the client. Test reports are sent to the client and, at the client's direction, to the DoD Registration Authority (DISA/JITC). No duplication or distribution of any test report is permitted without approval of both the client and the test laboratory.

30.11 Test Result Disposition Procedures. All materials relating to a given client's interaction with the test laboratory should be held in the strictest confidence on behalf of that client. Such materials, particularly as they regard test campaigns and results, should be treated in accordance with the following procedures.

a. All test campaign materials (such as PETS, log files, and environmental files) developed using automated resources are confined to the specific log-in account or directory created for the client.

b. At the conclusion of a test campaign, all materials in the client's log-in file or directory are stored on tape or disk and backed up on a separate tape or disk (both items of these media are dedicated to the materials of the single client). Then the client's log-in file or directory and all subsidiary materials, are purged from the system.

c. All hard-copy test campaign materials for a given client are kept separate from materials relating to any other client.

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d. Test campaign materials for a given test campaign, both hard-copy and magnetic media, should be retained for a period of one year. Access to these materials should be limited to test laboratory and client personnel.

e. After one year, test campaign materials should be archived for an additional six years. Access to these archived records should be provided only upon receipt by the test laboratory of written request from the client. Every effort should be made to be certain that client privacy of these records is maintained.

30.12 Dispute Procedures. The following procedure is to be followed in regard to dispute of any test laboratory policy, procedure, or test result.

a. All disputes must be submitted by clients through formal channels. The test laboratory technical staff should not engage in dispute discussions with clients.

b. Each dispute is examined by the test laboratory manager to determine its nature. If the dispute involves test campaign issues, the test laboratory manager, in consultation with the test engineer, should make a determination on test case verdict or outcome.

c. If the dispute regards a policy or procedure of the test laboratory, the test laboratory manager should make a determination whether the policy or procedure is in error. If the policy or procedure is found to be in error, changes should be instituted. If the policy or procedure is one that affects accreditation, the resultant change is forwarded to the Accreditation Authority (DISA/JITC).

d. If the dispute regards a test result, the test laboratory manager and the test laboratory engineer should review the evidence and determine whether a testing error has occurred. In the event of an error, the following procedure is followed.

(1) If an error has been detected in the MOT, all supporting evidence is delivered to the Registration Authority (DISA/JITC) and the supplier of the MOT for resolution.

(2) If at least a portion of the test case in question is believed to be improper or defective by the test laboratory engineer, then all supporting data and a written description of the issue are generated by the test laboratory. These are then forwarded to the Registration Authority (DISA/JITC) and MOT vendor for analysis.

(3) If an error is detected in the assessment of a test case verdict, the test laboratory should either:

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APPENDIX A

a. Disqualify this test case (check Not-Selected) if the test case is determined to be irrelevant, or

b. Modify the assessment for test cases mistakenly judged "Fail" to be "Inconclusive" or "Pass" depending on the results of the review. (If necessary, tests may be repeated to validate the results.)

e. Upon reaching a determination on the dispute, the test laboratory manager should consult with the client to attempt to reach a mutual understanding of its resolution.

f. In all cases, the test laboratory final disposition of a dispute is communicated formally to the client.

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APPENDIX B

SYSTEM CONFORMANCE TEST REPORT

10. SCOPE. This Appendix is a mandatory part of this MIL-HDBK. The information contained herein is intended for compliance.

20. APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

30. FORMAT AND SAMPLE. The following pages provide the format and sample for a SCTR.

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APPENDIX B

SYSTEM CONFORMANCE TEST REPORT
FOR
<PROTOCOL>

<SCTR Number>

<MONTH YYYY>

Submitted by:

Name
Title
Organization or agency

Approved by:

_____
Name of signatory
Organization

Prepared by:
Tester
Protocol Test Center
Organization or Agency
City, State, ZIP

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APPENDIX B

TABLE OF CONTENTS

PARAGRAPH		PAGE
1.	IDENTIFICATION SUMMARY	B-1
1.1	SYSTEM CONFORMANCE TEST REPORT	B-1
1.2	TEST LABORATORY	B-1
1.3	SPONSOR	B-1
1.4	SUT	B-1
1.5	NATURE OF CONFORMANCE TESTING	B-1
1.6	LIMITS AND RESERVATIONS	B-2
1.7	RECORD OF AGREEMENT	B-2
1.8	COMMENTS	B-2
2.	SYSTEM REPORT SUMMARY	B-3
2.n	PROTOCOL LAYER TESTING SUMMARY FOR *PROTOCOL NAME*	B-3

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APPENDIX B

System Conformance Test Report for *SUT Name*

1. IDENTIFICATION SUMMARY

1.1 SYSTEM CONFORMANCE TEST REPORT

SCTR Number:
SCTR Date: *DD MMM YY*
Technical Manager: *Name*
Signature: *Technical Manager Signature*

1.2 TEST LABORATORY

Protocol Test Center
Address of Test Center
City, State, ZIP

Telephone: (xxx) xxx-xxxx
FAX: (xxx) xxx-xxxx

1.3 SPONSOR

Agency Name
Agency Point of Contact
Address

Telephone: *(xxx) xxx-xxxx (Indicate DSN or Commercial)*
FAX: *(xxx) xxx-xxxx*

1.4 SUT

Name:
Version:
Supplier: *Name*
Address

Telephone: *(xxx) xxx-xxxx (Include International*
FAX: *(xxx) xxx-xxxx Prefix if Necessary)*

Dates for Testing: *DD MMM YY - DD MMM YY*
SCS Identifier:

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APPENDIX B

1.5 NATURE OF CONFORMANCE TESTING

The purpose of conformance testing is to increase the probability that different implementations can interoperate. However, the complexity of OSI protocols makes exhaustive testing impractical on both technical and economic grounds. Furthermore, there is no guarantee that a SUT which has passed all the relevant tests conforms to a specification.

Neither is there any guarantee that such a SUT should interoperate with other real open systems. Rather, the passing of the tests gives confidence that the SUT has the stated capabilities and that its behavior conforms consistently in representative instances of communication.

1.6 LIMITS AND RESERVATIONS

This report is the joint responsibility of the *Protocol Test Center (PTC) or Laboratory* and the *XXXXX Agency*. Its contents may include sponsor or vendor proprietary or confidential information. No portion of this report should be released to anyone outside the *PTC or Laboratory* without the express written consent of the identified *Agency* point of contact. The sponsor should receive a copy of the test report upon completion of the *PTC or Laboratory* signatory's approval of the report. The sponsor has the right to append comments to the report. Those comments should be retained as part of the permanent record of the test. The sponsor may initiate an appeal to invalidate the results of the test, but may in no way negotiate a change to the contents of the report. In the event of a successful appeal, the appropriate action shall be negotiated with the *PTC or Laboratory* representative.

1.7 RECORD OF AGREEMENT

The *PTC or Laboratory* and the representative from *Sponsor Name* agreed that the following portions of the SUT were considered to be the Implementations Under Test (IUT) during testing, and that the stated abstract test methods and abstract test suites would be used.

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APPENDIX B

IUT-1: *Name and Version*
ATS Description eg. ATS-9 Transport Class 4
ATM Description eg. Coordinated Single Layer

|
|
|

IUT-n: *Name and Version*
ATS Description

ATM Description

1.8 COMMENTS

Either the sponsor or the PTC manager may comment on any of the contents of the SCTR or corresponding PCTRs. The comments may include statements of improper actions by sponsor or test facility personnel or may be used to note disagreement between the two parties. The point of disagreement should be pertinent to the reported results of the test. For example, the sponsor may disagree with the tester's final selection of the method of test.

2. SYSTEM REPORT SUMMARY

This paragraph should include a statement of which protocols within the SUT were tested and a brief summary of which were considered to be standard compliant and which were not. For each protocol layer tested, add a subparagraph of the format shown below to summarize the testing and conformance status of the implementation. If there is more than one protocol tested, then begin the subparagraph for each (after the first) on a separate page.

2.n PROTOCOL LAYER TESTING SUMMARY FOR *PROTOCOL NAME*

Implementation Identifier:	*Name and Version Number*
IUT Definition Reference:	IUT *# Number from 1.7*
Protocol Standard/Recommendation:	*Reference ie. ISO/IEC 8073*
PICS:	*PTC Reference Number*
PIXIT:	*PTC Reference Number*
PCTR Number:	*PTC Reference Number*
PCTR Date:	*Date of PCTR*
ATS Standard/Recommendation:	*Reference from Register ie. ATS-9*
Abstract Test Method:	*eg. Coordinated Single Layer*
MOT Identifier:	*Name and Version Number*

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APPENDIX B

Conformance Status:

Static Conformance Errors?:	*Yes/No*
Dynamic Conformance Errors?:	*Yes/No*
Sponsor Can Claim Conformance?:	*Yes/No*
Test Cases Run:	*Number*
Passed:	*Number*
Failed:	*Number*
Inconclusive:	*Number*

Observations:

This is an optional paragraph where the tester may provide an additional summary on any aspects of non-conformance exhibited by the IUT. Any difficulties encountered in the testing may also be reported here.

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APPENDIX C

PROTOCOL CONFORMANCE TEST REPORT

10. SCOPE. This Appendix is a mandatory part of this MIL-HDBK. The information contained herein is intended for compliance.

20. APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

30. FORMAT AND SAMPLE. The following pages provide the format and sample for a PCTR.

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APPENDIX C

PROTOCOL CONFORMANCE TEST REPORT
FOR
<PROTOCOL>

<PCTR Number>

<MONTH YYYY>

Submitted by:

Name
Title
Organization or Agency

Approved by:

_____
Name of signatory
Organization

Prepared by:
Tester
Protocol Test Center
Address of Test Center
City, State, ZIP

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APPENDIX C

TABLE OF CONTENTS

PARAGRAPH		PAGE
1.	IDENTIFICATION SUMMARY	C-1
1.1	PROTOCOL CONFORMANCE TEST REPORT	C-1
1.2	IUT	C-1
1.3	TESTING ENVIRONMENT	C-1
1.4	LIMITS AND RESERVATIONS	C-1
1.5	COMMENTS	C-2
2.	IUT CONFORMANCE STATUS	C-2
3.	STATIC CONFORMANCE SUMMARY	C-2
4.	DYNAMIC CONFORMANCE SUMMARY	C-2
5.	STATIC CONFORMANCE REVIEW REPORT	C-2
6.	TEST CAMPAIGN REPORT	C-3
7.	OBSERVATIONS	C-3

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APPENDIX C

Protocol Conformance Test Report for *Protocol Name*

1. IDENTIFICATION SUMMARY

1.1 PROTOCOL CONFORMANCE TEST REPORT

PCTR Number:	
PCTR Date:	*DD MMM YY*
Corresponding SCTR Number:	
Corresponding SCTR Date:	*DD MMM YY*
Technical Manager:	*Name*
Signature:	*Technical Manager Signature*

1.2 IUT

Name:	
Version:	
Protocol Standard/Recommendation:	*Reference ie. ISO/IEC 8073*
PICS:	*Copy or Reference Number*
Previous PCTRs if any(Optional):	*Reference Number or Other Lab ID and Reference Identification*

1.3 TESTING ENVIRONMENT

PIXIT:	*Copy or Reference Number*
ATS Standard/Recommendation:	*Reference from Register ie. ATS-9*
Abstract Test Method:	*eg. Coordinated Single Layer*
MOT Identifier:	*Name and Version Number*
Protocol Information (Optional):	*Timers, Parameters, Etc.*
Dates of Testing:	*DD MMM YY - DD MMM YY*
Conformance Log Reference(s):	*Reference Numbers*
Retention Date for Log Reference:	Short Term *DD MMM YY* Archive *DD MMM YY*

1.4 LIMITS AND RESERVATIONS

This report is the joint responsibility of the PTC or Laboratory and the sponsor. Its contents may include sponsor proprietary and/or confidential information. No portion of this report should be released to anyone outside the PTC or Laboratory without the express written consent of the identified sponsor point of contact. The sponsor should receive a copy of the test report upon completion of the PTC or Laboratory signatory's approval of the report. The sponsor has the right to append comments to the report. Those comments should be retained as part of the permanent record of the

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test. The sponsor may initiate an appeal to invalidate the results of the test, but may in no way negotiate a change to the contents of the report. In the event of a successful appeal, the appropriate action shall be negotiated with the PTC or Laboratory representative.

1.5 COMMENTS

Either the sponsor or the Protocol Test Center manager may comment on any of the contents of the PCTR. The comments may include statements of improper actions by sponsor or test facility personnel or may be used to note disagreement between the two parties. The point of disagreement should be pertinent to the reported results of the test. For example, the sponsor may disagree with the tester's final selection of the method of test.

2. IUT CONFORMANCE STATUS

This IUT has/has not been shown by testing to be non-conforming to the specified protocol standard or recommendation. Thus the sponsor can/cannot claim conformance to this protocol standard or recommendation.

Strike the appropriate words in this sentence; if the PICS for this IUT is consistent with the static conformance requirements (as specified in Paragraph 3 of this report) and there are no "Fail" verdicts to be recorded (in Paragraph 6) strike the word "has/", otherwise strike the word "/has not".

3. STATIC CONFORMANCE SUMMARY

The PICS for this IUT is/is not consistent with the static conformance requirements in the specified protocol standard or recommendation.

Strike the appropriate words in this sentence.

4. DYNAMIC CONFORMANCE SUMMARY

The test campaign did/did not reveal errors in the IUT.

Strike the appropriate words in this sentence; if there are no "Fail" verdicts to be recorded in Paragraph 6 of this report, strike the word "did/", otherwise strike the words "/did not".

In addition, a descriptive summary of the results of groups of tests may be given. The detailed results of testing are provided in the table of Section 6. This section allows the test laboratory to make observations on those results: for example, "All the tests concerned with segmented data transfer failed."

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APPENDIX C

5. STATIC CONFORMANCE REVIEW REPORT

If section 2 indicates non-conformance, this section itemizes the mismatches between the PICS and the static conformance requirements of the specified protocol standard or recommendation.

6. TEST CAMPAIGN REPORT

This section shall use the following table which indicates both the test case selection performed for the test laboratory and the results of testing. The order in which the abstract tests shall appear in this test is defined in the ATS standard or recommendation. Notes on the information that the Test Laboratory should complete in the columns are provided below, and referenced as n).

ATS Reference	Selected ?	Run ?	Verdict	Observations
a)	b)	c)	d)	e)

Figure 2

a) Reference to the abstract test case from the ATS standard or recommendation.
b) Indicate whether or not the test was selected according to the PICS and PIXIT. If it was not selected due to the PIXIT information, indicate why.
c) Indicate whether or not the test was run. If it was not run, indicate why.
d) Enter the verdict as assigned during the test campaign.
e) Enter a reference to any observations made in Section 7 of this report.

7. OBSERVATIONS

Additional information relevant to the technical content of the PCTR may be given here.

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APPENDIX D

DOD INTEROPERABILITY TEST PROCEDURES

10. SCOPE. This Appendix is a mandatory part of this MIL-HDBK. The information contained herein is intended for compliance.

20. APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

30. PROCEDURES. The following procedures should be followed at all DoD Test Facilities which are accredited to perform interoperability testing of data communications protocols to be registered for procurement by DoD Components and Agencies. The procedures are specific and should be followed explicitly during the execution of test campaigns.

NOT MEASUREMENT

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APPENDIX D

30.1 Flow chart of Test Procedures.

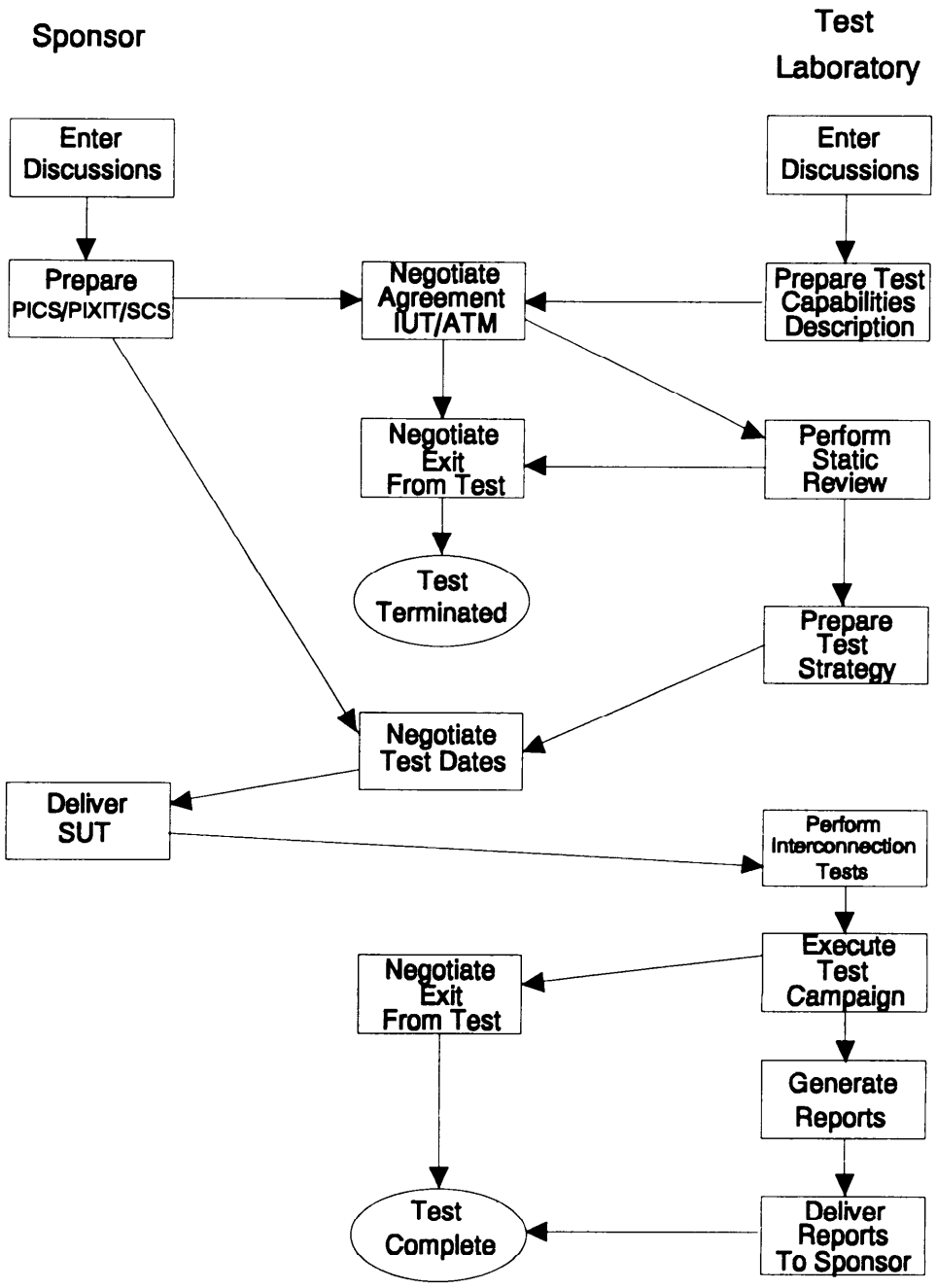

Figure 3. Interoperability test procedures.

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APPENDIX D

30.2 Test Preparation Administrative Procedures. Subsequent to agreement in principle between sponsors of both IUTs and SUTs and the testing laboratory to conduct a test, the following sequence of procedures is followed to prepare for actual testing. Informal contact between the sponsors and the laboratory manager is encouraged during this phase. In particular, the laboratory manager should explain the policies and procedures that should govern various stages of the interoperability testing process.

a. The laboratory manager should furnish the sponsors with a statement of the test facility capabilities and limitations as they apply to the testing of the sponsor's IUT and SUTs. Included is information on the documentation, resources, and actions required of the sponsors to facilitate testing of the pair of IUT and SUTs.

b. The sponsors must furnish to the test laboratory a description of the IUT and SUTs, specifically identifying those portions of each SUT to be considered IUTs. This data must include a System Conformance Statement (SCS) and sufficient PICS and PIXIT to describe each complete SUT.

c. Subsequent to the exchange of information, the sponsors and the test laboratory must reach an agreement regarding the ITS, the executable test cases to be used and any special methods of testing to be used.

d. The test laboratory then performs a static review of the sponsors documentation, verifies that the documentation reflects systems suitable for testing, selects the tests to be performed, and prepares and delivers to the sponsors a test strategy. In the event that the sponsors' documentation is faulty, or the sponsors' system(s) is (are) not suitable for testing, the test laboratory notifies the sponsors and assists the sponsors in remedying the shortfalls.

e. Given that all of the above steps have been successful, the sponsors and the test laboratory negotiate a mutually acceptable time and setting to perform the testing. Specifically in the case of interoperability testing this may include the involvement of at least two test laboratories. Ideally the two laboratories should always be DoD accredited facilities, but at a minimum the controlling facility should be accredited.

f. If an agreement cannot be reached between the sponsors and the test laboratory on the test cases and methods and setting for testing, or if the shortfalls from the static review are not resolved, the sponsors and the test laboratory may negotiate a mutually acceptable exit from the testing process.

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APPENDIX D

30.3 Static Review Procedures. In the course of completing the test preparation administrative procedures, the test laboratory technical personnel should conduct a static review of both of the sponsor's IUT and SUTs based on the submitted PICS and PIXIT and conformance test results. The objective is to determine whether the products are technically suitable for interoperability testing. The following steps are accomplished in the static review.

a. Ensure all mandatory elements of the protocol standard identified in the System or Protocol Conformance Statement have been tested, and are covered in the SCTR. If any mandatory element has not been properly tested, this product has not successfully completed the Static Review. All such elements are itemized and provided to the Sponsors for resolution. Interoperability testing for this product is then deferred pending resolution.

b. Note all elements identified as optional (O) and then note if these elements have been implemented in both products. Also indicate if these elements have been implemented as originator or recipient or both. Note any constraints that have been provided on any element implemented.

30.4 Test Preparation Procedures. In the course of completing the test preparation procedures, the test laboratory technical personnel prepare a test strategy. This strategy includes a description of the required interconnections and a listing of the test cases that are to be conducted. The bulk of MOTs available have automated tools to assist in the selection of test cases. When such automated tools exist, they are used in the preparation of a test plan. For those cases in which the MOT does not have automated tools, the Test Engineer prepares the list of test cases manually. The following steps are accomplished.

a. Develop an overall test strategy for the sponsor's pair of IUT and SUTs. This includes selecting a test method and MOT for each protocol and identifying required elements of the test system infrastructure. It also identifies the locations of elements of the total test configuration and identifies required communications.

b. Prepare a draft ITR for the pair of IUT and SUTs. Include pertinent information from the test strategy.

c. Note the set of test cases known to be defective. Mark and reference the known defect.

d. Select all test cases for features other than those identified as optional.

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e. Select test cases for optional features only if system or implementation documentation states that they have been implemented.

f. The draft ITR should contain a test case table to be used in the test. A comment should also be placed in the draft ITR explaining why those cases not selected were chosen.

g. Develop a test strategy for each protocol that identifies the projected test configuration, including the locations of all elements of the test.

30.5 Basic Interconnection Testing Procedures. Assuming all preliminary procedures have been completed successfully, the sponsors and the test laboratory(s) initiate testing on the appointed date. The initial action is to perform basic interconnection testing. The purpose of this testing is to determine whether the two systems and implementations and the MOT and interoperability test suite can interact using identified parameters. The test laboratory(s), in concert with the sponsor (or vendor) technical personnel, should accomplish the following procedures.

a. Connect the two systems and implementations and the MOT via the agreed-on communications medium.

b. Set the parameters (such as addresses, connection and end point identifiers, counters, timers, and encoding strategies) that should be used to govern interactions between the two systems and implementations and the MOT.

c. Verify that the two systems and implementations can communicate and that these communications can be monitored by the MOT. Also verify that the MOT (if appropriate) can communicate with both systems.

d. To the extent feasible, test the different values of parameters to verify that they are valid.

e. In the event of a failure of basic interconnection testing, the test laboratory(s) should attempt to determine the cause of the failure. In the event of a basic incompatibility, or an inappropriate parameter, the sponsor and the test laboratory(s) should negotiate an exit from testing, using the negotiated exit procedures.

Successful completion of the basic interconnection tests is required prior to continuing with the execution of the test campaign.

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APPENDIX D

30.6 Testing Order Policy. Interoperability testing should not be subject to the same constraints as those that apply to conformance testing. Interoperability should be verified for a profile or entire system. This should include the local area network protocol as well as upper layer implementations. For example, if the interoperability of two FTAM protocol implementations are tested operating with other protocols in a profile, this interoperability should be registered for only that profile (including the local area network protocol used). However, to establish the status of underlying (or service providing) protocols in a profile the following procedures should be followed.

a. The test laboratory(s) engineers review the documentation on the implementations and accompanying profiles to determine:

(1) That all protocols undergoing interoperability testing have been determined to be compliant with the standards by an accredited test facility or

(2) Whether it is likely that substitution of another service provider would affect the results of interoperability testing.

b. The test laboratory(s) engineers examine the service provider layers of the profile to verify that they match the evidence from previous testing.

c. If the test laboratory engineer cannot assure that the service provider layers of the profile are identical to the previously tested version, the test laboratory(s) must note this fact in the ITR.

30.7 Test Execution Procedures. The following procedures govern all test laboratory interoperability testing.

a. The test laboratory(s) should assure that all equipment, software, MOT and test operators are available for the full duration of the scheduled testing period.

b. Each test campaign begins from an initial start point in which all previous log files have been purged.

c. Any automated test execution capabilities of the MOT are used to execute the test cases used in the interoperability test.

d. The test laboratory engineers should use the resources of the MOT to the greatest extent possible to log real-time observations during the execution of a test campaign. Additionally, the test laboratory engineers should maintain a log of test data.

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e. If a test case terminates abnormally, the test case is restarted and rerun. If the same result is produced, the test case is logged as "not run."

f. The PICS may not be changed once testing on the two systems and implementations has begun. The PIXIT may be changed to correct typographical errors, but may not be changed due to aberrant behavior on the part of the systems and implementations.

g. At the completion of a test campaign, the entire interoperability test account should be archived to magnetic media and a backup of the account made to a separate magnetic media. These media should be maintained in a secure place accessible to test laboratory personnel.

h. After both the archive and the backup have been accomplished, the entire interoperability test account should be purged from the test system.

30.8 Negotiated Exit Procedures. Circumstances may arise during a test campaign which result in either the sponsor(s) or the test laboratory engineers desire to exit testing. The following policies and procedures should govern such cases.

a. The sponsor(s) or test laboratory(s) may request a negotiated exit from official testing any time. In such an event, testing is suspended at that time and no test report is generated.

b. An agreement between the test laboratory(s) and the sponsors must be signed containing the following information:

(1) Date and time when negotiated exit took place.

(2) Exit point

(3) Reason for the negotiated exit.

(4) Conditions for re-entry into testing.

c. Further testing may be rescheduled by the test sponsor(s) with the test laboratory following any negotiated exit.

d. After a negotiated exit testing is not restarted except by starting a new test campaign or by initiating a new interoperability assessment process.

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APPENDIX D

30.9 Test Verdict Assessment Procedures. The test laboratory(s) should assign verdicts for all test cases run during an interoperability test campaign. In general, these verdicts are assigned automatically by the MOT. In the case of "Pass" verdicts assigned by the MOT, samples of those verdicts are examined in the log files. For other circumstances, the following procedures are used.

a. In the event of a "Fail" verdict, the test laboratory engineers should examine the log files, verify the "Fail" verdict, determine the cause of the failure, and document the cause of failure. For all test cases in which the log file data indicate one of the systems or implementations is at fault, test laboratory(s) inform the sponsor(s) formally of intent to assign a "Fail" verdict. In the event of a "Fail" verdict which is not the fault of either of the systems or implementations, the test laboratory engineers should attempt to isolate the cause of the problem. The results of this investigation should be brought to the attention of the appropriate party.

b. In the event of a test case error, the verdict of "Not Run" is assigned, and the test laboratory should generate an action to rectify the situation within the interoperability test case.

c. In the event of an "Inconclusive" verdict, the test laboratory engineers should attempt to determine whether the problem is in the systems and implementations under test, and reproducible, or in some other element of the test configuration. If the problem can be identified as a reproducible error in one or both of the systems and implementations under test, the test case is listed as "Inconclusive." Otherwise, the test case should be run again. If re-running the test case produces a "Pass" or "Fail", the latter should be the assigned verdict. Otherwise, the test case remains "Inconclusive". Findings are documented as observations.

d. In the event of an abnormal termination, the test case should be re-run. If the test case terminates abnormally again, the test case is listed as "Not Run."

e. The test laboratory engineer should remain alert for any circumstance indicating a fault in either the test methodology or the executable test cases of the MOT. If such a fault is detected, the test engineer should note the fault and the test laboratory should initiate sufficient action to report the fault to the DISA(JITC), Department of Commerce (NIST), and the manufacturer of the MOT. The proper reporting channel for MOT faults is through the test laboratory system administrator to the MOT supplier and for test methodology faults, through the test laboratory signatory to the DISA(JITC).

30.10 Test Report Generation Procedures. For each interoperability test campaign not terminated by a negotiated exit, the test laboratory should produce an Interoperability Test

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Report (ITR). If two laboratories are connected for the purpose of conducting an interoperability test then a lead laboratory should be designated at the commencement of the test. The lead laboratory should normally be the one which operates the MOT during the test campaign. This laboratory should be responsible for preparing the ITR after the completion of the test campaign. The ITR should be produced in accordance with the following procedures.

a. Each ITR should use the DoD format which is shown at Appendix E.

b. Each ITR should include information describing any distributions or restrictions agreed upon between the sponsor(s) and the test laboratory(s).

c. Each ITR should clearly state whether non-interoperability, or cause for concern, has been demonstrated by any test case. The ITR should also state whether any test cases repeatedly demonstrated inconclusive behavior.

d. The interoperability test laboratory should generate professional, accurate, and timely test reports.

e. The interoperability test laboratory is responsible for the approval or completion of an interoperability statement, and for reporting the results to DISA(JITC) for registration.

f. Test report results should remain within the DoD, but should be released to any Military Service or Agency which inquires about specific test results. If the sponsor requests DoD interoperability registration, the test results should be sent to the DoD Registration Authority (DISA/JITC). No duplication or distribution of any test report is permitted without approval of both the sponsor(s) and the test laboratory(s).

30.11 Test Result Disposition Procedures. All materials relating to a given sponsors' interaction with the test laboratory are the responsibility of the sponsor. The test laboratory should not release any materials relevant to a test without the direction of the sponsoring activity. In this regard the following procedures should be used at interoperability test laboratories.

a. All test campaign materials (such as log files, environmental files) developed using automated resources are confined to the specific log-in account or directory created for the sponsor(s).

b. At the conclusion of a test campaign, all materials in the sponsors' log-in file or directory are stored on magnetic media and backed up on a separate magnetic media. (Both

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of these media are dedicated to the materials of a single sponsor). The sponsors' log-in file or directory and all subsidiary materials are purged from the test laboratory system.

c. All hard-copy test campaign materials for a test campaign are kept separate from materials relating to any other test campaign.

d. Test campaign materials for a given test campaign, both hard-copy and magnetic media, should be retained for a period of one year. Access to these materials should be limited to test laboratory and sponsor personnel.

e. After one year, test campaign materials should be archived for an additional six years. Access to these archived records should be provided only upon receipt by the test laboratory of written request from the sponsors.

30.12 Dispute Procedures. The following procedures should be followed in regard to dispute of any test laboratory policy, procedure, or test result.

a. All disputes must be submitted by sponsors through formal channels. The test laboratory technical staff should not engage in dispute discussions with sponsors.

b. Each dispute is examined by the test laboratory manager to determine its nature. If the dispute involves test campaign issues, the test laboratory manager, in consultation with the test engineer, should make a determination on test case verdict or outcome.

c. If the dispute regards a policy or procedure of the test laboratory, the test laboratory manager should make a determination whether the policy or procedure is in error. If the policy or procedure is found to be in error, changes should be instituted. If the policy or procedure is one that affects accreditation, the resultant change is forwarded to the Accreditation Authority (DISA/JITC).

d. If the dispute is in regard to a test result, the test laboratory manager and the test laboratory engineer should review the evidence and determine whether a testing error has occurred. In the event of an error, the following procedure is followed.

(1) If an error has been detected in the MOT, all supporting evidence is delivered to the Registration Authority (DISA/JITC) and the supplier of the MOT for resolution.

(2) If at least a portion of the test case in question is believed to be improper or defective by the test laboratory engineer, then all supporting data and a written description

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of the issue are generated by the test laboratory, and forwarded to the Registration Authority (DISA/JITC) and MOT vendor for analysis.

(3) If an error is detected in the assessment of a test case verdict, the test laboratory should either:

a. Disqualify the test case (check Not-Selected) if the test case is determined to be irrelevant, or

b. Modify the assessment for test cases mistakenly judged "Fail" to be "Inconclusive" or "Pass" depending on the results of the review. (If necessary, tests may be repeated to validate the results.)

e. Upon reaching a determination on the dispute, the test laboratory manager should consult with the sponsor(s) to attempt to reach a mutual understanding of its resolution.

f. In all cases, the test laboratory final disposition of a dispute is communicated formally to the sponsor(s).

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APPENDIX E

INTEROPERABILITY TEST REPORT FORMAT

10. SCOPE. This Appendix is a mandatory part of this MIL-HDBK. The information contained herein is intended for compliance.

20. APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

30. FORMAT. The following format is to be used when preparing an ITR.

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APPENDIX E

INTEROPERABILITY TEST REPORT
FOR
<PROTOCOL/SYSTEM PAIR>

<ITS Number>

<MONTH YYYY>

Submitted by:

Name
Title
Organization or Agency

Approved by:

_____
Name of signatory
Organization or Agency

Prepared by:
Name of Tester
Name of Protocol Test Center
Address of Protocol Test Center
City, State, ZIP

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APPENDIX E

TABLE OF CONTENTS

PARAGRAPH		PAGE
1.	IDENTIFICATION SUMMARY	E-1
1.1	SYSTEM(S) INTEROPERABILITY TEST REPORT	E-1
1.2	TEST LABORATORY(S)	E-1
1.3	SPONSOR(S)	E-1
1.4	SUT/IUT	E-1
1.5	NATURE OF INTEROPERABILITY TESTING	E-1
1.6	LIMITS AND RESERVATIONS	E-2
1.7	RECORD OF AGREEMENT	E-2
1.8	COMMENTS	E-2
2.	SYSTEM(S) REPORT SUMMARY	E-3
2.n	PROTOCOL LAYER TESTING SUMMARY FOR *PROTOCOL NAME*	E-3

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APPENDIX E

Interoperability Test Report for *SUT and IUT Names*

1. IDENTIFICATION SUMMARY

1.1 INTEROPERABILITY TEST REPORT

ITR Number:
ITR Date: *DD MMM YY*
Technical Manager: *Name*
Signature: *Technical Manager Signature*

1.2 TEST LABORATORIES

A. Protocol Test Center (Primary Test Laboratory)
Address
City, State, ZIP

Telephone: (xxx) xxx-xxxx
FAX: (xxx) xxx-xxxx

B. Data Communications Test Laboratory
Address
City, State, ZIP

Telephone: (xxx) xxx-xxxx
FAX: (xxx) xxx-xxxx

1.3 SPONSOR(S)

Agency Name
Agency Point of Contact
Address

Telephone: *(xxx) xxx-xxxx (Indicate DSN or Commercial)*
FAX: *(xxx) xxx-xxxx*

1.4 SUT/IUT PAIR

A. Name:
Version:
Supplier(s): *Name*
Address

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Telephone:	*(xxx) xxx-xxxx*	*(Include International*
FAX:	*(xxx) xxx-xxxx*	*Prefix if Necessary)*
Dates for Testing:	*DD MMM YY - DD MMM YY*	
SCS Identifiers:		

B. Name:
Version:
Supplier(s): *Name*
Address

Telephone:	*(xxx) xxx-xxxx*	*(Include International*
FAX:	*(xxx) xxx-xxxx*	*Prefix if Necessary)*
Dates for Testing:	*DD MMM YY - DD MMM YY*	
SCS Identifiers:		

1.5 NATURE OF INTEROPERABILITY TESTING

The purpose of interoperability testing is to ensure that a given pair of products (systems or implementations) can successfully carry out all required and desired functions and interoperate. However, the complexity of OSI protocols makes exhaustive testing of the interoperability of protocol functionality impractical on both technical and economic grounds. Furthermore, there is no guarantee that a SUT which has passed all the relevant conformance tests conforms to a specification. Rather, the passing of the tests gives confidence that the SUT has the stated capabilities and that its behavior conforms consistently in representative instances of communication and interoperability.

1.6 LIMITS AND RESERVATIONS

This report is the joint responsibility of the *Protocol Test Center,* the *Data Communications Test Laboratory*, and the *XXXXX Agency*. Its contents may include sponsor or vendor proprietary and confidential information. No portion of this report should be released to anyone outside the DoD without the express written consent of the Joint Interoperability Test Center and the identified *Agency* point of contact. *The sponsor should receive a copy of the test report upon completion of the Protocol Test Center signatory's approval of the report. The sponsor has the right to append comments to the report. Those comments should be retained as part of the permanent record of the test. The sponsor may initiate an appeal to invalidate the results of the test, but may in no way negotiate a change to the contents of the report. In the event of a successful appeal, the appropriate action shall be negotiated with the Protocol Test Center representative.*

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APPENDIX E

1.7 RECORD OF AGREEMENT

The *Protocol Test Center*, the *Data Communications Test Laboratory*, and the representative from *Sponsor Name* agreed that the following portions of the two SUTs were considered to be the Implementations Under Test (IUT) during testing, and that the stated abstract test methods (normally the astride method) and interoperability test suites would be used.

IUT-1:	*Name and Version*
	ATS Description eg. ATS-9 Transport Class 4
	ATM Description eg. Astride Coordinated Single Layer
|	|
|	|
|	|
IUT-n:	*Name and Version*
	ATS Description
	ATM Description

1.8 COMMENTS

Either the sponsor, the Protocol Test Center manager (primary laboratory), or the Data Communications Test Laboratory manager (additional test laboratory) may comment on any of the contents of the ITR. The comments may include statements of improper actions by sponsor or test facilities personnel or may be used to note disagreement between the test parties. The point of disagreement should be pertinent to the reported results of the test. For example, the sponsor may disagree with the tester's final selection of the method of test.

2. INTEROPERABILITY REPORT SUMMARY

This paragraph should include a statement of which protocols within the SUTs were tested and a brief summary of which were considered to be compliant and which were not. For each protocol layer tested, add a subparagraph of the format shown below to summarize the testing and conformance status of the implementation. Begin the subparagraph for each after the first on a separate page.

2.n PROTOCOL LAYER TESTING SUMMARY FOR *PROTOCOL NAME*

Implementation A. Identifier:	*Name and Version Number*
IUT Definition Reference:	IUT *# Number from 1.7*
Protocol Standard/Recommendation:	*Reference ie. ISO/IEC 8073*
PICS:	*PTC Reference Number*
PIXIT:	*PTC Reference Number*
PCTR Number:	*PTC Reference Number*

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APPENDIX E

PCTR Date:	*Date of PCTR*
ATS Standard/Recommendation:	*Reference from Register ie. ATS-9*
Abstract Test Method:	*eg. Astride (Coordinated Single Layer)*
ITS Identifier:	*Name and Version Number*
Implementation B. Identifier:	*Name and Version Number*
IUT Definition Reference:	IUT *# Number from 1.7*
Protocol Standard/Recommendation:	*Reference ie. ISO/IEC 8073*
PICS:	*PTC Reference Number*
PIXIT:	*PTC Reference Number*
PCTR Number:	*PTC Reference Number*
PCTR Date:	*Date of PCTR*
ATS Standard/Recommendation:	*Reference from Register ie. ATS-9*
Abstract Test Method:	*eg. Astride (Coordinated Single Layer)*
ITS Identifier:	*Name and Version Number*

Interoperability Status of the Product Pair:

Static Interoperability Errors?:	*Yes/No*
Dynamic Interoperability Errors?:	*Yes/No*
Sponsor Can Claim Interoperability?:	*Yes/No*
Test Cases Run:	*Number*
Passed:	*Number*
Failed:	*Number*
Inconclusive:	*Number*

Observations:

This is an optional paragraph where the tester may provide an additional summary on any aspects of non-interoperability exhibited by the SUT and /IUTs. Any difficulties encountered in the testing may also be reported here.

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APPENDIX F

DOD CONFORMANCE AND INTEROPERABILITY TEST LABORATORY ACCREDITATION AND REGISTRATION PROCEDURES

10. SCOPE. This Appendix is a mandatory part of this MIL-HDBK. The information contained herein is intended for compliance.

20. APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

30. ACCREDITATION AND REGISTRATION PROCEDURES.

30.1 Accreditation Process. The accreditation process includes submission of an application and the transfer of funds to the Joint Interoperability Test Center (JITC), an on-site assessment by JITC personnel, the resolution of any deficiencies identified during the on-site assessment, participation in proficiency testing, technical evaluation, and administrative review.

The following steps are required for the accreditation (and subsequent registration) of DoD laboratories which should be permitted to perform conformance and interoperability testing on data communications protocols and profiles, the most prevalent of which should be the US GOSIP profile.

Accreditation and registration of a test laboratory should impart to the laboratory the authority to provide test results to the Joint Interoperability Test Center for the registration of products as compliant with standards or interoperable with other products. This includes military extensions to standard US GOSIP products or other adopted protocol products.

Accreditation also carries the responsibility to provide uniform, rigorous testing of data communications implementations to be used in DoD systems, and clear presentation of test results

30.1.1 Application and Fees.

a. Application Package. An application package should be sent from the JITC to laboratories desiring to become accredited for DoD conformance and interoperability testing. It includes a General Application Form, a Fee Schedule, Funds Transfer Instructions, and Points of Contact at the JITC. The General Application Form should be signed by a representative of the Service or Agency desiring testing and the transfer of funds must be accomplished prior to the accreditation of the laboratory.

b. Fee Schedule. The accreditation fee is variable and is composed of several parts,

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some of which are fixed while others depend on the scope of accreditation of the laboratory and the nature of testing to be conducted in the laboratory. The individual parts of the accreditation fee include: an administrative and technical support fee; and test method fee; a proficiency testing fee; the cost of reference materials and quality assurance samples; and an on-site assessment fee (temporary duty expenses). These fees are listed and explained in the fee schedule included in the application package.

c. Assessment Schedule. After receipt of the completed application package, the JITC should contact the laboratory and a date for the on-site assessment should be arranged. Any additional information not in the hands of either party should be exchanged at this time.

30.1.2 On-site Assessment.

a. Before initial accreditation and every two years thereafter an on-site assessment of each DoD Conformance and Interoperability Laboratory should be conducted to ensure the quality of testing at the facility and to determine compliance with criteria of the accreditation program. This assessment should be conducted by a member of the data communications testing staff of the DISA/JITC. These assessors should be selected based upon their expertise in the areas in which the prospective test laboratory wishes to be accredited.

The assessors should use a standard checklist (normally the same checklist used by the National Voluntary Laboratory Accreditation Program for GOSIP accreditation). This should ensure that all laboratories assessed under this program should receive assessments comparable to that received by others.

b. Each laboratory to be assessed and accredited should be contacted by the JITC to arrange a date for an assessment. An assessment normally takes one to three days depending on the extent of the laboratory's application. Every effort should be made to conduct the assessment with as little disruption as possible to the normal operations of the laboratory. During the assessment the following actions should take place:

(1) Interviews with management and supervisory personnel

(2) Examination of the laboratory's quality assurance program

(3) Review of test personnel qualifications

(4) Examination of equipment and facilities

(5) Observation of test demonstrations

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(6) Examination of test reports for completeness and understanding.

c. At the conclusion of the assessment, the assessor should conduct an exit briefing to discuss observations and any deficiencies with the laboratory staff. A written assessment report should be left with the laboratory staff and with the commander of the organization of which the laboratory is a part. A final copy of the assessment report should be returned to the JITC for retention in records pertaining to accredited conformance and interoperability laboratories.

30.1.3 Monitoring Visits.

a. In addition to the regularly scheduled biennial accreditation assessments of the ɔratories, monitoring visits may be conducted by assessors from the JITC at any time during accreditation period. These visits may occur for cause or on a random basis. While most monitoring visits should be scheduled in advance with the accredited laboratory, unannounced monitoring visits may be conducted by assessors from the JITC.

b. The scope of a monitoring visit may range from the verification of a limited number of predetermined items at the accredited laboratory to a complete review. The assessors may review deficiency resolutions, verify changes in the laboratory's personnel, facilities or operations, or explore possible reasons for poor performance in proficiency testing.

30.1.4 Proficiency Testing.

a. Proficiency testing is an integral part of the DoD Conformance and Interoperability Laboratory Accreditation Program. Demonstration that a test laboratory possesses the requisite facilities, equipment, software, competent personnel and capable management is not in itself sufficient to prove complete laboratory testing competence. The actual performance of conformance or interoperability tests by laboratory personnel should demonstrate the effectiveness of the laboratory and the preparedness of the laboratory to perform on behalf of the entire DoD.

b. Several types of proficiency testing methods should be employed by the assessors who recommend accreditation of the laboratory. These include the following types of demonstrations or techniques to validate laboratory proficiency:

(1) Inter-laboratory comparisons of similar or exact tests or test cases.

(2) Comparisons of results against known characteristics of reference implementations. This should normally be Accomplished in the form of a request by the assessor that test personnel accomplish a given test case

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on a well known feature of reference implementation. Test results are then compared against expected results.

(3) Familiarity of test personnel with their test tools and MOT should be subjectively monitored by assessors to aid in the determination of overall competence of laboratory personnel.

c. Information obtained by assessors during proficiency testing should aid in the identification and specification of problems within a candidate laboratory. When problems are discovered and specified the assessors and personnel from the JITC should provide assistance in resolving them and aiding the candidate laboratory toward accreditation.

d. For some test procedures, assessors should bring special proficiency testing materials with them for use during the on-site visit. The candidate laboratory should be instructed to perform selected parts of the test procedures while the assessors observe.

e. The specific proficiency testing requirements for various levels and forms of accreditation should be maintained at the JITC and can be provided to candidate laboratories.

30.1.5 Deficiency Notification and Resolution.

a. A deficiency is the failure of a conformance and interoperability laboratory to meet accreditation criteria. Deficiencies may be determined during on-site assessments, monitoring visits, proficiency testing, staff review, or technical evaluation. Laboratories should be informed of deficiencies during on-site assessments and by formal written communications.

b. When a laboratory is notified in writing of a deficiency, a written response from the laboratory must be received at the JITC within 45 days of the notification. The response must provide certification that the specified deficiencies have either been corrected or include a plan of action to effect the corrections. The plan must include a list of actions, dates of completion, and responsible personnel.

c. A conformance and interoperability test laboratory which is currently accredited must begin correction of all deficiencies within 45 days of notification by the JITC, or accreditation may be withdrawn and the laboratory removed from the DoD Accredited Laboratory Register.

d. Test equipment, materials, computer software, test system implementations, MOT, and interoperability test suites that are identified as deficient should not be used for accredited

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testing until corrective action has been taken. When deficient systems have been identified, this information should be made known to the JITC and evidence of corrective action should be provided at the earliest opportunity.

e. Substantial deficiencies may require a follow-on on-site visit and additional proficiency testing to be accomplished. Accreditation criteria must be met prior to placement of a laboratory on the DoD Test Facility Register. All deficiencies must be corrected before accreditation can be granted or renewed.

30.1.6 Technical Evaluation.

a. A final technical evaluation of the laboratory should be conducted at the JITC to determine that all technical requirements for accreditation have been met. This evaluation should consist of a review of the following items:

(1) Information provided with the laboratory application

(2) Results of quality system documentation review

(3) The on-site assessment report

(4) Documented actions taken by the laboratory to correct known deficiencies

(5) Results of proficiency testing

(6) Information from any monitoring visits

b. If technical evaluation reveals additional deficiencies, written notification should be provided to the test laboratory. The laboratory should respond as noted in the procedures for "Deficiency Notification and Resolution". All deficiencies should be corrected before accreditation should be granted or renewed.

30.1.7 Accreditation Actions.

a. After the technical evaluation has been completed and all resource allocation actions have been completed the JITC should take one of the following accreditation actions:

(1) Accreditation and Registration. A Certification of Accreditation (with accreditation scope) should be issued to the test laboratory.

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(2) Denial. The laboratory should be notified of a proposal to deny accreditation and the rationale for denial.

b. If a test laboratory which has previously been accredited is found to be no longer in compliance with DoD Laboratory Accreditation Criteria, the JITC should suspend or revoke the laboratory's accreditation.

(1) Suspension. Suspension should be a temporary removal of the accredited status of a laboratory when it is found to be out of compliance with the terms of its accreditation. The laboratory should be notified in writing of the reasons for its suspension and the actions it must take to regain accreditation. Examples of reasons for suspension include the loss of key personnel, the loss of major equipment, the termination of license agreements for automated MOT, or loss of test proficiency.

(2) Revocation. Revocation is the removal of the accreditation of a laboratory when it is found to have violated the terms of its accreditation. If a laboratory's accreditation is revoked its name should be removed from the DoD Accredited Laboratory Register. Reasons for revocation include: obtaining accreditation through false statements, the refusal of the laboratory to resolve deficiencies, or the cessation of the laboratory to provide the necessary services. If revocation becomes necessary the laboratory may re-apply for accreditation, but the process should be started from the beginning rather than finding solutions to isolated existing problems.

30.1.8 Quality Assurance Measures.

a. The system employed by the laboratory to ensure quality conformance and interoperability testing must be designed to promote laboratory practices which ensure technical integrity and adherence to quality assurance practices. The laboratory must maintain a quality assurance manual which documents the procedures and practices and the specific steps taken to ensure quality testing. The quality assurance manual must include or provide reference to the following:

(1) The laboratory's quality assurance policies including procedures for detecting test discrepancies and for corrective action in response thereto;

(2) Laboratory functional description and quality assurance responsibilities for each accredited function of the laboratory

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(3) Specific procedures for long-distance testing over Wide Area Networks where the SUT is not directly under laboratory control

(4) Specific quality assurance practices and procedures for each MOT

(5) Copies of all routine test methods and procedures

(6) Specific procedures for retesting, control charts, reference materials, and inter-laboratory tests

(7) Procedures and documentation for all computer equipment and communications connectivity in use as well as procedures for resolving disputes and complaints

b. A copy of an acceptable Quality Assurance Manual can be obtained from the JITC GOSIP Test Facility.

30.1.9 Laboratory Staff.

a. The laboratory shall maintain a competent administrative and technical staff. The laboratory should maintain a complete listing of position descriptions and staff members assigned to those positions. A current resume for each member of the technical staff should be maintained in laboratory records.

b. The members of the technical staff should possess appropriate degrees (such as electrical engineering, computer science) from accredited colleges and universities or equivalent working experience. These personnel should be knowledgeable in US GOSIP, conformance and interoperability testing, appropriate computer operating systems, and the requirements of the DoD Data Communications Protocol Testing Program.

c. The laboratory should name an individual and an alternate who have responsibility for the quality assurance program and maintenance of the Quality Assurance Manual.

30.1.10 Training. The laboratory should ensure that staff members have adequate qualifications and training to conduct assigned duties. A description of staff training programs should be maintained in the Quality Assurance Manual.

30.1.11 Competency.

a. In addition to training, the laboratory should evaluate the competence of each member

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of the technical staff for each test method the staff member is authorized to perform. An evaluation and observation of performance should be conducted annually by the immediate supervisor or a designee appointed by the laboratory manager. A record of the annual evaluation of these staff members must be maintained in laboratory records.

b. A description of competency review programs should be maintained in the Quality Assurance Manual.

30.1.12. Facilities and Equipment.

a. An accredited test laboratory should have adequate facilities and equipment to meet the requirements for operation. This includes adequate facilities for the required training, competency, record keeping, documentation, and other duties as required. Records must be maintained on all software in use to include licenses, operating agreements, versions, and updates. Additionally, a laboratory must maintain systems adequate to support each MOT it operates.

b. A laboratory should be capable of assuring that its test capability, including all hardware and software, is functional and properly maintained. The laboratory should establish and maintain communications connectivity including the following:

(1) 3 layer X.25 connectivity accredited for DoD usage

(2) Local Area Network connectivity capable of supporting the MOT for the accredited DoD profiles

(3) Sufficient registered MOT for each protocol or profile which the laboratory is accredited to test

(4) Reference materials which apply the means by which MOT communicate with SUTs and IUTs

(5) Sufficient computing equipment to ensure real-time communications between MOT and SUTs and IUTs without undue delays; sufficient terminals/processors to support sponsors or clients during testing; and sufficient storage media to hold all files necessary for a complete test of a protocol or profile.

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APPENDIX F

30.1.13 Records. The laboratory should maintain a functional record keeping system. Records should cover the following topics as a minimum. Records in addition to those listed below may also be maintained.

a. Quality System to include the Quality Assurance Manual.

b. Staff Training Records.

c. Testing Equipment Lists and Maintenance Records

d. Test Facilities and Plans.

e. MOT Registration Certificates.

f. Test Methods and Procedures.

g. Test Data and Reports, including PICS, PIXITs, PCTRs, and SCTRs.

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APPENDIX G

DEPARTMENT OF DEFENSE
DATA COMMUNICATIONS TEST REGISTER
REGISTRATION PROCEDURES

10. SCOPE. This Appendix is a mandatory part of this MIL-HDBK. The information contained herein is intended for compliance.

20. APPLICABLE DOCUMENT. This section is not applicable to this appendix.

30. REGISTRATION PROCEDURES. The following steps should be used when registering products, services, or test cases with the DoD Data Communications Test Register:

30.1 For ATSs and ATS Test Cases (Extensions).

a. All ATSs which have been registered on the US GOSIP Register should be considered to be on the DoD Register and should not require re-registration.

b. For ATSs which apply to DoD unique protocols:

(1) The specification for the protocol, the ATS, and any additional explanatory material should be sent to a DoD organization selected by DISA as a demonstrated protocol authority. This designation should be conferred by the Joint Interoperability Test Center.

(2) The JITC or designated protocol authority should assess the ATS against the protocol specification and determine whether registration of the ATS should take place.

(3) The JITC or designated protocol authority should notify the ATS sponsor, in writing, of the results of the ATS assessment, and place the ATS on the DoD ATS Register if the assessment is favorable. The DTMP will be notified of results if changes to the standards are recommended.

c. For Abstract Test Cases which apply to DoD Extensions to GOSIP protocols or other adopted protocols:

(1) The specification for the protocol extension, the test cases, and any additional explanatory material should be sent to a protocol authority, designated for that protocol by the Joint Interoperability Test Center.

(2) The JITC or designated protocol authority should assess the test cases against

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the protocol specification and determine that registration of the test cases should take place.

(3) The JITC or designated protocol authority should notify the Abstract Test Case sponsor, in writing, of the results of the assessment, and place the test cases (along with the ATS which they extend) on the DoD ATS Register if the assessment is favorable. The DTMP will be notified of results if changes to the standards are recommended.

30.2 For MOT and Executable Test Cases (Extensions).

a. All MOTs which have been registered on the US GOSIP Register should be considered to be on the DoD Register and should not require re-registration.

b. For MOTs which apply to DoD unique protocols:

(1) The specification for the protocol, the ATS, and any additional explanatory material should be sent along with the MOT to the JITC-designated protocol authority.

(2) The JITC or designated protocol authority should assess the MOT against the ATS and determine that registration of the MOT should take place.

(3) The JITC or designated protocol authority should notify the MOT sponsor in writing of the results of the assessment and place the MOT on the DoD MOT Register if the assessment is favorable. The DTMP will be notified of results if changes to the standards are recommended.

30.3 For Executable Test Cases which apply to DoD Extensions to GOSIP protocols or other adopted protocols.

a. The specification for the protocol extension, the Abstract Test Cases from which they are derived, the test cases themselves, and any additional explanatory material should be sent to a JITC-designated protocol authority.

b. The JITC or designated protocol authority should assess the test cases against the Abstract Test Cases and determine that registration of the test cases should take place.

c. The JITC or designated protocol authority should notify the Executable Test Case sponsor in writing of the results of the assessment and place the test cases (along with the MOT which they extend) on the DoD MOT Register if the assessment is favorable. The DTMP will be notified of results if changes to the standards are recommended.

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30.4 For Conformance Tested Products and Conformance Tested Military Extensions.

a. All products which have been registered on the US GOSIP Register should be considered to be on the DoD Register and should not require re-registration.

b. For Data Communications Protocols which are unique to the DoD:

(1) The SCTR or PCTR and any additional explanatory material should be sent to the JITC-designated protocol authority.

(2) The JITC or designated protocol authority should review the SCTR or PCTR and determine whether registration of the product should take place.

(3) The JITC or designated protocol authority should notify the product sponsor in writing of the results of the review and place the product on the DoD Data Communications Protocol Register if the review is favorable. The DTMP will be notified of results if changes to the standards are recommended.

c. For Protocol Extensions to GOSIP protocols or other adopted protocols:

(1) The SCTR or PCTR and any additional explanatory material should be sent to the JITC-designated protocol authority.

(2) The JITC or designated protocol authority should review the SCTR or PCTR to determine whether registration of the product should take place.

(3) The JITC or designated protocol authority should notify the product sponsor in writing of the results of the assessment and place the product on the DoD Data Communications Protocol Register if the assessment is favorable. The DTMP will be notified of results if changes to the standards are recommended.

30.5 For Interoperable Product Pairs.

a. All product pairs which have been registered on the US GOSIP Register should be considered to be on the DoD Register and should not require re-registration.

b. For Data Communications Protocols which are unique to the DoD:

(1) The ITR and any additional explanatory material should be sent to the JITC-designated protocol authority.

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(2) The JITC or designated protocol authority should review the ITR and determine whether registration of the product should (or should not) take place.

(3) The JITC or designated protocol authority should notify the test sponsor in writing of the results of the review and place the product pair on the DoD Data Communications Protocol Register if the review is favorable. The DTMP will be notified of results if changes to the standards are recommended.

30.6 For Accredited Test Laboratories. The accreditation of laboratories for conformance and interoperability testing is covered in section 4.4 and Appendix F. In general, once all required actions have been taken by the JITC relative to accreditation of applicant laboratories, the applicant should be placed on the DoD Accredited Laboratory Register.

30.7 For Interoperability Test Suites.

a. All ITSs which have been registered on the US GOSIP Register should be considered to be on the DoD Register and should not require re-registration.

b. For ITSs which apply to DoD unique protocols:

(1) The specification for the protocol, the ATS, and any additional explanatory material should be sent, along with the ITS, to the JITC-designated protocol authority.

(2) The JITC or designated protocol authority should assess the ITS relative to the protocol specification, the ATS and determine that registration of the ITS should take place.

(3) The JITC or designated protocol authority should notify the ITS sponsor in writing of the results of the assessment and place the ITS on the DoD ITS Register if the assessment is favorable. The DTMP will be notified of results if changes to the standards are recommended.

30.8 For Test Tool Assessment Authorities. As in the US GOSIP, the only test tool assessment authority in the DoD Data Communications Protocol Testing Program should be the DISA(JITC). Further registration should not be required.

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CONCLUDING MATERIAL

Custodians:

DISA:	DC	Preparing Activity:
Army:	SC	Defense Information Systems Agency (DISA) - DC
Air Force:	90	
Navy:	OM	
DIA:	DI	
NSA:	NS	
USMC:	MC	
DLA:	DH	

Review Activities:

Army:	SC
Air Force:	02, 13, 17, 29, 90
Navy:	EC, OM
DIA:	DI
NSA:	NS
USMC:	MC, CG
DLA:	DH
OASD:	IQ, DO, MA, IR
ODISC4:	AC

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1,2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

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I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-HDBK-1350-2	2. DOCUMENT DATE *(YYMMDD)* 940728

3. DOCUMENT TITLE **Data Communications Protocol Conformance and Interoperability Testing and Registration, Volume 2**

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(Include Zip Code)*	d. TELEPHONE *(Include Area Code)* (1) Commercial (2) DSN *(If applicable)*	7. DATE SUBMITTED *(YYMMDD)*

8. PREPARING ACTIVITY **DEFENSE INFORMATION SYSTEMS AGENCY (DISA)**

a. NAME Rose D. Satz	b. TELEPHONE *(Include Area Code)* (1) Commercial 908-532-7732 (2) DSN 992-7732
c. ADDRESS *(Include Zip Code)* Director JIEO ATTN: TBBF Ft. Monmouth, NJ 07703-5613	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 DSN289-2340

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