FIPS PUB 80

FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATION

1980 DECEMBER 19

U.S. DEPARTMENT OF COMMERCE/National Bureau of Standards

GUIDE FOR THE IMPLEMENTATION OF FEDERAL INFORMATION PROCESSING STANDARDS (FIPS) IN THE ACQUISITION AND DESIGN OF COMPUTER PRODUCTS AND SERVICES

U.S. DEPARTMENT OF COMMERCE, Philip M. Klutznick, Sacratary

Jordan J. Baruch, Assistant Sacretary for Productivity,
Tachnology and Innovation
NATIONAL BUREAU OF STANDARDS, Ernest Amblar, Diractor

Foreword

The Federal Information Processing Standards Publication Series of the National Bureau of Standards is the official publication relating to standards adopted and promulgated under the provisions of Public Law 89-306 (Brooks Act) and under Part 6 of Title 15, Code of Faderal Regulations. These legislative and executive mandates have given the Secretary of Commerce important responsibilities for improving tha utilization and management of computers and automatic data processing in the Federal Government. To carry out the Secretary's responsibilities, the NBS, through its Institute for Computer Sciences and Technology, provides leadership, technical guidance and coordination of Government efforts in tha development of guidelines and standards in these areas.

Comments concerning Federal Information Processing Standards Publications are welcomed and should be addressed to the Director, Instituta for Computar Sciences and Technology, National Bureau of Standards, Washington, DC 20234.

James H. Burrows, Diractor
Instituta for Computer Sciences
and Technology

Abstract

This Guide provides information about tha 67 FIPS publications currantly in effect and identifies the computer products and services to which they may apply. This Guide is intended to serve as a supplemental reference in tha use of approved standards and guidelines. It should prove useful in the preparation of specifications for computer systems, components, services and supplies.

This Guide serves as a checklist to assure that tha propar standards ara incorporated in planned acquisitions and in solicitation documants. Industry vendors and suppliers should find this Guide usaful in the design of equipment and services that must conform to Federal Governmant procurement requirements.

KEY WORDS: Automated data processing (ADP); communications; Federal Information Processing Standard (FIPS); Federal Managemant Regulations (FPMR); procurement; telecommunications; standards.

Nat.Bur.Stand. (U.S.), Fed.Info.Process.Stand.Publ.(FIPS PUB) 80, 96 pages.
(1980)
CODEN:FIPPAT

For sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

FIPS PUB 80

GUIDE
FOR THE IMPLEMENTATION
OF
FEDERAL INFORMATION
PROCESSING STANDARDS (FIPS)
IN THE ACQUISITION & DESIGN
OF
COMPUTER PRODUCTS & SERVICES

PUBLICATIONS IN PROCESS

At the time that this publication was submitted for printing the following standards and guidelines were in various stages of approval and publication. These will be included in the next revision to this Guide.

FIPS-PUB	Title
68	Minimal BASIC
69	FORTRAN
70	Representation of Geographic Point Locations for Information Interchange
71	Advanced Data Communications Control Procedures (ADCCP)
72	Guideline for Measurement of Remote Batch Computer Service
73	Guidelines for Security of Computer Applications
74	Guidelines for Implementing and Using the NBS Data Encryption Standard (DES)
75	Guideline on Constructing Benchmarks for ADP System Acquisition
76	Guideline for Planning and Using a Data Dictionary System
77	Guideline for Planning and Management of Data-base Applications
78	Guideline for Implementing Advanced Data Communications Contol Procedures (ADCCP)
79	Magnetic Tape Labels and File Structure
81	DES Modes of Operation
82	Guideline for Inspection and Quality Control for Alphanumeric COM
83	Guideline on User Authentication Techniques for Computer Network Access Control
84	Microfilm Readers

# # # # # # # # # # # # # # # # # # # #

TABLE OF CONTENTS

PAGE

Introduction 5

Section 1
Index of Computer Products and Services 7

Section 2
ADP Items and Applicable Standards 13

Section 3
Abstracts of Federal Information Processing Standards 29

Section 4
Citations for Standards in Solicitation Documents 43

Section 5
Key Word Index of Federal Information Processing
Standards Publications 67

Section 6
Voluntary Industry Standards Adopted for Federal Use 89

Section 7
References to Standards in Federal Property Management Regulations .93

* * * * * * * * * *

Federal Information Processing Standards (FIPS) are developed and issued by the National Bureau of Standards (NBS) under the Brooks Act and other Federal legislative authorities. The Brooks Act has as its goal improved Government productivity through better utilization and more competitive procurement of computer resources. NBS responsibilities under this Act also include technical assistance to Federal agencies in solving computer-related problems and applying computer standards effectively.

This guide provides basic information about the 67 FIPS that are in effect and identifies the computer products and services to which they may apply. The official applicability statement is contained in each FIPS. This guide is intended to serve as a supplemental reference in the use of approved standards and guidelines. Its purpose is to assist Federal agency personnel who prepare requirements and specifications for computer systems, components, services, and supplies.

The guide is arranged for use as a checklist to assure that the proper standards are incorporated into agency planning for new acquisitions and are cited in the solicitation documents themselves (purchase orders, requests for proposals, and invitations for bid). Additionally, computer vendors and manufacturers may find this information about the applicability of FIPS helpful in the design of equipment, software and services that conform to Federal requirements.

The seven sections of this guide include the following information:

Section 1 is an index of computer products and services that are commonly used in specifications and catalogs. When more than one name can be used to identify an item, cross references are provided.

Section 2 lists ADP items and identifies the standards that may be applicable to each item. FIPS guidelines which provide advisory guidance related to each item are also listed and indicated by an asterisk (*).

Section 3 lists the FIPS currently in effect in numerical order and provides date of issue, the associated voluntary industry standard if applicable, and an abstract for each FIPS.

Section 4 contains the standard terminology prescribed by Paragraph 101-36.13 of the Federal Property Management Regulations for citing FIPS in solicitation documents.

Section 5 contains a listing of the key words contained in the titles of FIPS along with the identification of each FIPS that has the key word in its title.

Section 6 provides a listing of voluntary industry standards and documents that have been adopted for Federal use. The associated FIPS PUB number is also indicated.

Section 7 provides a listing of each FIPS that is applicable to the acquisition of computer products and services, along with the paragraph/section reference as contained in the Federal Property Management Regulations (FPMRs).

Questions concerning Federal Information Processing Standards, this guide, or its use may be addressed to:

Office of ADP Standards Administration
Institute for Computer Sciences and Technology
National Bureau of Standards
Room B-64, Technology Building
Washington, DC 20234
Telephone: (301) 921-3157

Information about applying and implementing FIPS is contained in the individual publications which may be ordered singly or in quantity from:

National Technical Information Service (NTIS)
U.S. Department of Commerce
Springfield, VA 22161
Telephone: (703) 487-4650

Requests for subscriptions may be sent to:

Subscriptions - NTIS
U.S. Department of Commerce
Springfield, VA 22161
Telephone: (703) 487-4630

* * * * * * * * * * * * * * * *

INDEX
OF
COMPUTER PRODUCTS
&
SERVICES

SECTION 1

Page

-A-

Alphanumeric CRT display terminals
see Alphanumeric display terminals..... 15
Alphanumeric display terminals..... 15
Application packages..... 15

-B-

Badge readers
see Plastic card/badge equipment..... 24
Batch Terminals..... 15

-C-

Cartridges..... 16
Cassette/cartridge to Magnetic Tape Converters..... 16
Cassette tape transports..... 16
Cassettes..... 16
Communications control systems
see Communications processors..... 16
Communications modems
see Modems..... 23
Communications multiplexers
see Multiplexers..... 23
Communications processors..... 16
Communications terminals
see Alphanumeric display terminals..... 15
Batch terminals..... 15
Graphic display terminals..... 18
Intelligent terminals..... 19
Interactive hard-copy terminals..... 19
Source data collection terminals..... 26
Word processing systems..... 27
Compilers..... 17
Computer output microfilmers..... 17
Computer security
see security equipment..... 25
Computer systems..... 17
Conversion equipment
see Media conversion equipment..... 22
Cassette/cartridge to magnetic tape converter..... 16
Magnetic tape to cassette/cartridge converter..... 21
Magnetic tape to paper tape converter..... 21
Magnetic tape to punched card converter..... 22

-D-

Data base management systems..... 17
Data communications
see Communications processors..... 16
Data conversion devices
see Media conversion equipment..... 22
Cassette/cartridge to magnetic tape converter..... 16
Magnetic tape to cassette/cartridge converter..... 21
Magnetic tape to paper tape converter..... 21
Magnetic tape to punched card converter..... 22
Data dictionary/directory systems..... 17
Data management
see Data base management systems..... 17

INDEX

Page

Data sets
see Modems 23
Dete trensmission stetions 18
Disk drives
see Megnetic disk subsystems 20
Documentetion eids 18

-F-

Forms
see Peper forms 23
Frequency division multiplexers
see Multiplexers 23

-G-

Grephic displey systems
see Graphic displey terminals 18
Grephics displey terminals 18

-I-

Intelligent terminels 19
Interactive hard-copy terminals 19

-K-

Keyboerd dete entry systems 19
Keypunches end verifiers 19
Key/tape devices
see Keyboard data entry systems 19

-L-

Line printers 20
Locel eree networks 20

-M-

Megnetic disk subsystems 20
Megnetic ink charecter readers 20
Megnetic tape (reel) 20
Megnetic tepe subsystems 21
Magnetic tape to cassette/cartridge converter 21
Magnetic tape to peper tape converter 21
Megnetic tepe to punched card converter 22
Megnetic tape transports 22
Mark reeders
see Optical reeders 23
Media conversion equipment 22
MICR encoders 22
Microfilm - Microfiche 22
Microfilm/microfiche equipment 23
Modems 23
Multiplexers 23

Page

-O-

OCR (optical character recognition)
see OCR encoders ... 23
Optical readers ... 23
Paper forms ... 23
OCR encoders ... 23
Off-line printers
see Printing elements and chains ... 24
Serial printers ... 26
Optical character recognition
see OCR encoders ... 23
Optical readers ... 23
Paper forms ... 23
Optical readers ... 23

-P-

Paper forms (including OCR) ... 23
Paper tape ... 24
Paper tape equipment ... 24
Perforated tape
see Paper tape ... 24
Performance evaluators ... 24
Photocomposers and typesetters ... 24
Plastic card/badge equipment ... 24
Point of sale equipment (POS)
see Source data collection systems ... 26
Source data collection terminals ... 26
Programmable terminals
see Intelligent terminals ... 19
Precompilers ... 24
Printers
see Printing elements and chains ... 24
Serial printers ... 26
Printing elements and chains ... 24
Program generators ... 25
Programming languages
see Compilers ... 17
Punch card equipment ... 25
Punched card to magnetic tape converters ... 25
Punched paper tape to magnetic tape converters ... 25

-R-

Remote batch terminals
see Batch terminals ... 15
Remote job entry terminals
see Batch terminals ... 15
RJE terminals
see Batch terminals ... 15
Rotating mass storage subsystems
see Magnetic disk subsystems ... 20

-S-

Security equipment ... 25
Serial printers ... 26
Source data collection systems ... 26
Source data collection terminals ... 26

INDEX

Page

-T-

Tape drivas
see Magnatic tape subsystems..... 21
Cassette tape transports..... 16
Magnetic tape transports..... 22
Telecommunications
see entries undar Communications Teleprocessing
see entries under Communications Teletypawriters
see Intaractive hard-copy terminals..... 19
Typawritar terminals
see Interactive hard-copy terminals..... 19
Terminals
see Alphanumeric display terminals..... 15
Batch terminals..... 15
Graphic display tarminals..... 18
Intelligent terminals..... 19
Intaractive hard-copy terminals..... 19
Source data collection terminals..... 26
Word processing terminals..... 27
Text editors..... 27
Time division multiplexers
see Multiplexers..... 23

-U-

Unit record equipment
sae Punch card equipment..... 25

-W-

Word processing systems..... 27

* * * * * * * * * * * * * * *

ADP ITEMS
&
APPLICABLE
STANDARDS

SECTION 2

ADP ITEM	APPLICABLE STANDARDS	FIPS
Alphanumeric display terminals	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Guideline for the Selection of Data Entry Equipment	67*
Application packages	Guidelines for Describing Information Interchange Formats	20*
	Flowchart Symbols and Their Usage	24
	Software Summary for Describing Computer Programs and Data Systems	30
	Guidelines for Documentation of Computer Programs and Automated Data Sytems	38*
	Guidelines for Documentation of Computer Programs and Automated Data Systems for the Initiation Phase	64
	Guide for the Development, Implementation and Maintenance of Standards for the Representation of Computer Processed Data Elements	45*
	Calendar Date	4
	States and Outlying Areas of the United States	5-1
	Counties and Equivalents of the States of the United States	6-2
	Standard Metropolitan Statistical Areas (SMSAs)	8-4
	Congressional Districts of the United States	9
	Countries, Dependencies and Areas of Special Sovereignty	10-2
	Guidelines for Registering Data Codes	19*
	Guideline for Codes for Named Populated Places and Related Entities of the States of the United States	55*
	Representations of Local Time of the Day for Information Interchange	58
	Representations of Universal Time, Local Time Differentials and United States Time Zone References for Information Interchange	59
	Standard Industrial Classification Codes	66
Batch terminals	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14

ADP ITEMS AND APPLICABLE STANDARDS

ADP ITEM	APPLICABLE STANDARDS	FIPS
Cartridges	Recorded Magnetic Tape Cartridge for ASCII 4-Track, 6.30 mm, (1/4 in), 63 bpmm (1600 bpi), Phase Encoded	52
Cassetta/cartridge to magnatic tape converters	Coda for Information Interchange (ASCII)	1
	Implemantation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Reprasentation of Control Characters of ASCII	36
	Recorded Magnetic Tape for ASCII (800 CPI, NRZI)	3-1
	Recordad Magnatic Tape for ASCII (1600 CPI, PE)	25
	Recorded Magnetic Tape for ASCII, 6250 cpi (246 cpmm), Group Coded Recording	50
	Magnetic Tape Cassettes for ASCII (3.810 mm (0.150 in) Tape at 32 bpmm (800 bpi), PE)	51
	Recorded Magnetic Tape Cartridge for ASCII 4-Track, 6.30 mm (1/4 in), 63 bpmm (1600 bpi), PE	52
Cassette tape transports	Magnetic Tape Cassettes for ASCII (3.810 mm (0.150 in) Tape at 32 bpmm (800 bpi), PE)	51
Cassattes	Magnetic Tape Cassettes for ASCII (3.810 mm (0.150 in) Tape at 32 bpmm (800 bpi), PE)	51
Communications processors	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Bit Sequencing of ASCII in Serial-By-Bit Data Transmission	16-1
	Character Structure and Parity Sense for Sarial-By-Bit Data Communication in ASCII	17-1
	Character Structure and Parity Sense for Parallal-By-Bit Data Communication in ASCII	18-1
	Synchronous Signaling Rates Between Data Tarminal and Data Communication Equipment	22-1
	Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communications Equipment	37

ADP ITEMS AND APPLICABLE STANDARDS

ADP ITEM	APPLICABLE STANDARDS	FIPS
Compilers	COBOL	21-1
	Aids for Program COBOL Conversion (FIPS 21 and 21-1)	43*
	COBOL Pocket Guide	47*
Computer Output Microfilmers (COM)	OCR Character Sets	32
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	COM Formats and Reduction Ratios, 16 mm and 105 mm	54
Computer systems	A REVIEW OF ALL FIPS SHOULD BE MADE TO DETERMINE THEIR APPLICABILITY BASED ON THE SPECIFIC SYSTEMS REQUIREMENTS AND THE ASSOCIATED SUBSYSTEMS AND COMPONENTS INVOLVED.	
Data base management systems	COBOL	21-1
	Aids for Program COBOL Conversion (FIPS 21 and 21-1)	43*
	COBOL Pocket Guide	47*
Data dictionary/directory systems	Guidelines for Describing Information Interchange Formats	20*
	Guide for the Development, Implementation and Maintenance of Standards for the Representation of Computer Processed Data Elements	45*
	Calendar Date	4
	States and Outlying Areas of the United States	5-1
	Counties and Equivalents of the States of the United States	6-2
	Standard Metropolitan Statistical Areas (SMSAs)	8-4
	Congressional Districts of the United States	9
	Countries, Dependencies and Areas of Special Sovereignty	10-2
	Guidelines for Registering Data Codes	19*
	Guideline for Codes for Named Populated Places and Related Entities of the States of the United States	55*
	Representations of Local Time of the Day for Information Interchange	58
	Representations of Universal Time, Local Time Differentials and United States Time Zone References for Information Interchange	59
	Standard Industrial Classification Codes	66

336-939 O - 81 - 3

ADP ITEMS AND APPLICABLE STANDARDS

ADP ITEM	APPLICABLE STANDARDS	FIPS
Data transmission stations (including facsimile)	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
	Bit Sequencing of ASCII in Serial-By-Bit Data Transmission	16-1
	Character Structure and Parity Sense for Serial-By-Bit Data Communication in ASCII	17-1
	Character Structure and Parity Sense for Parallel-By-Bit Data Communication in ASCII	18-1
	Synchronous Signaling Rates Between Data Terminal and Data Communication Equipment	22-1
	Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communications Equipment	37
	Guideline for Selection of Data Entry Equipment	67*
Documentation aids	Guidelines for Describing Information Interchange Formats	20*
	Flowchart Symbols and Their Usage	24
	Software Summary for Describing Computer Programs and Data Systems	30
	Guidelines for Documentation of Computer Programs and Automated Data Systems	38*
	Guidelines for Documentation of Computer Programs and Automated Data Systems for the Initiation Phase	64
Graphic display terminals	OCR Character Sets	32
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control	
	Guideline for Selection of Data Entry Equipment	67*
	Characters of ASCII	36

ADP ITEM	APPLICABLE STANDARDS	FIPS
Intelligant tarminals	Coda for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Guidaline for Selection of Data Entry Equipment	67*
Interactive hard-copy terminals	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Guideline for Selection of Data Entry Equipment	67*
Keyboard data entry systems	OCR Character Sets	32
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
	Perforated Tape Code for ASCII	2
	One-Inch Perforated Paper Tape for ASCII	26
	Take-Up Reels for One-Inch Perforated Tape	27
	Magnetic Tape Cassettes for ASCII (3.810 mm (0.150 in) Tape at 32 bpmm (800 bpi), PE)	51
	Recorded Magnetic Tape Cartridge for ASCII 4-Track, 6.30 mm (1/4 in), 63 bpmm (1600 bpi), PE	52
	Guidelina for Selection of Data Entry Equipment	67*
Keypunches and verifiers	Character Set for Handprinting	33
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
	Guidelina for Selection of Data Entry Equipment	67*

ADP ITEMS AND APPLICABLE STANDARDS

ADP ITEM	APPLICABLE STANDARDS	FIPS
Line printers	Code for Informetion Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Cherecters of ASCII	36
Locel aree networks	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or B Bits	35
	Grephic Representetion of Control Characters of ASCII	36
	Bit Sequencing of ASCII in Seriel-By-Bit Data Trensmission	16-1
	Cherecter Structure end Parity Sense for Serial-By-Bit Data Communication in ASCII	17-1
	Character Structure and Parity Sense for Parallel-By-Bit Deta Communicetion in ASCII	18-1
	Synchronous Signaling Rates Between Data Terminal and Date Communication Equipment	22-1
	Synchronous High Speed Data Signaling Rates Between Data Terminel Equipment and Deta Communicetions Equipment	37
	Date Encryption Standard	46
Magnetic disk subsystems	I/O Channel Interface	60
	Chennel Level Power Control Interface	61
	Operetional Specifications for Roteting Mess Storage Subsystems	63
Magnetic Ink Character Readers (MICR)	OCR Character Sets	32
	Cherecter Set for Handprinting	33
	Code for Informetion Interchenge (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or B Bits	35
	Guideline for Selection of Deta Entry Equipment	67*
Magnetic tape (reel)	Recorded Magnetic Tepe for ASCII (80D CPI, NRZI)	3-1
	Recorded Magnetic Tape for ASCII (160D CPI, PE)	25
	Recorded Magnetic Tape for ASCII 625D cpi (246 cpmm), GCR	5D
	Transmittal Form for Describing Computer Magnetic Tape File Properties	53

ADP ITEM	APPLICABLE STANDARDS	FIPS
Magnetic tape subsystems	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Recorded Magnetic Tape for ASCII (800 CPI, NRZI)	3-1
	Recorded Magnetic Tape for ASCII (1600 CPI, PE)	25
	Recorded Magnetic Tape for ASCII 6250 cpi (246 cpmm), GCR	50
	Recorded Tape Cassettes for ASCII (3.810 mm (0.150 in) Tape at 32 bpmm (800 bpi), PE)	51
	Recorded Magnetic Tape Cartridge for ASCII 4-Track, 6.30 mm (1/4 in), 63 bpmm (1600 bpi), PE	52
	I/O Channel Interface	60
	Channel Level Power Control Interface	61
	Operational Specifications for Magnetic Tape Subsystems	62
Magnetic tape to cassette/ cartridge converter	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Recorded Magnetic Tape for ASCII (800 CPI, NRZI)	3-1
	Recorded Magnetic Tape for ASCII (1600 CPI, PE)	25
	Recorded Magnetic Tape for ASCII 6250 cpi (246 cpmm), GCR	50
	Magnetic Tape Cassettes for ASCII (3.810 mm (0.150 in) Tape at 32 bpmm (800 bpi), PE)	51
	Recorded Magnetic Tape Cartridge for ASCII 4-Track, 6.30 mm (1/4 in), 63 bpmm (1600 bpi), PE	52
Magnetic tape to paper tape converter	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Recorded Magnetic Tape for ASCII (800 CPI, NRZI)	3-1
	Recorded Magnetic Tape for ASCII (1600 CPI, PE)	25
	Recorded Magnetic Tape for ASCII 6250 cpi (246 cpmm), GCR	50

ADP ITEMS AND APPLICABLE STANDARDS

ADP ITEM	APPLICABLE STANDARDS	FIPS
Magnetic tape to paper tape converter (continued)	Perforated Tape Code for ASCII	2
	One-Inch Perforated Paper Tape for ASCII	26
	Take-Up Reels for One-Inch Perforated Tape	27
Magnetic tape to punched card converter	Code for Information Interchange (ASCII)	1
	Implentation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Recorded Magnetic Tape for ASCII (800 CPI, NRZI)	3-1
	Recorded Magnetic Tape for ASCII (1600 CPI, PE)	25
	Recorded Magnetic Tape for ASCII 6250 cpi (246 cpmm), GCR	50
	Rectangular Holes in 12-Row Punched Cards	13
	Hollarith Punched Card Code	14
Magnetic tape transports	Recorded Magnetic Tape for ASCII (800 CPI, NRZI)	3-1
	Recorded Magnetic Tape for ASCII (1600 CPI, PE)	25
	Recorded Magnetic Tape for ASCII 6250 cpi (246 cpmm), GCR	50
Media conversion equipment	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Perforated Tape Code for ASCII	2
	One-Inch Perforated Paper Tape for ASCII	26
	Take-Up Reels for One-Inch Perforated Tape	27
	Magnetic Tape Cassettes for ASCII (3.810 mm (0.150 in) Tape at 32 bpmm (800 bpi), PE)	51
	Recorded Magnetic Tape Cartridge for ASCII 4-Track, 6.30 mm (1/4 in), 63 bpmm (1600 bpi), PE	52
MICR encoders	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
Microfilm - microfiche	COM Formats and Reduction Ratios, 16 mm and 105 mm	54

ADP ITEM	APPLICABLE STANDARDS	FIPS
Microfilm/microfiche equipment	COM Formats and Reduction Ratios, 16 mm and 105 mm	54
Modems	Synchronous Signaling Rates Between Data Terminal and Data Communication Equipment	22-1
	Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communications Equipment	37
Multiplexers	Bit Sequencing of ASCII in Serial-By-Bit Data Transmission	16-1
	Character Structure and Parity Sense for Serial-By-Bit Data Communication in ASCII	17-1
	Character Structure and Parity Sense for Parallel-By-Bit Data Communication in ASCII	18-1
	Synchronous Signaling Rates Between Data Terminal and Data Communication Equipment	22-1
	Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communications Equipment	37
OCR encoders	OCR Character Sets	32
	Character Set for Handprinting	33
	Guideline for OCR Forms	40*
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
Optical readers	OCR Character Sets	32
	Character Set for Handprinting	33
	Guideline for OCR Forms	40*
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Guideline for Selection of Data Entry Equipment	67*
Paper forms (including OCR)	OCR Character Sets	32
	Character Set for Handprinting	33
	Guideline for OCR Forms	40*
	COBOL Coding Form	44

ADP ITEMS AND APPLICABLE STANDARDS

ADP ITEM	APPLICABLE STANDARDS	FIPS
Paper tape	One-Inch Perforated Paper Tape for ASCII	26
	Take-Up Reels for One-Inch Perforated Tape	27
Paper tape equipment	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Perforated Tape Code for ASCII	2
	One-Inch Perforated Paper Tape for ASCII	26
	Take-Up Reels for One-Inch Perforated Tape	27
Performance evaluators	Guidelines for Benchmarking ADP Systems in Competitive Procurement Environment	42-1*
	Guideline on Computer Performance Management: An Introduction	49*
	Guidelines for the Measurement of Interactive Computer Service Response Time and Turnaround Time	57*
Photocomposers and typesetting equipment	OCR Character Sets	32
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or B Bits	35
	Graphic Representation of Control Characters of ASCII	36
	COM Formats and Reduction Ratios, 16 mm and 105 mm	54
Plastic card/badge equipment	OCR Character Sets	32
	Character Set for Handprinting	33
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or B Bits	35
	Graphic Representation of Control Characters of ASCII	36
Precompilers	COBOL	21-1
	Aids for Program COBOL Conversion (FIPS 21 and 21-1)	43*
	COBOL Pocket Guide	47*
Printing elements and chains	OCR Character Sets	32
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or B Bits	35
	Graphic Representation of Control Characters of ASCII	36

ADP ITEMS AND APPLICABLE STANDARDS

ADP ITEM	APPLICABLE STANDARDS	FIPS
Program generators	COBOL	21-1
	Aids for Program COBOL Conversion (FIPS 21 and 21-1)	43*
	COBOL Pocket Guide	47*
Punch card equipment	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
Punched card to magnetic tape converters	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Recorded Magnetic Tape for ASCII (800 CPI, NRZI)	3-1
	Recorded Magnetic Tape for ASCII (1600 CPI, PE)	25
	Recorded Magnetic Tape for ASCII 6250 cpi (246 cpmm), GCR	50
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
Punched paper tape to magnetic tape converters	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Recorded Magnetic Tape for ASCII (800 CPI, NRZI)	3-1
	Recorded Magnetic Tape for ASCII (1600 CPI, PE)	25
	Recorded Magnetic Tape for ASCII 6250 cpi (246 cpmm), GCR	50
	Perforated Tape Code for ASCII	2
	One-Inch Perforated Paper Tape for ASCII	26
	Take-Up Reels for One-Inch Perforated Tape	27
Security equipment	Guidelines for ADP Physical Security and Risk Management	31*
	Glossary for Computer Systems Security	39*
	Computer Security Guidelines for Implementing Privacy Act of 1974	41*

336-939 O - 81 - 4

ADP ITEMS AND APPLICABLE STANDARDS

ADP ITEM	APPLICABLE STANDARDS	FIPS
Security equipment (continued)	Data Encryption Standard	46
	Guidelines on Evaluation of Techniques for Automated Personal Identification	48*
	Guideline for Automatic Data Processing Risk Analysis	65*
Serial printers	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
Source data collection systems	OCR Character Sets	32
	Character Set for Handprinting	33
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
	Perforated Tape Code for ASCII	2
	One-Inch Perforated Paper Tape for ASCII	26
	Take-Up Reels for One-Inch Perforated Tape	27
	Magnetic Tape Cassettes for ASCII (3.810 mm (0.150 in) Tape at 32 bpmm (800 bpi), PE)	51
	Recorded Magnetic Tape Cartridge for ASCII 4-Track, 6.30 mm (1/4 in), 63 bpmm (1600 bpi), PE	52
	Guideline for Selection of Data Entry Equipment	67*
Source data collection terminals	OCR Character Sets	32
	Character Set for Handprinting	33
	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 8its	35
	Rectangular Holes in 12-Row Punched Cards	13
	Hollerith Punched Card Code	14
	Guideline for Selection of Data Entry Equipment	67*

ADP ITEM	APPLICABLE STANDARDS	FIPS
Text editors	Code for Information Interchange (ASCII)	1
	Implementation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
Word processing systems	OCR Character Sets	32
	Code for Information Interchange (ASCII)	1
	Implentation of ASCII	7
	Subsets of ASCII	15
	Code Extension Techniques in 7 or 8 Bits	35
	Graphic Representation of Control Characters of ASCII	36
	Bit Sequencing of ASCII in Serial-By-Bit Data Transmission	16-1
	Character Structure and Parity Sense for Serial-By-Bit Data Communication in ASCII	17-1
	Character Structure and Parity Sense for Parallel-By-Bit Data Communication in ASCII	18-1
	Synchronous Signaling Rates Between Data Terminal and Data Communication Equipment	22-1
	Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communications Equipment	37
	Magnetic Tape Cassettes for ASCII (3.810 mm (0.150 in) Tape at 32 bpmm (800 bpi), PE)	51
	Recorded Magnetic Tape Cartridge for ASCII 4-Track, 6.30 mm (1/4 in), 63 bpmm (1600 bpi), PE	52
	Guidelines for Describing Information Interchange Formats	20*
	Guideline for Selection of Data Entry Equipment	67*

ABSTRACTS OF FEDERAL INFORMATION PROCESSING STANDARDS (FIPS)

SECTION 3

GENERAL PUBLICATIONS

GENERAL DESCRIPTION OF THE FEDERAL INFORMATION PROCESSING STANDARDS REGISTER, FIPS-PUB-0, 196B November 1.

Establishes the Federal Information Processing Standards Register as the official source within the Federal government for information pertaining to the approval, implementation, and maintenance of FIPS. Defines responsibilities for development and maintenance of Register, and for the content and format of FIPS.

FEDERAL INFORMATION PROCESSING STANDARDS INDEX, FIPS-PUB-12-2, 1974 December 1.

Provides information of Federal Information Processing Standards Publications (FIPS PUBS), national and international standards for information processing, and Federal policies and guidelines on computers and telecommunications. This publication is being revised.

OBJECTIVES AND REQUIREMENTS OF THE FEDERAL INFORMATION PROCESSING STANDARDS PROGRAM, FIPS-PUB-23, 1973 February 15.

Explains the legislative mandate for the computer standards program and establishes objectives and requirements for the program in six areas. This publication is being revised.

STANDARDIZATION OF DATA ELEMENTS AND REPRESENTATIONS, FIPS-PUB-28, 1973 December 5.

Defines policies and responsibilities for a government-wide program for the standardization of data elements and representations used in Federal automated data systems.

INTERPRETATION PROCEDURES FOR FEDERAL STANDARD COBOL, FIPS-PUB-29, 1974 June 30.

Establishes procedures for users of COBOL and vendors of COBOL compilers to follow when questions arise as to the meaning of language specifications of the Federal Standard Cobol.

GUIDE FOR THE USE OF INTERNATIONAL SYSTEM OF UNITS (SI) IN FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATIONS, FIPS-PUB-34, 1975 January 1.

Establishes requirements for use of International System of Units in all FIPS PUBS.

HARDWARE STANDARDS

Character Recognition

OPTICAL CHARACTER RECOGNITION SETS, FIPS-PUB-32, 1974 August 15.

Defines the optical and dimensional properties of tha shape patterns forming Optical Character Racognition (OCR) characters and the basic raquiraments for tha position of OCR characters on the paper substrate. Establishes two charactar sets, a 92 character font dasigned for maximum machine efficiency in reading and a 96 character font designad for esthetic appaarance.

CHARACTER SET FOR HANDPRINTING, FIPS-PUB-33, 1974 October 1.

Specifies shapes and sizes of handprinted characters to ba used in Optical Character Recognition (OCR) systems. Adopts ANS X3.45-1974.

GUIDELINE FOR OPTICAL CHARACTER RECOGNITION FORMS, FIPS-PUB-40, 1976 May 1.

Provides information on the dasign, preparation, acquisition, and application of OCR forms in data entry systems.

Data Entry Equipment

GUIDELINE FOR SELECTION OF DATA ENTRY EQUIPMENT, FIPS-PUB-67, 1979 September 30.

Providas information about the ganeral characteristics of data entry equipment. Discussas the factors to be taken into considaration in tha selection of efficient and economical data entry systems.

Interchange Codes and Media

CODE FOR INFORMATION INTERCHANGE, FIPS-PUB-1, 1968 November 1.

Establishes a standard coded character set for information interchange between information processing systams, communications systems, and ralated equipment. Adopts ANS X3.4-1978. Supplemantad by FIPS 7.

PERFORATED TAPE CODE FOR INFORMATION INTERCHANGE, FIPS-PUB-2, 196B November 1.

Specifias the representation of the Code for Information Interchange on perforated tape and similarly encoded media used for interchange of information between office machinas, data procassing and communications systems. Adopts ANS X3.6-1965. Supplemanted by FIPS 7.

RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (BOO CPI, NRZI), FIPS-PUB-3-1, 1973 June 30.

Specifies the recordad characteristics of 9-track, one-half inch wide magnetic tape and the data format for rapresenting the Code for Information Interchange. Adopts ANS X3.22-1973. Supplamentad by FIPS 7.

IMPLEMENTATIDN OF THE CDDE FDR INFORMATION INTERCHANGE AND RELATED MEDIA STANOARDS, FIPS-PUB-7, 1969 Merch 7.

Explains the scope of application of the Code for Information Interchange, instructions for implementing it, and its use in computer and telecommunications applications. Supplements FIPS 1, 2 end 3-1.

RECTANGULAR HDLES IN TWELVE-RDW PUNCHED CARDS, FIPS-PUB-13, 1971 October 1.

Specifies the size, location, end dimensional tolerances of rectenguler holes in 12-row, 3-1/4 inch wide punched cards. This stendard epplies to card reeding end punching equipment used in dete processing, communications end releted functions. Adopts ANS X3.21-1967.

HDLLERITH PUNCHED CARD COOE, FIPS-PUB-14, 1971 October 1.

Specifies the hole patterns to represent the 128 characters of the Federal Code for Information Interchange in 12-row, 8D column, rectangular hole punched cards. This standard is applicable when subsets of the standard code are used as specified in FIPS 15. Adopts ANS X3.26-197D.

SUBSETS DF THE STANDARD CDOE FDR INFDRMATIDN INTERCHANGE, FIPS-PUB-15, 1971 October 1.

Provides for three standard subsets of the Standard Code for Informetion Interchenge for use in printers, display devices, punched cerd equipment and other date processing or communication equipment thet do not require the full 12B standard character subset.

RECDROED MAGNETIC TAPE FDR INFDRMATIDN INTERCHANGE (1600 CPI, PHASE ENCDDED), FIPS-PUB-25, 1973 June 3D.

Provides specifications for formet end recording of the Standard Code for Information Interchange on 1/2 inch, 9-track magnetic tepe. Adopts ANS X3.39-1973.

DNE-INCH PERFORATED PAPER TAPE FOR INFDRMATION INTERCHANGE, FIPS-PUB-26, 1973 June 3D.

Specifies the width and thickness of one-inch perforated paper tepe; the locations end size of feed holes and information holes. Adopts ANS X3.18-1967.

TAPE-UP REELS FDR DNE-INCH PERFDRATED TAPE FDR INFDRMATIDN INTERCHANGE, FIPS-PUB-27, 1973 June 3D.

Specifies the physical characteristics and dimensions for both small diameter and large diameter drive take-up (or storage) reels, with either fixed or separable flanges. Adopts ANS X3.2D-1967.

CDDE EXTENSIDN TECHNIQUES IN 7 OR B 8ITS, FIPS-PUB-35, 1975 June 1.

Specifies methods for extending the 7-bit Code for Information Interchenge in either a 7-bit environment or an 8-bit environment. Adopts ANS X3.41-1974.

336-939 O - 81 - 5

GRAPHIC REPRESENTATION OF THE CONTROL CHARACTERS OF ASCII, FIPS-PUB-36, 1975 June 1.

Specifies graphical representetion for 34 ANCII cherecters which ere not indiceted in FIPS 1. Adopts ANS X3.32-1973.

RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE, 6250 CPI (246 CPM), GROUP CODED RECORDING, FIPS-PUB-50, 197B Februery 1.

Specifies formet end recording requirements for representing the Code for Informetion Interchange on nine-channel, one-helf inch magnetic tepe. This standard applies to recording and reproducing equipment opereting at densities of 6250 characters per inch. Adopts ANS X3.54-1976.

MAGNETIC TAPE CASSETTES FOR INFORMATION INTERCHANGE (3.810 MM (0.150 IN) TAPE AT 32 BPMM (B00 BPI), PE), FIPS-PUB-51, 1978 February 1.

Specifies the physicel, magnetic, and recorded characteristics of e 3.B10 mm (0.150 in) magnetic tape cessette et e recording density of 32 bits per millimeter (800 bits per inch) using phese encoding techniques. Adopts ANS X3.48-1977.

RECORDED MAGNETIC TAPE CARTRIDGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCODED, FIPS-PUB-52, 197B July 15.

Specifies formet and recording requirements for representing the Code for Information Interchange on 6.30 mm wide magnetic tape cartridges with either one, two or four serial data tracks. This stendard applies to recording end reproducing equipment operating et densities of 63 bits per millimeter. Adopts ANS X3.56-1977.

COMPUTER OUTPUT MICROFORM (COM) FORMATS AND REDUCTION RATIOS, 16MM end 105 MM, FIPS-PUB-54, 197B July 15.

Specifies the imege arrangement, size and reduction ratios for 16 mm and 105 mm microforms generated by computer output microfilmers. This stendard epplies to systems using business-oriented fonts similar to line printer output.

Interface

I/O CHANNEL INTERFACE, FIPS-PUB-60-1, 1979 August 27.

Defines the functional, electrical, and mechanical and interface specificetions for connecting computer peripheral equipment as part of automatic data processing systems. This standerd and FIPS PUB 61, Channel Level Power Control Interface, define the hardwere characteristics for the I/O (input/output) channel level interface. Adopts American National Standards Institute Document X3T9/600, Revision 2.

CHANNEL LEVEL POWER CONTROL INTERFACE, FIPS-PUB-61, 1979 February 16.

Defines the functional, electricel end mechanicel interface specificetions for a power control interface for use in connecting computer peripheral equipment as part of automatic date processing systems. This standard is appliceble whenever use of FIPS 60-1 is required. Adopts American National Standards Institute Document X3T9/666, Revision 2.

OPERATIONAL SPECIFICATIONS FOR MAGNETIC TAPE SUBSYSTEMS, FIPS-PUB-62, 1979 February 16.

Defines the operational specifications for connecting magnetic tape equipment as part of automatic data processing systems. This standard applies to acquisition of magnetic tape equipment whenever use of FIPS PUB 60-1 and 61 are required. Adopts American National Standards Institute Document X3T9/7B0, Revision 3.

OPERATIONAL SPECIFICATIONS FOR ROTATING MASS STORAGE SUBSYSTEMS, FIPS-PUB-63, 1979 August 27.

Defines the operational specifications for connecting rotating mass storage equipment as part of automatic data processing systems. This standard applies to acquisition of rotating mass storage equipment whenever use of FIPS PUB 60-1 and 61 are required. Adopts American National Standards Institute Document X3T9/B4B, Revision 2.

Transmission

BIT SEQUENCING OF THE CODE FOR INFORMATION INTERCHANGE IN SERIAL-BY-BIT DATA TRANSMISSION, FIPS-PUB 16-1, 1977 September 1.

Specifies the method for transmitting the Standard Code for Information Interchange in serial-by-bit, serial-by-character data transmission. Adopts ANS X3.15-1976.

CHARACTER STRUCTURE AND CHARACTER PARITY FOR SENSE FOR SERIAL-BY-BIT DATA COMMUNICATION IN CODE FOR INFORMATION INTERCHANGE, FIPS-PUB 17-1, 1977 September 1.

Specifies the character structure and sense of character parity for serial-by-bit, serial-by-character data communication for the Standard Code for Information Interchange. Adopts ANS X3.16-1976.

CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR PARALLEL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE, FIPS-PUB 18-1, 1977 September 1 .

Specifies the character structure and character parity sense for transmitting the Code for Information Interchange in systems employing parallel-by-bit data transmission. Adopts ANS X3.25-1976.

SYNCHRONOUS SIGNALING RATES BETWEEN DATA TERMINAL AND DATA COMMUNICATION EQUIPMENT, FIPS-PUB 22-1, 1977 September 1.

Specifies the rates of transferring binary encoded information in synchronous serial or parallel form between data processing terminal and data communications equipment that employ voice band communications facilities. Adopts ANS X3.1-1976.

SYNCHRONOUS HIGH SPEED DATA SIGNALING RATES BETWEEN DATA TERMINAL EQUIPMENT AND DATA COMMUNICATIONS EQUIPMENT, FIPS-PUB-37, 1975 June.

Specifies the rates for transferring synchronous binary encoded information between data processing terminal and data communication equipment on wide band communication channels. This standard complements FIPS 22-1. Adopts ANS X3.36-1975.

SOFTWARE STANDARDS

Documentation

DICTIONARY FOR INFORMATION PROCESSING, FIPS-PUB-11-1, 1977 September 30.

A basic reference document containing definitions end explenetions for terms used in the field of computers and information processing. Adopts ANS X3/TR-1-77.

GUIDELINES FOR DESCRIBING INFORMATION INTERCHANGE FORMATS, FIPS-PUB-20, 1972 March 1.

Identifies end defines the physicel end logicel cheracteristics of formetted informetion to improve interchange, processing, and use.

FLOWCHART SYMBOLS AND THEIR USAGE IN INFORMATION PROCESSING, FIPS-PUB-24, 1972 June 30.

Prescribes and defines flowchert symbols to represent the sequence of operetions, the flow of data, end the flow of peperwork on flowcharts for information processing; prescribes presentation techniques for flowchert symbols on flowcharts; prescribes end defines the use of flowchart symbols.

SOFTWARE SUMMARY FOR DESCRIBING COMPUTER PROGRAMS AND DATA SYSTEMS, FIPS-PUB-30, 1974 June 30

Establishes a stendard form to be used by Federel egencies in documenting summaries or abstracts of progrems end autometed deta systems

GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS, FIPS-PUB-38, 1976 Februery 15.

Provides basic guidence for the preparation of ten document types that are used in the development of computer software. Can be used as e checklist for the planning and eveluation of software documentetion practices.

COBOL CODING FORM, FIPS-PUB-44, 1976 September 1.

Specifies a standard form for Federal egencies to use in coding COBOL source programs.

TRANSMITTAL FORM FOR DESCRIBING COMPUTER MAGNETIC TAPE FILE PROPERTIES, FIPS-PUB-53, 1978 April 1.

Provides a standard form for Federal agencies to use in documenting the physical properties end charecteristics of a recorded magnetic tape file.

GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS FOR THE INITIATION PHASE, FIPS-PUB-64, 1979 August 1.

Provides guidance in determining the content end extent of documentation for initietion phese of the softwere life cycle. Covers preparation of project request, feasibility study, end cost/benefit analysis documents.

Programming Languages

COBOL, FIPS-PUB-21-1, 1975 December 1.

Establishes tha form for and the interpretation of programs expressed in Federal Standard COBOL. Adopts ANS X3.23-1974.

INTERPRETATION PROCEDURES FOR FEDERAL STANDARD COBOL, FIPS-PUB-29, 1974 June 30.

Establishes the procedures for users of COBOL and vendors of COBOL compilers to follow when questions arise as to the meaning of language specifications of the Federal Standard COBOL

AIDS FOR COBOL PROGRAM CONVERSION (FIPS PUB 21 to FIPS PUB 21-1), FIPS-PUB-43, 1975 Decambar 1.

Provides information to assist in converting COBOL source programs daveloped for compilers in conformance with the 196B COBOL Standard (FIPS 21) to use with compilers in conformance with the 1974 COBOL Standard (FIPS 21-1).

FEDERAL STANDARD COBOL POCKET GUIDE, FIPS-PUB-47, 1977 February 1.

Contains a complete language skeleton displaying syntactically correct formats for the high level of Standard COBOL. Designad to be used by programmers as a reference guide to the standard language.

DATA STANDARDS

Representations and Codes

CALENDAR DATE, FIPS-PUB-4, 1968 November 1.

Specifies codes to identify years, months and dates of the Gregorian calendar.

STATES AND OUTLYING AREAS OF THE UNITED STATES, FIPS-PUB-5-1, 1970 June 15.

Provides abbreviations and two digit numeric codes for states, the District of Columbia and outlying areas such as Puerto Rico, Virgin Islands, and other United States territories.

COUNTIES AND COUNTY EQUIVALENTS OF THE UNITED STATES, FIPS-6-3, 1979 December 15.

Provides namas and three-digit numeric codes for counties or county aquivalents in the United States.

STANDARD METROPOLITAN STATISTICAL AREAS (SMSAs), FIPS-PUB-8-4, 1974 June 30.

Provides a four-digit numaric coda for each Standard Metropolitan Statistical Area in the United States

CONGRESSIONAL DISTRICTS OF THE UNITED STATES, FIPS-PUB-9, 1969 November 14.

Specifies the use of two-digit numeric codes to represent the Congressional Districts of each State of the United States as identifiad in the "Congressional Directory."

COUNTRIES, DEPENDENCIES AND AREAS OF SPECIAL SOVEREIGNTY, FIPS-PUB-10-2, 1977 March 1.

Assigns two character alphabetic codes to 224 geopolitical entities including independent states, dependent areas, territories, possessions and areas of special sovereignty.

GUIDELINES FOR REGISTERING DATA CODES, FIPS-PUB-19, 1972 February 1.

Establishes procedures for Federal agencies to use in registering data codes and for obtaining information about codes in use and under development. The National Bureau of Standards maintains registers of data elements and codes to minimize individual agency development efforts and to facilitate the interchange of information.

GUIDE FOR THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF STANDARDS FOR THE REPRESENTATION OF COMPUTER PROCESSED DATA ELEMENTS, FIPS-PUB-45, 1976 September 30.

Provides basic concepts and tarminology of data standardization, describes data characteristics, basic coding methods, and principles of data code development.

CODES FOR NAMED POPULATED PLACES AND RELATED ENTITIES OF THE STATES OF THE UNITED STATES, FIPS-PUB-55, 1978 June 1.

Provides 7-cherecter numeric codes for places in the United States such as cities, towns, villeges, rural communities, eirports, Indien reservations, military installetions, shopping centers and transport points. Also provides the name end code for the county (counties) in which the place is loceted, the ZIP code of the servicing post office, end a cross-reference to the Worldwide Geogrephic Location Codes issued by GSA. Implements ANS X3.47-1977.

REPRESENTATIONS OF LOCAL TIME OF THE DAY FOR INFORMATION INTERCHANGE, FIPS-PUB-58, 1979 February 1.

Specifies representetions for the local time of the day based on both 12 and 24 hour timekeeping systems. Specifies the time elements and their sequencing, the use of separators between time elements, and the representation of the meridiem designator. Adopts ANS X3.47-1977.

REPRESENTATIONS OF UNIVERSAL TIME, LOCAL TIME DIFFERENTIALS, AND UNITED STATES TIME ZONE REFERENCES FOR INFORMATION INTERCHANGE, FIPS-PUB-59, 1979 February 1.

Specifies representations for Universal Time, the Local Time Differential Factors, and Locel Time Zones in general use in the United States. Adopts ANS X3.51-1975.

STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES, FIPS-PUB-66, 1979 August 15.

Provides clessificetions, short titles, and codes for representing industries and groups of establishments with similer economic ectivities.

ABSTRACTS OF FEDERAL INFORMATION PROCESSING STANDARDS

ADP OPERATIONS

Benchmarking for Computer Selection

GUIDELINES FOR BENCHMARKING ADP SYSTEMS IN THE COMPETITIVE PROCUREMENT ENVIRONMENT, FIPS-PUB-42-1, 1975 December 1.

Recommends good practicas for Fedaral agancias to usa in planning, organizing, and conducting benchmark mix damonstrations for competitive computer system procuremants.

Computer Performance Management

GUIDELINE ON COMPUTER PERFORMANCE MANAGEMENT: AN INTRODUCTION, FIPS-PUB-49, 1977 May 1.

Datails the responsibilities of ADP managers in meating usar requirements managing and planning for ADP rasources, communiceting with upper management, and communicating with vendors.

GUIDELINES FOR THE MEASUREMENT OF INTERACTIVE COMPUTER SERVICE RESPONSE TIME AND TURNAROUND TIME, FIPS-PUB-57, 1978 August 1.

Provides a methodology for measuring interactive computar servica response time and turnaround tima. Addresses interactiva computer utilization characterizad by an interchange of input and output between a computer and a person utilizing a keyboerd terminal end describas functional performance maasures that can ba employed.

Computer Security

GUIDELINES FOR ADP PHYSICAL SECURITY AND RISK MANAGEMENT, FIPS-PUB-31, 1974 June.

Providas guidance to Federal organizations in developing physical security and risk managemant programs for thair ADP facilitias. Can be used as a checklist for planning and evaluating security of computer systems.

GLOSSARY FOR COMPUTER SYSTEMS SECURITY, FIPS-PUB-39, 1976 February 15.

A reference documant containing approximately 170 terms and definitions pertaining to privacy and computer security.

COMPUTER SECURITY GUIDELINES FOR IMPLEMENTING THE PRIVACY ACT OF 1974, FIPS-PUB-41, 1975 May 30.

Providas guidance in the selection of technical and ralated procedural methods for protecting personel data in automatad information systems. Discussas categorias of risks and tha releted safeguerds for physical security, information managemant practices, and system controls to improve system sacurity.

DATA ENCRYPTION STANDARD, FIPS-PUB-46, 1977 January 15.

Specifias and algorithm to be implamented in electronic hardware devices and usad for tha cryptographic protaction of computer date. The algorithm uniquely dafinas tha mathamatical staps raquirad to transform computer data into a cryptographic cipher and the staps requirad to transform tha cipher back to its original form.

GUIDELINES ON EVALUATION OF TECHNIQUES FOR AUTOMATED PERSONAL IDENTIFICATION, FIPS-PUB-48, 1977 April 1.

Discusses the performance of personal identification devices, how to evaluate them, and considerations for their use within the context of computer system security.

GUIDELINES FOR AUTOMATIC DATA PROCESSING RISK ANALYSIS, FIPS-PUB-65, 1979 August 1.

Presents a technique for conducting a risk analysis of an ADP facility and related assets. Provides guidance on collecting, quantifying, and analyzing data related to the frequency of occurrence and the damage caused by adverse events.

Management of Multivendor ADP Systems

GUIDELINES FOR MANAGING MULTIVENDOR PLUG-COMPATIBLE ADP SYSTEMS, FIPS-PUB-56, 1978 September 15.

Provides general assistance to Federal ADP managers responsible for the planning, acquisition, or operation of an ADP system that involves products or services obtained from multiple sources.

336-939 O - 81 - 6

CITATIONS FOR STANDARDS IN SOLICITATION DOCUMENTS

SECTION 4

Subpart 101-36.13 - Implementation of Federal Information Processing and Federal Telecommunications Standards into Solicitation Documents.

Sec.
101-36.1300 Scope of Subpart.

101-36.1301 Applicability.

101-36.1302 Federal Standards.
101-36.1302-1 Federal Information Processing Standards Publications (FIPS PUBS).
101-36.1302-2 Federal Telecommunication Standards (FED-STD).
101-36.1302-3 Joint Federal Information Processing Standards (FIPS) and Federal Telecommunication Standards (FED-STD).

101-36.1303 Definitions.
101-36.1303-1 Standard Terminology.
101-36.1303-2 Hardware Standards.
101-36.1303-3 Software Standards.
101-36.1303-4 Applications Standards.
101-36.1303-5 Data Standards.

101-36.1304 Hardware Standards.
101-36.1304-1 FIPS PUB 1, Code for Information Interchange.
101-36.1304-2 FIPS PUB 2, Perforated Tape Code for Information Interchange.
101-36.1304-3 FIPS PUB 3-1, Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI).
101-36.1304-4 FIPS PUB 7, Implementation of the Code for Information Interchange and Related Media Standards.
101-36.1304-5 FIPS PUB 13, Rectangular Holes in 12-Row Punched Cards.
101-36.1304-6 FIPS PUB 14, Hollerith Punched Card Code.
101-36.1304-7 FIPS PUB 15, Subsets of the Standard Code for Information Interchange.
101-36.1304-8 FIPS PUB 25, Recorded Magnetic Tape for Information Interchange (1600 CPI, Phase Encoded).
101-36.1304-9 FIPS PUB 26, One-Inch Perforated Paper Tape for Information Interchange.
101-36.1304-10 FIPS PUB 27, Take-up Reels for One-Inch Perforated Tape for Information Interchange.
101-36.1304-11 FIPS PUB 32, Optical Character Recognition Character Sets.
101-36.1304-12 FIPS PUB 33, Character Set for Handprinting.
101-36.1304-13 FIPS PUB 35, Code Extension Techniques in 7 or 8 Bits.
101-36.1304-14 FIPS PUB 36, Graphic Representation of the Control Characters of ASCII (FIPS 1).
101-36.1304-15 FIPS PUB 46, Data Encryption Standard (DES).
101-36.1304-16 FIPS PUB 50, Recorded Magnetic Tape for Information Interchange, 6250 CPI (246 CPMM), Group Coded Recording.
101-36.1304-17 FIPS PUB 51, Magnetic Tape Cassettes for Information Interchange (3.810 mm (0.150 in) Tape at 32 BPMM (800 BPI) , PE).
101-36.1304-18 FIPS PUB 52, Recorded Magnetic Tape Cartridge for Information Interchange, 4-Track, 6.30 mm (0.250 in), 63 BPMM (1600 BPI) Phase Encoded.
101-36.1304-19 FIPS PUB 54, Computer Output Microform (COM) Formats and Reduction Ratios, 16 mm and 105 mm.
101-36.1304-20 FIPS PUB 60, Input/Output (I/O) Channel Interface
101-36.1304-21 FIPS PUB 61, Channel Level Power Control Interface

101-36.1304-22	FIPS PUB 62, Operational Specifications for Magnetic Tape Subsystems
101-36.1304-23	FIPS PUB 63, Operational Specifications for Rotating Mass Storage Subsystems.
101-36.1305	Software Standards.
101-36.1305-1	FIPS PUB 21-1, Federal Standard COBOL.
101-36.1305-2	FIPS PUB 24, Flowchart Symbols and Their Usage in Information Processing.
101-36.1305-3	FIPS PUB 30, Software Summary for Describing Computer Programs and Automated Data Systems.
101-36.1305-4	FIPS PUB 53, Transmittal Form for Describing Computer Magnetic Tape File Properties.
101-36.1306	Applications Standards.
101-36.1307	Data Standards.
101-36.1307-1	FIPS PUBS Applicable to the Interchange of Machine Processable Data Between and Among Agencies.
101-36.1308	Federal Telecommunication Standards (FED-STD).
101-36.1308-1	FED-STD 1002, Time and Frequency Reference Information in Telecommunications Systems.
101-36.1308-2	FED-STD 1005, Coding and Modulation Requirements for Nondiversity 2400 Bit/Second Modems.
101-36.1308-3	FED-STD 1006, Coding and Modulation Requirements for 4800 Bit/Second Modems.
101-36.1309	Joint FIPS/FED-STD.
101-36.1309-1	FIPS PUB 37/FED-STD 1001, Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communication Equipment.
101-36.1309-2	FIPS PUB 16-1/FED-STD 1010, Bit Sequencing of the Code for Information Interchange in Serial-By-Bit Data Transmission.
101-36.1309-3	FIPS PUB 17-1/FED-STD 1011, Character Structure and Character Interchange.
101-36.1309-4	FIPS PUB 18-1/FED-STD 1012, Character Structure and Character Parity Sense for Parallel-By-Bit Data Communication in the Code for Information Interchange.
101-36.1309-5	FIPS PUB 22-1/FED-STD 1013, Synchronous Signaling Rates Between Data Terminal and Data Communication Equipment.

Subpart 101-36.13 - Implementation of Federal Information Processing and Federal Telecommunication Standards Into Solicitation Documents.

§101-36.1300 Scope of subpart.

This subpart provides standard terminology for use in solicitation documents for the acquisition of ADP and telecommunication equipment, services, and related software. This subpart supplements the provisions of part 101-36 and is applicable, where particular standards apply, to equipment and services acquired under part 101-37 of the FPMR and subpart 1-4.11 of the FPR.

§101-36.1301 Applicability.

The provisions of this subpart are applicable to all Federal agencies unless the agencies are otherwise excepted. Waiver procedures are prescribed in the applicable standards.

§101-36.1302 Federal Standards

Federal standards discussed in this subpart are categorized as Federal Information Processing Standards (FIPS), Federal Telecommunication Standards (FED-STD), or as Joint Federal Information Processing and Federal Telecommunication Standards (FIPS/FED-STD). Each of these standards categories is described in detail below.

§101-36.1302-1 Federal Information Processing Standards Publications (FIPS PUBS).

Federal Information Processing Standards Publications (FIPS PUBS) are official Federal Government publications relating to standards adopted and issued under the provisions of section 111 of the Federal Property and Administrative Services Act of 1949, 63 Stat. 383, as amended, 40 U.S.C. 759 and Executive Order 11717 (3 CFR). These publications are issued by the National Bureau of Standards (NBS) and collectively constitute the Federal Information Processing Standards Register. As an aid in implementing this subpart 101-36.13, all agencies should establish and maintain a register in accordance with FIPS PUB 0, General Description of the Federal Information Processing Standards Register, November 1, 1968. Requests for FIPS PUBS should be sent to:

National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, telephone 703-557-4650; FTS 557-4650.

Requests for discount prices on quantity orders should also be referred to the above address and telephone number. Requests for FIPS PUBS subscriptions should be sent to:

Subscriptions, National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161, telephone 703-557-4630; FTS 557-4630.

§101-36.1302-2 Federal Telecommunication Standards (FED-STD).

Federal Telecommunication Standards (FED-STD) are official Federal Government publications relating to standards adopted and issued under the provisions of section 206 of the Federal Property and Administrative Services Act of 1949, 63 Stat. 390, as amended, 40 U.S.C. 487. These Federal publications are issued by the General Services Administration and collectively constitute the Federal Supply Class (FSC) of "Telecommunications" in the Federal Standards Index. These publications are available from the General Services Administration (3FRI), Specification Branch, Building 197, Washington Navy Yard, Washington, D.C. 20407, telephone 202-472-2205; FTS 472-2205. Requests for standards must include the appropriate FED-STD number.

NOTE - Most Federal Telecommunication Standards (FED-STD) implement specifications contained in American National Standards Institute (ANSI) standards or Electronic Industry Association (EIA) standards. Addresses are referenced in the appropriate FED-STD. Federal agencies may secure one copy of each FED-STD free of charge.

§101-36.1302-3 Joint Federal Information Processing Standards (FIPS) and Federal Telecommunication Standards (FED-STD).

Joint Federal Information Processing Standards and Federal Telecommunication Standards (FIPS/FED-STD) are standards which are

published as both FIPS and FED-STD within the authorities cited in §§101-36.1302-1 and 101-36.1302-2. Either the FIPS or the FED-STD adequately addresses the joint applicability, and these standards are available as discussed in §§101-36.1302-1 and 101-36.1302-2.

§101-36.1303 Definitions.

The following definitions are applicable to subpart 101-36.13. For terms not defined, see the FIPS PUB 11-1, American National Standard Vocabulary for Information Processing, available as discussed in §101-36.1302-1, and the Military Communications System Standards, Terms, and Definitions (MIL-STD-188-120), available as discussed in §101-36.1302-2.

§101-36.1303-1 Standard terminology.

"Standard terminology" means that language which is used in purchase agreements, solicitations, and offers for acquisitions of ADP and telecommunication equipment, services, and related software to ensure conformance with Federal Information Processing and Federal Telecommunication Standards.

§101-36.1303-2 Hardware standards.

"Hardware standards" means that category of standards which includes areas of standardization such as character recognition, interchange codes and media, transmission, interface, and keyboards.

§101-36.1303-3 Software standards.

"Software standards" means that category of standards which includes areas of standardization such as programing languages, operating systems, operating procedures, and documentation.

§101-36.1303-4 Applications standards.

"Applications standards" means that category of standards which includes areas of standardization such as payroll, flowcharting, and data base management.

§101-36.1303-5 Data standards.

"Data standards" means that category of standards which includes areas of standardization such as data elements, data formats, and data representations and data codes.

§101-36.1304 Hardware standards.

This section provides standard terminology for use in the procurement of ADPE and gives effect to the applicable FIPS PUBS covering areas of standardization listed in §101-36.1303-2.

§101-36.1304-1 FIPS PUB 1, Code for Information Interchange.

(a) FIPS PUB 1 promulgates the American Standard Code for Information Interchange (ASCII) and specifies the code and character set for use in Federal information processing systems, communications systems, and associated equipment. (Technical specifications of the standard are not included with FIPS PUB 1.)

(b) The standard terminology for use in solicitation documents is:

ASCII SYSTEM REQUIREMENTS

The system, upon receiving a hardware or software command, must accept data on magnetic tape, paper tape, or any other input media covered by an approved Federal Information Processing Standards Publication (FIPS PUB) in ASCII code and collating sequence prescribed in FIPS PUB 1 and in the format prescribed in FIPS PUBS 2, 3, or other applicable FIPS PUBS. Such data may be translated, if necessary, into a form upon which the proposed equipment can internally process: "Provided", That, upon receiving a hardware or software command, the output of the processed data to magnetic tape, paper tape, and other output media will be in the ASCII code and collating sequence prescribed in FIPS PUB 1 and in the format prescribed in FIPS PUBS 2, 3, or other applicable FIPS PUBS.

§101-36.1304-2 FIPS PUB 2, Perforated Tape Code for Information Interchange.

(a) FIPS PUB 2 specifies the representation of the ASCII code and format on perforated tape to be used in Federal information processing systems, communications systems, and associated equipment. (Technical specifications of the standard are not included with FIPS PUB 2.)

(b) The standard terminology for use in solicitation documents is:

PUNCHED PAPER TAPE READERS AND PUNCHES

Punched paper tape equipment must be capable of reading and punching in the prescribed ASCII code and format specified in FIPS PUBS 1 and 2.

§101-36.1304-3 FIPS PUB 3-1, Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI).

(a) FIPS PUB 3-1 supersedes FIPS PUB 3, reflects a change in scope from the earlier version of X3.22-1967, and encompasses the recorded tape requirements only. The unrecorded tape standard will include the requirements for the physical property of the tape and reels that were previously included in FIPS 3. FIPS PUB 3-1 specifies the recorded characteristics of 9-track digital 1/2-inch-wide magnetic computer tape, including the data format for implementing the Federal Standard Code for Information Interchange at the recording density of 800 characters per inch (CPI). (Technical specifications of the standard are not included with FIPS PUB 3-1.)

(b) The standard terminology to be used in solicitation documents is:

All 9-track digital magnetic tape recording and reproducing equipments resulting from this solicitation employing 1/2-inch-wide tape at the recording density of 800 characters per inch (CPI), including associated

programs, shall provide the capability to accept and generate recorded tapes in compliance with the requirements set forth in FIPS PUB 3-1.

§101-36.1304-4 FIPS PUB 7, Implementation of the Code for Information Interchange and Related Media Standards.

(a) FIPS PUB 7 supplements FIPS PUBS 1, 2, and 3 and provides details concerning their implementation and applicability. (Technical specifications of a standard are not required in connection with FIPS PUB 7.)

(b) The standard terminology for use in solicitation documents: Not applicable.

§101-36.1304-5 FIPS PUB 13, Rectangular Holes in 12-Row Punched Cards.

(a) FIPS PUB 13 specifies the size and location of rectangular holes in 12-row 3 1/4-inch-wide punched cards. The standard applies to card reading and punching equipment used in data processing, communications, and similar operations. It does not apply to other types of equipment such as those which punch round holes or cards of other width dimensions. (Technical specifications of the standard are not included with FIPS PUB 13.)

(b) The standard terminology for use in solicitation documents is:

All punching or reading equipment utilizing 12-row 3 1/4-inch-wide punched cards used in data processing, communications, and similar operations must be capable of punching and reading rectangular holes of a size and location specified in FIPS PUB 13.

§101-36.1304-6 FIPS PUB 14, Hollerith Punched Card Code.

(a) FIPS PUB 14 specifies the representation of the Federal Standard Code for Information Interchange, FIPS PUB 1, in 12-row 3 1/4-inch-wide, rectangular hole, punched cards used in Federal information processing systems, communications systems, and associated equipment. This standard does not apply to other types of punched cards such as those with round holes or to "edge-punched" cards whose holes resemble those used in perforated tape. (Technical specifications of the standard are not included with FIPS PUB 14.)

(b) The standard terminology for use in solicitation documents is:

All punching or reading equipment utilizing 12-row 3 1/4-inch-wide, rectangular hole punched cards used in data processing, communications, and similar operations must be capable of punching or reading the Federal Standard Code for Information Interchange, FIPS PUB 1, or one of the approved Subsets of the Standard Code for Information Interchange, FIPS PUB 15, in the hole pattern specified in FIPS PUB 14, Hollerith Punched Card Code.

§101-36.1304-7 FIPS PUB 15, Subsets of the Standard Code for Information Interchange.

(a) FIPS PUB 15 amends FIPS PUB 7 and requires that all printers, display devices, punched card, and other data processing or communications

equipment brought into the Federal inventory which utilize a character set less than that provided by the 128-character set of FIPS PUB 1 must conform to one of the three subsets provided in FIPS PUB 15. (Technical specifications of the standard are included with FIPS PUB 15.)

(b) The standard terminology for use in solicitation documents is:

Printers; display devices; data acquisition, preparation, and transcription devices; data communication terminal devices; punched card equipment; and other data processing or communications equipment that may result from this solicitation not requiring the full 128-character set of the Federal Code for Information Interchange, FIPS PUB 1, must conform to one of the approved character Subsets of the Standard Code for Information Interchange, FIPS PUB 15. Printers of the "chain" or "train" or other replaceable symbol technology may also be provided with optional subsets having a different number of characters than those specified in FIPS PUB 15 in order to increase the printer's repertoire of symbols or the printer's speed as required for local use, provided the ability to interchange information by the selected character subset (FIPS PUB 15) is retained in the data processing system.

§101-36.1304-8 FIPS PUB 25, Recorded Magnetic Tape for Information Interchange (1600 CPI, Phase Encoded).

(a) FIPS PUB 25 specifies the recorded characteristics of 9-track digital 1/2-inch-wide magnetic computer tape, including the data format for implementing the Federal Standard Code for Information Interchange at the recording density of 1600 characters per inch (CPI). (With one exception that is cited in FIPS PUB 25, technical specifications of the standard are contained in American National Standard X3.39-1973, Recorded Magnetic Tape for Information Interchange (1600 CPI, PE).)

(b) The standard terminology for use in solicitation documents is:

All 9-track digital magnetic tape recording and reproducing equipment resulting from this solicitation and employing 1/2-inch-wide tape at the recording density of 1600 characters per inch (CPI, phase encoded), including associated programs, shall provide the capability to accept and generate recorded tapes in compliance with the requirements set forth in FIPS PUB 25.

§101-36.1304-9 FIPS PUB 26, One-Inch Perforated Paper Tape for Information Interchange.

(a) FIPS PUB 26 specifies the physical dimensions and tolerances of 1-inch-wide paper tape, including the size and location of the perforations used for recording information. (Technical specifications of the standard are contained in American National Standard X3.18-1974, One-Inch Perforated Paper Tape for Information Interchange.)

(b) The standard terminology for use in solicitation documents is:

All 1-inch-wide perforated paper tape and related 8-channel paper tape punch and reading equipment which result from this solicitation and are utilized in Federal information processing systems, communication systems, and associated terminals employing perforated paper tape equipment shall provide the capability to accept and generate tapes in compliance with the requirements set forth in FIPS PUB 26.

§101-36.1304-10 FIPS PUB 27, Take-up Reels for One-Inch Perforated Tape for Information Interchange.

(a) FIPS PUB 27 specifies the physical dimensions of paper tape take-up (or storage) reels with either fixed or separate flanges. The two types of reels specified differ in the size and shape of the drive hub, but both are intended for use with 1-inch perforated paper tape devices. (Technical specifications of the standard are included in FIPS PUB 27.)

(b) The standard terminology for use in solicitation documents is:

All 1-inch perforated tape takeup reels and related devices employing such reels, including paper tape readers, punches, and related tape handling equipment, which result from this solicitation and are used in Federal information processing systems and associated equipment employing such devices, shall provide the capability to accept one of the two types of reels specified in FIPS PUB 27.

§101-36.1304-11 FIPS PUB 32, Optical Character Recognition Character Sets.

(a) FIPS PUB 32 provides the description, scope, and identification for different character sets (OCR-A and OCR-B) to be used in the application of Optical Character Recognition (OCR) systems. (Technical specifications of the standard are contained in American National Standard X3.49-1975, Character Set for Optional Character Recognition (OCR-B).)

(b) The standard terminology for use in solicitation documents is:

All applicable Optical Character Recognition (OCR) equipment or services resulting from this solicitation must comply with the provisions of FIPS PUB 32. Applicable OCR equipment also includes data input devices such as typewriters, line printers, and CRT displays. Applicable services include data preparation and processing of information represented in OCR form.

§101-36.1304-12 FIPS PUB 33, Character Set for Handprinting.

(a) FIPS PUB 33 announces the adoption of the American National Standard X3.45-1974, Character Set for Handprinting, as a Federal standard. The standard provides the description, scope, and application rules for a character set for handprinting. (Technical specifications of the standard are contained in American National Standard X3.45-1974, Character Set for Handprinting.)

(b) The standard terminology for use in solicitation documents is:

All applicable Optical Character Recognition (OCR) equipment or services which result from this solicitation and which are capable of reading handprinted material must comply with FIPS PUB 33. The applicable services include data preparation and processing of information represented in OCR form.

§101-36.1304-13 FIPS PUB 35, Code Extension Techniques in 7 or 8 Bits.

(a) FIPS PUB 35 specifies methods of extending the 7-bit code of the Standard Code for Information Interchange (FIPS PUB 1/ASCII), remaining in a 7-bit environment or increasing to an 8-bit environment, building upon the structure of ASCII to describe various means of extending the control

and graphic sets of code. FIPS PUB 35 describes techniques for constructing codes related to ASCII to allow application-dependent usage without preventing the interchangeability of the data, and also describes 8-bit codes for general information interchange in which ASCII is a subset. (Technical specifications are contained in American National Standard X3.41-1974, Code Extension Techniques for Use with the 7-Bit Coded Character Set of the American National Standard Code for Information Interchange.)

(b) The standard terminology for use in solicitation documents is:

All coded character sets offered as a result of this solicitation which require control function and/or graphic symbols that are not included in the 128 characters of ASCII will be implemented through the use of the code extension methods and techniques as described in FIPS PUB 35.

§101-36.1304-14 FIPS PUB 36, Graphic Representation of the Control Characters of ASCII (FIPS 1).

(a) FIPS PUB 36 specifies graphical representation for the 34 characters of ASCII (FIPS PUB 1) for which a graphic representation is not indicated in FIPS PUB 1. Graphic representations are given for the 32 control functions of column 0 and 1 and for the characters "space" and "delete." Two forms of graphical representation for each of the 34 characters are provided: a pictorial symbol and a 2-letter alpha-numeric code. (Technical specifications are contained in American National Standard X3.32-1973, Graphic Representation of the Control Characters of American National Standard Code for Information Interchange.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment that may result from this solicitation that prints or displays graphic representations of any or all of the control characters of ASCII (FIPS PUB 1) or of the characters "space" or "delete" must comply with the requirements set forth in FIPS PUB 36. This standard also applies to equipment that prints these graphic representations on media such as perforated tape, punched cards, or listing.

§101-36.1304-15 FIPS PUB 46, Data Encryption Standard (DES)

(a) FIPS PUB 46 specifies an algorithm to be implemented in computer or related data communication devices using hardware (not software) technology. This standard shall be used by Federal agencies for the cryptographic protection of computer data when:

(1) A department or agency decides that cryptographic protection is required; and

(2) The data are not classified according to the National Security Act 1947, as amended; or the Atomic Energy Act of 1954, as amended.

(b) Federal agencies using cryptographic devices for protecting data classified according to either the National Security Act or the Atomic Energy Act can use these devices for protecting unclassified data in lieu of the standard.

(c) Technical specifications are included with FIPS PUB 46.

(d) The standard terminology for use in solicitation documents is:

In the event that a data encryption requirement is specified elsewhere in this solicitation, such encryption will be accomplished in accordance with FIPS PUB 46. Implementations of the standard embodied in products or services offered as a result of this solicitation that are asserted to have an encryption capability in conformance with FIPS PUB 46 must have the capability validated by the National Bureau of Standards prior to being proposed. Arrangements for validation may be made with the Systems and Software Division, National Bureau of Standards, Washington, D.C. 20234.

§101-36.1304-16 FIPS PUB 50, Recorded Magnetic Tape for Information Interchange, 6250 CPI (246 CPMM), Group Coded Recording.

(a) FIPS PUB 50 specifies the recording characteristics of 9-track, 1/2-inch-wide (12.7 mm) magnetic computer tape, including the format for implementing the Standard Code for Information Interchange (FIPS PUB 1/ASCII) at the recording density of 6250 characters per inch (246 characters per millimeter). (FIPS PUB 50 adopts American National Standard X3.54-1976, Recorded Magnetic Tape for Information Interchange (6250 CPI, Group Coded Recording), with one exception - paragraph 5.4.3. of X3.54-1976 should read: "Bit Z shall be zero or treated as a bit of higher order than the ASCII bits.")

(b) The standard terminology to be used in solicitation documents is:

All applicable digital magnetic tape recording and reproducing equipment which results from this solicitation and employs 1/2-inch-wide (12.7 mm) magnetic computer tape at the recording density of 6250 characters per inch (246 characters per millimeter) group-coded recording, including associated programs, shall provide the capability to accept and generate recorded tape in compliance with the requirements set forth in FIPS PUB 50.

§101-36.1304-17 FIPS PUB 51, Magnetic Tape Cassettes for Information Interchange (3.810 mm (0.150 in) Tape at 32 BPMM (800 BPI) , PE).

(a) FIPS PUB 51 specifies the physical, magnetic, and recording characteristics of a 3.810 mm (0.150 in) magnetic tape cassette in order to provide for data interchange between information processing systems at a recording density of 32 bits per millimeter (800 bits per inch) using phase encoding techniques. (FIPS PUB 51 adopts technical specifications contained in American National Standard X3.48-1977, Magnetic Tape Cassettes for Information Interchange (3.810 mm (0.150 in) Tape at 32 BPMM (800 BPI) , PE).

(b) The standard terminology to be used in solicitation documents is:

All magnetic tape cassette recording and reproducing equipment which results from this solicitation and employs 3.810 mm (0.150 in) wide magnetic tape at the recording density of 32 bits per millimeter (800 bits per inch) using phase encoding techniques, including associated programs, shall provide the capability to accept and generate recorded tapes in compliance with the requirements set forth in FIPS PUB 51.

§101-36.1304-18 FIPS PUB 52, Recorded Magnetic Tape Cartridge for Information Interchange, 4-Track, 6.30 mm (0.250 in), 63 BPMM (1600 BPI) Phase Encoded.

(a) FIPS PUB 52 specifies the recorded characteristics for a 6.30 mm (0.250 in) wide magnetic tape cartridge with either one, two, or four serial data tracks in order to provide for data interchange between information processing systems, communication systems, and associated equipment at a recording density of 63 bits per millimeter (1600 bits per inch) using phase encoding recording techniques. This standard is one of a series of Federal standards implementing the Federal Standard Code for Information Interchange (FIPS PUB 1) on magnetic tape media. (With one exception as cited in FIPS PUB 52, technical specifications of the standard are contained in American National Standard X3.56-1977, Recorded Magnetic Tape Cartridge for Information Interchange, 4-Track,6.30 mm (0.250 in), 63 PBMM (1600 BPI) Phase Encoded.

(b) The standard terminology for use in solicitation documents is:

All magnetic tape cartridge recording and reproducing equipment which results from this solicitation and employs 6.30 millimeter (0.250 inch) wide magnetic tape with one, two, or four independent serial data tracks at recording densities of 63 bits per millimeter (1600 bits per inch) using phase encoding techniques, including associated software, shall provide the capability to accept and generate recorded magnetic tape cartridges in the code and format as specified in FIPS PUB 1 and FIPS PUB 52.

§101-36.1304-19 FIPS PUB 54, Computer Output Microform (COM) Formats and Reduction Ratios, 16 mm and 105 mm.

(a) FIPS PUB 54 specifies the image arrangement, size, and reduction for 16 mm and 105 mm microforms generated by computer output microfilmers. It is limited to systems using business-oriented fonts similar to line printer output. The standard does not cover engineering drawings or microphotocomposition using complex graphics or graphic arts fonts and formats, nor does it cover special systems using two-step reduction techniques. (Technical specifications of the standard are included with FIPS PUB 12.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment or services that may result from this solicitation that produce computer generated microforms using plain type faces must be in compliance with FIPS PUB 54.

§101-36.1304-20 FIPS PUB 60, Input/Out (I/O) Channel Interface.

(a) FIPS PUB 60 defines the functional, electrical, and mechanical interface specifications for connecting computer peripheral equipment as part of automatic data processing (ADP) systems. This standard, with a companion standard for power control (FIPS PUB 61), defines the hardware characteristics for the I/O channel level interface. Two other closely related standards specify how this interface is to be used for the connection of particular classes of peripheral devices. These standards are FIPS PUB 62, Operational Specifications for Magnetic Tape Subsystems, and FIPS PUB 63, Operational Specifictions for Rotating Mass Storage Subsystems.

(b) This standard provides that FIPS PUB 60 is applicable to the acquisition of all ADP systems and peripheral subsystems acquired by the Federal Government except those minicomputer , microcomputer, and other small-scale systems that are specifically excluded by the National Bureau

of Standards (NBS). A list of these currently excluded systems and the current criteria for exclusion is developed, maintained, and periodically distributed to all Federal agencies by NBS and is publicly available from NBS upon request. The standard contains additional applicability, implementation, and waiver provisions. If waivers are applicable to a solicitation, the solicitation document shall so state. Questions regarding FIPS PUBS 60, 61, 62, or 63 may be directed to the System Component Division, A-219 Technology, National Bureau of Standards, Washington, D.C. 20234 (telephone 310-921-2705).

(c) The correct operation of all interfaces required to conform to FIPS PUB 60 must be verified by NBS before the acceptance of all applicable ADP equipment. A list of equipment having verified interfaces will be established, maintained, and periodically distributed to all Federal agencies by NBS and will be available from NBS upon request. This list will identify each interface verified and the conditions of verification. The solicitation document shall require offerors to state the status of verification for those interfaces for which conformance is required.

(d) The standard terminology for use in solicitation documents is:

Unless otherwise excluded as specified in FIPS PUB 60, or unless a waiver is granted following the waiver procedures specified in FIPS PUB 60, ADP systems and peripheral subsystems that may result from this solicitation, and for which operational specifications FIPS PUBS (such as FIPS PUBS 62 and 63) have been issued and are in effect, must conform to FIPS PUB 60. The correct operation of these systems' conforming interfaces must be verified before the acceptance of all applicable ADP equipment in accordance with FPMR 101-36.1304-20(c). Arrangements for verification may be made according to procedures issued by the National Bureau of Standards. These procedures may be obtained by writing the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234, Attention: Verification of I/O Channel Level Interface Standards. The Government may, at its option, apply instrumentation and test equipment at any interface required to conform with FIPS PUB 60 before the acceptance of these ADP systems to ensure conformance with FIPS PUB 60. Waivers applicable to the requirements of this solicitation are identified elsewhere in this solicitation document.

Note.--NBS published verification procedures regarding FIPS PUBS 60, 61, 62, and 63 on December 11, 1979 (44 FR 71444-71445) and a verification procedure checklist on February 27, 1980 (45 FR 12862).

§101-36.1304-21 FIPS PUB 61, Channel Level Power Control Interface.

(a) FIPS PUB 61 defines the functional, electrical, and mechanical interface specifications for a power control interface for use in connecting computer peripheral equipment as a part of ADP systems. This standard, with a companion standard for I/O Channel Interface (FIPS PUB 60), defines the hardware characteristics for the I/O channel level interface. This standard provides that FIPS PUB 61 is applicable whenever use of FIPS PUB 60 is required. If waivers are applicable to a solicitation, the solicitation document shall so state.

(b) The correct operation of all interfaces required to conform to FIPS Pub 61 must be verified by NBS before the acceptance of all applicable ADP equipment. A list of equipment having verified interfaces will be established, maintained, and periodically distributed by NBS and will be available from NBS upon request. This list will identify each interface

verified and the conditions of verification. The solicitation document shall require offerors to state the status of verification for those interfaces for which conformance is required.

(c) The standard terminology for use in solicitation documents is:

Unless otherwise excluded as spedified in FIPS PUB 61 by reference to FIPS PUB 60 or unless a waiver is granted following the waiver procedures specified in FIPS PUB 61, ADP systems and peripheral subsystems that may result from this solicitation, and for which operational specifications FIPS PUBS (such as FIPS PUBS 62 and 63) have been issued and are in effect, must conform to FIPS PUB 61. The correct operation of these systems' conforming interfaces must be verified before the acceptance of all applicable ADP equipment in accordance with FPMR 101-36.1304-21(b)k. Arrangements for verification may be made according to procedures issued by NBS. These procedures may be obtained by writing the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234, Attention: Verification of I/O Channel Level Interface Standards. The Government may, at its option, apply instrumentation and test equipment at any interface required to conform to FIPS PUB 61 before the acceptance of these ADP systems to ensure conformance with FIPS PUB 61. Waivers applicable to the requirements of this solicitation are identified elsewhere in this solicitation document.

§101-36.1304-22 FIPS PUB 62, Operational Specifications for Magnetic Tape Subsystems.

(a) FIPS PUB 62 defines the peripheral device dependent operational interface specifications for connecting magnetic tape equipment as a part of ADP systems. It is to be used with FIPS PUB 60, I/O Channel Interace, and FIPS PUB 61, Channel Level Power Control Interface. This standard, with FIPS PUB 60 and 61, provides for full plug-to-plug interchangeability of magnetic tape equipment as a part of ADP systems. This standard provides that FIPS PUB 62 is applicable to the acquisition of all magnetic tape equipment whenever the use of FIPS PUB 60 is required. If waivers are applicable to a solicitation, the solicitation document shall so state.

(b) The correct operation of all interfaces required to conform to FIPS PUB 62 must be verified by NBS before the acceptance of all applicable ADP equipment. A list of equipment having verified interfaces will be established, maintained, and periodically distributed to all Federal agencies by NBS and will be available from NBS upon request. This list will identify each interface verified and the conditions of verification. The solicitation document shall require offerors to state the status of verification for those interfaces for which conformance is required.

(c) The standard terminology for use in solicitation documents is:

Unless otherwise excluded as specified in FIPS PUB 62 by reference to FIPS PUB 60 or unless a waiver is granted following the procedures specified in FIPS PUB 62, ADP systems and magnetic tape subsystems that may result from this solicitation must conform to FIPS PUB 62. The correct operation of these systems' conforming interfaces must be verified before the acceptance of all applicable ADP equipment in accordance with FPMR 101-36.1304-22(b). Arrangement for verification may be made according to procedures issued by NBS. These procedures may be obtained by writing the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234, Attention: Verification of I/O Channel Level Interface Standards. The Government may, at its option, apply instrumentation and test equipment at any interface required to conform to

FIPS PUB 61 before the acceptance of these ADP systems to ensure conformance with FIPS PUB 62. Waivers applicable to the requirements of this solicitation are identified elsewhere in this solicitation document.

§101-36.1304-23 FIPS PUB 63, Operational Specifications for Rotating Mass Storage Subsystems.

(a) FIPS PUB 63 defines the peripheral device dependent operational interface specifications for connecting rotating mass storage subsystems, such as magnetic disk equipment, as a part of ADP systems. It is to be used with FIPS PUB 60, I/O Channel Interface, and FIPS PUB 61, Channel Level Power Control Interface. This standard, with FIPS PUBS 60 and 61, provides for full plug-to-plug interchangeability of rotating mass storage equipment as a part of ADP systems. This standard provides that FIPS PUB 63 is applicable to the acquisition of all magnetic disk equipment whenever the use of FIPS PUB 60 is required. If waivers are applicable to a solicitation, the solicitation document shall so state.

(b) The correct operation of all interfaces required to conform to FIPS 63 must be verified by NBS before the acceptance of all applicable ADP equipment. A list of equipment having verified interfaces will be established, maintained, and periodically distributed to all Federal agencies by NBS and will be available from NBS upon request. This list will identify each interface verified and the conditions of verification. The solicitation document shall require offerors to state the status of verification for those interfaces for which conformance is required.

(c) The standard terminology for use in solicitation documents is:

Unless otherwise excluded as specified in FIPS PUB 63 by reference to FIPS PUB 60 or unless a waiver is granted following the waiver procedures specified in FIPS PUB 63, ADP systems and rotating mass storage subsystems that may result from this solicitation must conform to FIPS PUB 63. The correct operation of these systems' conforming interfaces must be verified before the acceptance of all applicable ADP equipment in accordance with FPMR 101-36.1304-23(b). Arrangements for verification may be made according to procedures issued by NBS. These procedures may be obtained by writing the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234, Attention: Verification of Operational Specifications for Rotating Mass Storage Subsystems. The Government may, at its option, apply instrumentation and test equipment at any interface required to conform to FIPS PUB 63 before the acceptance of these ADP systems to ensure conformance with FIPS PUB 63. Waivers applicable to the requirements of this solicitation are identified elsewhere in this solicitation document.

§101-36.1305 Software standards.

This section provides standard terminology for use in solicitation documents in the areas of standardization listed in §101-36.1303-3.

§101-36.1305-1 FIPS PUB 21-1, Federal Standard COBOL.

(a) FIPS PUB 21-1 specifies the use of the American National Standard Programming Language COBOL X3.23-1974 as the Federal Standard COBOL. The purpose of FIPS 21-1 is to promote a high degree of interchangeability of programs for use on a wide variety of information processing systems. All COBOL compilers brought into the Federal Government inventory and those

used to develop computer programs for the Government when providing programming services must be validated in accordance with paragraph (c).

(b) The standard terminology for use in solicitation documents is:

ACQUISITION OF COBOL COMPILERS

COBOL compilers offered as a result of the requirements set forth in this solicitation will be identified as implementing all of the language elements of at least one of the levels of Federal Standard COBOL as specified in FIPS PUB 21-1. Implementation must provide a facility for the user to optionally specify a level of Federal Standard COBOL for monitoring the source program at compile time. Monitoring may be specified for any level at or below the highest level for which a compiler is implemented and will consist of an analysis of the syntax used in a source program against the syntax included in the level specified for monitoring. Any syntax not conforming to the specified level will be identified through a diagnostic message in the source program listing. The diagnostic message will contain at least the identification of the source program line number for each nonconforming syntax and identify the level of Federal Standard COBOL that supports the syntax or indicate that the syntax is nonstandard COBOL.

ACQUISITION OF COBOL PROGRAMS AND/OR PROGRAMING SERVICES

Business-oriented computer application programs (i.e., those applications or programs that emphasize the manipulation of characters, files, and input/output as contrasted with those concerned primarily with computation of numeric values) offered or prepared as a result of the requirements set forth in this solicitation will be written using one of the levels of Federal Standard COBOL as defined in FIPS PUB 21-1 including optional language elements, if any, as specified herein. If services provided include compilation(s), compilers used to perform these services shall be validated in accordance with Federal Property Management Regulations (FPMR) 101-36.105-1(a).

(c) COBOL compilers that are asserted to conform with one or more levels specified in FIPS PUB 21-1 and are offered to the Federal Government for purchase or lease and those used to develop computer programs when providing programming services or compilations shall be validated. The term "validation" as used in this section is the process of testing a given COBOL compiler against predetermined conditions and specifying which, if any, conditions are not met.

(1) COBOL compilers which are offered or used by vendors as a result of requirements set forth by Federal agencies in solicitations must implement the language elements of a designated level of the Federal Standard COBOL. To confirm that an implementation meets the specifications of the designated level of the Federal Standard COBOL, test routines have been developed and approved for use in testing COBOL compilers. These routines are known as the COBOL Compiler Validation System (CCVS). A Federal Compiler Testing Center (FCTC) operated by the General Services Administration provides a validating service for Federal agencies.

(2) The test results for a COBOL compiler shall be used by a Federal agency to confirm that, insofar as the CCVS tests the language elements included in a designated level of Federal Standard COBOL, the compiler meets the specifications of that level of standard. When an agency has indicated a waiver to a Federal Standard COBOL specification in a

solicitation, only the portions of the language that have been waived are excluded from the validation requirements.

(3) Validations will be conducted annually for each requesting vendor as specified in the official Compiler Validation Procedures prepared by the Federal Compiler Testing Center (FCTC). (Recertification of a previous annual validation may be substituted if no errors were identified during that previous annual validation and if no changes have been made to the compiler, its supporting system software, or the CCVS in the interim.) This annual validation process is intended to reduce or eliminate the need for separate validations associated with individual agency procurements.

(4) Request for and questions on validations should be sent to: General Services Administration (CFT), Federal Compiler Testing Center, Suite 1100, 5203 Leesburg Pike, Falls Church, VA 22041.

(5) When a request for validation services requires that compiler testing be performed, the requester is responsible for providing the necessary test facilities.

(6) In response to a request for validation service, the FCTC will conduct a validation test using the CCVS and will provide a Validation Summary Report (VSR) summarizing the test results.

(7) Validation is performed on a cost-reimbursable basis. The FCTC will send the requester an estimate of validation costs for approval before beginning the validation process.

(8) Unresolved questions and/or any ambiguities that arise during compiler testing and are identified by the FCTC or by the requester shall be referred to the National Bureau of Standards in accordance with FIPS PUB 29.

(d) The standard terminology for use in solicitation documents is:

VALIDATION OF COBOL COMPILERS

In addition to the specified mandatory COBOL compiler requirements stated in the specification portion of this solicitation and those compilers used to develop programs when providing services, all COBOL compilers brought into the Federal inventory as a result of this solicitation, the most recent release of which has not been previously tested, must be tested using the official COBOL Compiler Validation System (CCVS). Validation shall be in accordance with Federal Property Management Regulation (FPMR) 101-36.1305-1(c). The results of the validation shall be used to confirm that the compiler meets the specified requirements of the designated level of FIPS PUB 21-1, Federal Standard COBOL. To be considered responsive, the vendor shall:

(i) Certify in the proposal that all COBOL compilers offered in response to this solicitation have been submitted for validation as set forth in FPMR 101-36.1305-1(c).

(ii) Agree to correct all deviations from the standard reflected in the Validation Summary Report (VSR) not previously covered by a waiver. All deviations must be corrected within 12 months from the date of contract award unless a shorter period is specified elsewhere in this solicitation. If an interpretation of the standard is required that will invoke the

procedures set forth in FIPS PUB 29, such requests for interpretations will be made within 30 calendar days after contract award.

Any corrections that are required as a result of decisions made under the procedures of FIPS PUB 29 will be completed within 12 months of the date of formal notification of the interpretation to the contractor. Failure to make required corrections within the time provisions set forth above shall be deemed a failure to deliver required software. The liquidated damages as specified for failure to deliver either operating system or other software shall apply. In addition, such failure falls within the purview of the default clause. If the required corrections are not made within the time provisions specified above, subsequent proposals submitted to the Government offering the deficient COBOL compilers or subsequent uncorrected versions thereto shall be considered nonresponsive.

§101-36.1305-2 FIPS PUB 24, Flowchart Symbols and Their Usage in Information Processing.

(a) FIPS PUB 24 establishes standard flowchart symbols and specifies their use in the preparation of flowcharts in documenting information processing systems. (Technical specifications of the standard are not included with FIPS PUB 24.)

(b) The standard terminology for use in solicitation documents is:

All new information processing system documentation involving the use of flowcharts that may result from this solicitation document must comply with FIPS PUB 24.

§101-36.1305-3 FIPS PUB 30, Software Summary for Describing Computer Programs and Automated Data Systems.

(a) FIPS PUB 30 provides for the use of Standard Form 185, Federal Information Processing Standard Software Summary, and the instructions for describing computer programs and/or automated data systems for identification purposes. (Copies of SF-185 are available as a GSA Federal supply stock item FSN 7540-118-8541.)

(b) The standard terminology for use in solicitation documents is:

All documentation of computer programs and/or automated data systems that results from this solicitation must include completed SF-185 summaries as described by FIPS PUB 30.

§101-36.1305-4 FIPS PUB 53, Transmittal Form for Describing Computer Magnetic Tape File Properties.

(a) FIPS PUB 53 provides for the use of Standard Form 277, Computer Magnetic Tape File Properties, together with the instructions for providing the necessary information on the form. The form is to be used by Federal agencies to document the physical properties and characteristics of a recorded magnetic tape file needed by the receiving agency to process the tape. (Technical specifications of the standard are contained in FIPS PUB 53.)

(b) The standard terminology for use in solicitation documents is:

All magnetic tape used to transmit coded information to the Federal

Government as a result of this solicitation must include completed Standard Forms 277 describing magnetic tape file properties as set forth in FIPS PUB 53.

§101-36.1306 Applications standards.

This §101-36.1306 is reserved for future reference to FIPS PUBS and to standard terminology for use in solicitation documents in the areas of standardization listed in §101-36.1303-4.

§101-36.1307 Data standards.

This section provides standard terminology for use in solicitation documents in the areas of standardization listed in §101-36.1303-5.

§101-36.1307-1 FIPS PUBS applicable to the interchange of machine-processable data between and among agencies.

(a) Data standards facilitate the authorized interchange of data among Federal ADP users and the collection and dissemination of data with State and local governments, industry, and the public. Agencies are also encouraged to use the approved data standards in their data systems when such use contributes to operational benefits, efficiency, or economy. (Technical specifications of the data standards identified in this §101-36.1307-1(b) are included in each FIPS PUB with the exception of FIPS PUB 9, Congressional Districts of the United States.)

(b) The standard terminology for use in solicitation documents is: All application programs (software and machine sensible data) resulting from this solicitation that have been identified as those that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement the following applicable approved Federal Information Processing Standards (FIPS):

FIPS PUB 4	Calendar Date.
FIPS PUB 5-1	States and Outlying Areas of the United States.
FIPS PUB 6-3	Counties and County Equivalents of the States of the United States.
FIPS PUB 8-4	Standard Metropolitan Statistical Areas.
FIPS PUB 9	Congressional Districts of the United States.
FIPS PUB 10-2	Countries, Dependencies and Areas of Special Sovereignty.
FIPS PUB 58	Representations of Local Time of the Day for Information Interchange.
FIPS PUB 59	Representations of Universal Time, Local Time Differentials, and United States Time Zone References for Information Interchange.
FIPS PUB 66	Standard Industrial Classification (SIC) Codes.

§101-36.1308 Federal Telecommunication Standards (FED-STD).

This section provides the standard terminology for use in solicitation documents applicable to Federal Telecommunication Standards.

§101-36.1308-1 FED-STD 1002, Time and Frequency Reference Information in Telecommunication Systems.

(a) FED-STD 1002 requires that telecommunication facilities and systems of the Federal Government use time and frequency reference information based upon coordinated universal time (UTC).

(b) The standard terminology for use in solicitation documents is:

All applicable telecommunication facilities and systems that are offered or used as a result of this solicitation shall be referenced to the time and frequency standard specified in FED-STD 1002.

§101-36.1308-2 FED-STD 1005, Coding and Modulation Requirements for Nondiversity 2400 Bit/Second Modems.

(a) FED-STD 1005 establishes the coding and modulation requirements for 2400 bit per second modems owned or leased by the Federal Government for use over analog transmission channels other than those derived from high-frequency radio facilities.

(b) The standard terminology for use in solicitation documents is:

All nondiversity 2400 bit per second modems that are offered or used as a result of this solicitation and are to be used on 4kHz channels derived from either switched networks or dedicated lines must comply with FED-STD 1005.

§101-36.1308-3 FED-STD 1006, Coding and Modulation Requirements for 4800 Bit/Second Modems.

(a) FED-STD 1006 requires that all Federal departments and agencies shall comply with the standard in the design and procurement of telecommunication systems and equipment having a requirement for 4800 bit per second modems used with nominal 4kHz analog channels.

(b) The standard terminology for use in solicitation documents is:

All 4800 bit per second modems (and equipment containing 4800 bit per second modems) that may be proposed as a result of this solicitation for use with nominal 4kHz analog channels must comply with FED-STD 1006.

§101-36.1309 Joint FIPS/FED-STD.

This section provides standard terminology for use in solicitation documents applicable to Joint Federal Information Processing Standards and Federal Telecommunication Standards.

§101-36.1309-1 FIPS PUB 37/FED-STD 1001, Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communication Equipment.

(a) FIPS PUB 37/FED-STD 1001 establishes signaling rate requirements for data terminal and data processing equipment which is (1) employed with synchronous data communication equipment and (2) designed to operate on binary encoded information over wideband communication channels having greater bandwidth than the normal 4kHz bandwidth commonly used in analog

voice transmission. (Technical specifications of the standard are contained in American National Standard X3.36-1975, Synchronous High Speed Data Signaling Rates Between Data Terminal Equipment and Data Communication Equipment.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment or services resulting from this solicitation that are employed with synchronous data communication equipment designed to operate on binary coded information over wideband communication channels must comply with FIPS PUB 37/FED-STD 1001.

§101-36.1309-2 FIPS PUB 16-1/FED-STD 1010, Bit Sequencing of the Code for Information Interchange in Serial-By-Bit Data Transmission.

(a) FIPS PUB 16-1/FED-STD 1010 specifies the method of transmitting the Standard Code for Information Interchange, FIPS PUB 1, in serial-by-bit, serial-by-character data transmission. FIPS PUB 16-1 supersedes FIPS PUB 16 and reflects changes necessary to accommodate FIPS PUB 1 when operating in either 7- or 8-bit coded environments. The standard is applicable to the transmission of the standard code in a serial bit stream form at the interface between data terminal equipment and data communication equipment. Data terminal equipment transmitting an approved Federal subset or superset of FIPS PUB 1 must comply with FIPS PUB 16-1/FED-STD 1010. (Technical specifications of the standard are contained in American National Standard X3.15-1976, Bit Sequencing of the American National Standard Code for Information Interchange in Serial-By-Bit Data Transmission.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment or services that may result from this solicitation, transmitting in a serial-by-bit, serial-by-character mode, must be capable of bit sequencing as prescribed in FIPS PUB 16-1/FED-STD 1010 for the transmission of the Standard Code for Information Interchange, FIPS PUB 1, at the interface between data terminal equipment and data communication equipment.

§101-36.1309-3 FIPS PUB 17-1/FED-STD 1011, Character Structure and Character Parity Sense for Serial-By-Bit Data Communication in the Code for Information Interchange.

(a) FIPS PUB 17-1/FED-STD 1011 specifies the method of transmitting the Standard Code for Information Interchange, FIPS PUB 1, in the serial-by-bit, serial-by-character data transmission. FIPS PUB 17-1 supersedes FIPS PUB 17 and reflects changes necessary to accommodate revisions prescribed in FIPS PUB 1 when operating in either 7- or 8-bit coded environments. The standard is applicable at the interface between data terminal equipment and data communication equipment. Data terminal equipment transmitting an approved Federal subset or superset of FIPS PUB 1 must comply with FIPS PUB 17-1/FED-STD 1011. (Technical specifications of the standard are contained in American National Standard X3.16-1976, Character Structure and Character Parity Sense for Serial-By-Bit Data Communication in the American National Standard Code for Information Interchange.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment that may result from this solicitation, transmitting in a serial-by-bit, serial-by-character synchronous or

asynchronous mode, must be capable of transmitting the character structure and sense of character parity prescribed in FIPS PUB 17-1/FED-STD 1011 for the transmission of the Standard Code for Information Interchange, FIPS PUB 1, at the interface between data terminal equipment and data communication equipment.

§101-36.1309-4 FIPS PUB 18-1/FED-STD 1012, Character Structure and Character Parity Sense for Parallel-By-Bit Data Communication in the Code for Information Interchange.

(a) FIPS PUB 18-1/FED-STD 1012 specifies the channel assignment for transmitting the Standard Code for Information Interchange, FIPS PUB 1, in parallel-by-bit, serial-by-character data transmission. FIPS PUB 18-1 supersedes FIPS PUB 18 and reflects changes necessary to accommodate revisions prescribed by FIPS PUB 1 when operating in either 7- or 8-bit coded environments. The standard is applicable at the interface between data terminal equipment and data communication equipment. Data terminal equipment transmitting an approved Federal subset or superset of FIPS PUB 1 must comply with FIPS PUB 18-1/FED-STD 1012. (Technical specifications of the standard are contained in American National Standard X3.25-1976, Character Structure and Character Parity Sense for Parallel-By-Bit Data Communication in the American National Standard Code for Information Interchange.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment or services that may result from this solicitation, transmitting in a parallel-by-bit, serial-by-character mode, must be capable of transmitting the character structure and sense of character parity prescribed in FIPS PUB 18-1/FED-STD 1012, when transmitting the Standard Code for Information Interchange, FIPS PUB 1, or an approved Federal subset (FIPS PUB 15) at the interface between data terminal equipment and data communication equipment.

§101-36.1309-5 FIPS PUB 22-1/FED-STD 1013, Synchronous Signaling Rates Between Data Terminal and Data Communication Equipment.

(a) FIPS PUB 22-1/FED-STD 1013 specifies the rates of transferring binary encoded information in synchronous serial or parallel form between data processing terminal and data communication equipment that employ voice band communication facilities. FIPS PUB 22-1 supersedes FIPS PUB 22 and reflects changes made to the corresponding American National Standard X3.1-1976. (Technical specifications of the standard are contained in American National Standard X3.1-1976, Synchronous Signaling Rates for Data Transmission.)

(b) The standard terminology for use in solicitation documents is:

All applicable equipment or services resulting from this solicitation that are employed in conjunction with synchronous data communication equipment designed to operate on binary encoded information in either serial or parallel fashion over voice grade communication channels of nominal 4kHz bandwidth must comply with FIPS PUB 22-1/FED-STD 1013.

(Sec. 205(c), 63 Stat. 390; (40 U.S.C. 486(c)))

KEY WORD INDEX OF FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATIONS

SECTION 5

This computar-produced Index provides an alphabetical listing of the significant key words contained in the titles of Federal Information Processing Standards Publications. Listed under the key word is the title and number of each publication containing the key word which is highlighted in bold letters. This key word index is intended to provide a convenient reference for users of this guide in identifying standards publications through the association of major terms used in the titles of the publications.

1/4
RECOROED MAGNETIC TAPE CARTRIOGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (**1/4** IN), 63 BPMM (1600 BPI), PHASE ENCOOED — FIPS 52

3.810
MAGNETIC TAPE CASSETTES FOR INFORMATION INTERCHANGE (**3.810** MM 0.150 IN TAPE AND 32 BPMM BOO BPI , PE) — FIPS 51

4-TRACK
RECOROED MAGNETIC TAPE CARTRIOGE FOR INFORMATION INTERCHANGE, **4-TRACK** , 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCODED — FIPS 52

6.30
RECOROED MAGNETIC TAPE CARTRIDGE FOR INFORMATION INTERCHANGE, 4-TRACK, **6.30** MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCODED — FIPS 52

16MM
COMPUTER OUTPUT MICROFORM (COM) FORMATS ANO REOUCTION RATIOS, **16MM** ANO 105 MM — FIPS 54

105
COMPUTER OUTPUT MICROFORM (COM) FORMATS AND REDUCTION RATIOS, 16MM AND **105** MM — FIPS 54

246
RECOROED MAGNETIC TAPE FOR INFORMATION INTERCHANGE, 6250 CPI (**246** CPMM), GROUP COOED RECORDING — FIPS 50

BOO
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (**800** CPI, NRZI) — FIPS 3-1
MAGNETIC TAPE CASSETTES FOR INFORMATION INTERCHANGE (3.B10 MM "0.150 IN" TAPE ANO 32 BPMM **800** BPI", PE) — FIPS 51

1600
RECOROED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (**1600** CPI, PHASE ENCODED) — FIPS 25
RECORDED MAGNETIC TAPE CARTRIOGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (**1600** BPI), PHASE ENCOOED — FIPS 52

1974
COMPUTER SECURITY GUIOELINES FOR IMPLEMENTING THE PRIVACY ACT OF **1974** — FIPS 41

6250
RECOROED MAGNETIC TAPE FOR INFORMATION INTERCHANGE, **6250** CPI (246 CPMM), GROUP CODED RECORDING — FIPS 50

KEY WORD INDEX

ACT
COMPUTER SECURITY GUIDELINES FOR IMPLEMENTING THE PRIVACY **ACT** OF 1974 — FIPS 41

ADP (See also AUTOMATED, AUTOMATIC, DATA and PROCESSING)
GUIDELINES FOR BENCHMARKING **ADP** SYSTEMS IN THE COMPETITIVE PROCUREMENT ENVIRONMENT — FIPS 42-1
GUIDELINE FOR MANAGING MULTIVENDOR PLUG-COMPATIBLE **ADP** SYSTEMS — FIPS 56

AIDS
AIDS FOR COBOL PROGRAM CONVERSION (FIPS PUB 21 TO FIPS PUB 21-1) — FIPS 43

ANALYSIS
GUIDELINE FOR AUTOMATED DATA PROCESSING RISK **ANALYSIS** — FIPS 65

AREAS
STATES AND OUTLYING **AREAS** OF THE UNITED STATES — FIPS 5-1
STANDARD METROPOLITAN STATISTICAL **AREAS** — FIPS 8-4
COUNTRIES, DEPENDENCIES, AND **AREAS** OF SPECIAL SOVEREIGNTY — FIPS 10-2

ASCII (See also STANDARD, CODE, INFORMATION and INTERCHANGE)
GRAPHIC REPRESENTATION OF THE CONTROL CHARACTERS OF **ASCII** — FIPS 36

AUTOMATED, AUTOMATIC
SOFTWARE SUMMARY FOR DESCRIBING COMPUTER PROGRAMS AND **AUTOMATED** DATA SYSTEMS — FIPS 30
GUIDELINES FOR **AUTOMATIC** DATA PROCESSING PHYSICAL SECURITY AND RISK MANAGEMENT — FIPS 31
GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND **AUTOMATED** DATA SYSTEMS — FIPS 38
GUIDELINES ON EVALUATION OF TECHNIQUES FOR **AUTOMATED** PERSONAL IDENTIFICATION — FIPS 48
GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND **AUTOMATED** DATA SYSTEMS FOR THE INITIATION PHASE — FIPS 64
GUIDELINE FOR **AUTOMATIC** DATA PROCESSING RISK ANALYSIS — FIPS 65

BENCHMARKING
GUIDELINES FOR **BENCHMARKING** ADP SYSTEMS IN THE COMPETITIVE PROCUREMENT ENVIRONMENT — FIPS 42-1

BIT, BITS, BPI, BPMM
BIT SEQUENCING OF THE CODE FOR INFORMATION INTERCHANGE IN SERIAL-BY-**BIT** DATA TRANSMISSION — FIPS 16-1

CODE EXTENSION TECHNIQUES IN 7 OR 8 **BITS** — FIPS 35
MAGNETIC TAPE CASSETTES FOR INFORMATION INTERCHANGE (3.810 MM "0.150 IN" TAPE AND 32 **BPMM** 800 **BPI** , PE) — FIPS 51
RECORDED MAGNETIC TAPE CARTRIDGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 **BPMM** (1600 **BPI**) PHASE ENCODED — FIPS 52

CALENDAR
CALENDAR DATE — FIPS 4

CARD, CARDS
RECTANGULAR HOLES IN TWELVE-ROW PUNCHED **CARDS** — FIPS 13
HOLLERITH PUNCHED **CARD** CODE — FIPS 14

CARTRIOGE
RECORDEO MAGNETIC TAPE **CARTRIDGE** FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCODED — FIPS 52

CASSETTES
MAGNETIC TAPE **CASSETTES** FOR INFORMATION INTERCHANGE (3.810 MM 0.150 IN TAPE AND 32 BPMM BOOBPI , PE) — FIPS 51

CHANNEL
I/O **CHANNEL** INTERFACE — FIPS 60
CHANNEL LEVEL POWER CONTROL INTERFACE — FIPS 61

CHARACTER, CHARACTERS
CHARACTER STRUCTURE ANO **CHARACTER** PARITY SENSE FOR SERIAL-BY-BIT OATA COMMUNICATION IN THE COOE FOR INFORMATION INTERCHANGE — FIPS 17-1
CHARACTER STRUCTURE ANO **CHARACTER** PARITY SENSE FOR PARALLEL-BY-BIT OATA COMMUNICATION IN THE COOE FOR INFORMATION INTERCHANGE — FIPS 18-1
OPTICAL **CHARACTER** RECOGNITION **CHARACTER** SETS — FIPS 32
CHARACTER SET FOR HANOPRINTING — FIPS 33
GRAPHIC REPRESENTATION OF THE CONTROL **CHARACTERS** OF ASCII — FIPS 36
GUIOELINE FOR OPTICAL **CHARACTER** RECOGNITION FORMS — FIPS 40

CLASSIFICATION
STANOARO INOUSTRIAL **CLASSIFICATION** (SIC) COOES — FIPS 66

COBOL
COBOL — FIPS 21-1
INTERPRETATION PROCEOURES FOR FEOERAL STANOARO **COBOL** — FIPS 29
AIDS FOR **COBOL** PROGRAM CONVERSION (FIPS PUB 21 TO FIPS PUB 21-1) — FIPS 43
COBOL COOING FORM — FIPS 44
FEOERAL STANOARO **COBOL** POCKET GUIOE — FIPS 47

COOE, COOEO, COOES, COOING
CODE FOR INFORMATION INTERCHANGE — FIPS 1
PERFORATEO TAPE **CODE** FOR INFORMATION INTERCHANGE — FIPS 2
IMPLEMENTATION OF THE **CODE** FOR INFORMATION INTERCHANGE AND RELATED MEOIA STANOAROS — FIPS 7
HOLLERITH PUNCHEO CARO **CODE** — FIPS 14
SUBSETS OF THE STANOARO **CODE** FOR INFORMATION INTERCHANGE — FIPS 15
BIT SEQUENCING OF THE **CODE** FOR INFORMATION INTERCHANGE IN SERIAL-BY-BIT OATA TRANSMISSION — FIPS 16-1
CHARACTER STRUCTURE ANO CHARACTER PARITY SENSE FOR SERIAL-BY-BIT DATA COMMUNICATION IN THE **CODE** FOR INFORMATION INTERCHANGE — FIPS 17-1
CHARACTER STRUCTURE ANO CHARACTER PARITY SENSE FOR PARALLEL-BY-BIT OATA COMMUNICATION IN THE **CODE** FOR INFORMATION INTERCHANGE — FIPS 18-1
GUIOELINES FOR REGISTERING OATA **CODES** — FIPS 19
CODE EXTENSION TECHNIQUES IN 7 OR B BITS — FIPS 35
COBOL **CODING** FORM — FIPS 44
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE, 6250 CPI (246 CPMM), GROUP **CODED** RECORDING — FIPS 50
CODES FOR NAMEO POPULATEO PLACES ANO RELATEO ENTITIES OF THE STATES OF THE UNITEO STATES — FIPS 55
STANDARO INOUSTRIAL CLASSIFICATION (SIC) **CODES** — FIPS 66

KEY WORD INDEX

COM
COMPUTER OUTPUT MICROFORM (**COM**) FORMATS AND REDUCTION RATIOS, 16MM AND 105 MM — FIPS 54

COMMUNICATION, COMMUNICATIONS
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR SERIAL-BY-BIT DATA **COMMUNICATION** IN THE CODE FOR INFORMATION INTERCHANGE — FIPS 17-1
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR PARALLEL-BY-BIT DATA **COMMUNICATION** IN THE CODE FOR INFORMATION INTERCHANGE — FIPS 18-1
SYNCHRONOUS SIGNALING RATES BETWEEN DATA TERMINAL AND DATA **COMMUNICATION** EQUIPMENT — FIPS 22-1
SYNCHRONOUS HIGH SPEED DATA SIGNALING RATES BETWEEN DATA TERMINAL EQUIPMENT AND DATA **COMMUNICATIONS** EQUIPMENT — FIPS 37

COMPETITIVE
GUIDELINES FOR BENCHMARKING ADP SYSTEMS IN THE **COMPETITIVE** PROCUREMENT ENVIRONMENT — FIPS 42-1

COMPUTER
SOFTWARE SUMMARY FOR DESCRIBING **COMPUTER** PROGRAMS AND AUTOMATED DATA SYSTEMS — FIPS 30
GUIDELINES FOR DOCUMENTATION OF **COMPUTER** PROGRAMS AND AUTOMATED DATA SYSTEMS — FIPS 38
GLOSSARY FOR **COMPUTER** SYSTEMS SECURITY — FIPS 39
COMPUTER SECURITY GUIDELINES FOR IMPLEMENTING THE PRIVACY ACT OF 1974 — FIPS 41
GUIDE FOR THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF STANDARDS FOR THE REPRESENTATION OF **COMPUTER** PROCESSED DATA ELEMENTS — FIPS 45
GUIDELINE ON **COMPUTER** PERFORMANCE MANAGEMENT: AN INTRODUCTION — FIPS 49
TRANSMITTAL FORM FOR DESCRIBING **COMPUTER** MAGNETIC TAPE FILE PROPERTIES — FIPS 53
COMPUTER OUTPUT MICROFORM (COM) FORMATS AND REDUCTION RATIOS, 16MM AND 105 MM — FIPS 54
GUIDELINES FOR THE MEASUREMENT OF INTERACTIVE **COMPUTER** SERVICE RESPONSE TIME AND TURNAROUND TIME — FIPS 57
GUIDELINES FOR DOCUMENTATION OF **COMPUTER** PROGRAMS AND AUTOMATED DATA SYSTEMS FOR THE INITIATION PHASE — FIPS 64

CONGRESSIONAL
CONGRESSIONAL DISTRICTS OF THE UNITED STATES — FIPS 9

CONTROL
GRAPHIC REPRESENTATION OF THE **CONTROL** CHARACTERS OF ASCII — FIPS 36
CHANNEL LEVEL POWER **CONTROL** INTERFACE — FIPS 61

CONVERSION
AIDS FOR COBOL PROGRAM **CONVERSION** (FIPS PUB 21 TO FIPS PUB 21-1) — FIPS 43

COUNTRIES
COUNTRIES , DEPENDENCIES, AND AREAS OF SPECIAL SOVEREIGNTY — FIPS 10-2

COUNTY, COUNTIES
COUNTIES AND **COUNTY** EQUIVALENTS OF THE STATES OF THE UNITED STATES — FIPS 6-3

CPI, CPMM
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (800 **CPI** , NRZI) FIPS 3-1
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (1600 **CPI** , PHASE ENCODED) FIPS 25
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE, 6250 **CPI** (246 **CPMM**), GROUP CODED RECORDING FIPS 50

DATA
BIT SEQUENCING OF THE CODE FOR INFORMATION INTERCHANGE IN SERIAL-BY-BIT **DATA** TRANSMISSION FIPS 16-1
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR SERIAL-BY-BIT **DATA** COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE FIPS 17-1
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR PARALLEL-BY-BIT **DATA** COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE FIPS 18-1
GUIDELINES FOR REGISTERING **DATA** CODES FIPS 19
SYNCHRONOUS SIGNALING RATES BETWEEN **DATA** TERMINAL AND **DATA** COMMUNICATION EQUIPMENT FIPS 22-1
STANDARDIZATION OF **DATA** ELEMENTS AND REPRESENTATIONS FIPS 28
SOFTWARE SUMMARY FOR DESCRIBING COMPUTER PROGRAMS AND AUTOMATED **DATA** SYSTEMS FIPS 30
GUIDELINES FOR AUTOMATIC **DATA** PROCESSING PHYSICAL SECURITY AND RISK MANAGEMENT FIPS 31
SYNCHRONOUS HIGH SPEED **DATA** SIGNALING RATES BETWEEN **DATA** TERMINAL EQUIPMENT AND **DATA** COMMUNICATIONS EQUIPMENT FIPS 37
GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED **DATA** SYSTEMS FIPS 38
GUIDE FOR THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF STANDARDS FOR THE REPRESENTATION OF COMPUTER PROCESSED **DATA** ELEMENTS FIPS 45
DATA ENCRYPTION STANDARD FIPS 46
GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED **DATA** SYSTEMS FOR THE INITIATION PHASE FIPS 64
GUIDELINE FOR AUTOMATIC **DATA** PROCESSING RISK ANALYSIS FIPS 65
GUIDELINE FOR SELECTION OF **DATA** ENTRY EQUIPMENT FIPS 67

DATE
CALENDAR **DATE** FIPS 4

DAY
REPRESENTATIONS OF LOCAL TIME OF THE **DAY** FOR INFORMATION INTERCHANGE FIPS 5B

DEPENDENCIES
COUNTRIES, **DEPENDENCIES** , AND AREAS OF SPECIAL SOVEREIGNTY FIPS 10-2

DESCRIBING, DESCRIPTION
GENERAL **DESCRIPTION** OF THE FEDERAL INFORMATION PROCESSING STANDARDS REGISTER FIPS 0
GUIDELINES FOR **DESCRIBING** INFORMATION INTERCHANGE FORMATS FIPS 20
SOFTWARE SUMMARY FOR **DESCRIBING** COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS FIPS 30
TRANSMITTAL FORM FOR **DESCRIBING** COMPUTER MAGNETIC TAPE FILE PROPERTIES FIPS 53

DEVELOPMENT
GUIDE FOR THE **DEVELOPMENT** , IMPLEMENTATION AND MAINTENANCE OF STANDARDS FOR THE REPRESENTATION OF COMPUTER PROCESSED DATA ELEMENTS FIPS 45

KEY WORD INDEX

DICTIONARY
DICTIONARY FOR INFORMATION PROCESSING — FIPS 11-1

DIFFERENTIALS
REPRESENTATIONS OF UNIVERSAL TIME, LOCAL TIME **DIFFERENTIALS** AND UNITED STATES TIME ZONE REFERENCES FOR INFORMATION INTERCHANGE — FIPS 59

DISTRICTS
CONGRESSIONAL **DISTRICTS** OF THE UNITED STATES — FIPS 9

DOCUMENTATION
GUIDELINES FOR **DOCUMENTATION** OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS — FIPS 38
GUIDELINES FOR **DOCUMENTATION** OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS FOR THE INITIATION PHASE — FIPS 64

ELEMENTS
STANDARDIZATION OF DATA **ELEMENTS** AND REPRESENTATIONS — FIPS 28
GUIDE FOR THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF STANDARDS FOR THE REPRESENTATION OF COMPUTER PROCESSED DATA **ELEMENTS** — FIPS 45

ENCODED
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (1600 CPI, PHASE **ENCODED**) — FIPS 25
RECORDED MAGNETIC TAPE CARTRIDGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI) PHASE **ENCODED** — FIPS 52

ENCRYPTION
DATA **ENCRYPTION** STANDARD — FIPS 46

ENTITIES
CODES FOR NAMED POPULATED PLACES AND RELATED **ENTITIES** OF THE STATES OF THE UNITED STATES — FIPS 55

ENTRY
GUIDELINE FOR SELECTION OF DATA **ENTRY** EQUIPMENT — FIPS 67

ENVIRONMENT
GUIDELINES FOR BENCHMARKING ADP SYSTEMS IN THE COMPETITIVE PROCUREMENT **ENVIRONMENT** — FIPS 42-1

EQUIPMENT
SYNCHRONOUS SIGNALING RATES BETWEEN DATA TERMINAL AND DATA COMMUNICATION **EQUIPMENT** — FIPS 22-1
SYNCHRONOUS HIGH SPEED DATA SIGNALING RATES BETWEEN DATA TERMINAL **EQUIPMENT** AND DATA COMMUNICATIONS **EQUIPMENT** — FIPS 37
GUIDELINE FOR SELECTION OF DATA ENTRY **EQUIPMENT** — FIPS 67

EQUIVALENTS
COUNTIES AND COUNTY **EQUIVALENTS** OF THE STATES OF THE UNITED STATES — FIPS 6-3

EVALUATION
GUIDELINES ON **EVALUATION** OF TECHNIQUES FOR AUTOMATED PERSONAL IDENTIFICATION — FIPS 48

EXTENSION
CODE **EXTENSION** TECHNIQUES IN 7 OR 8 BITS — FIPS 35

FEOERAL
GENERAL DESCRIPTION OF THE **FEDERAL** INFORMATION PROCESSING STANOARDS REGISTER — FIPS 0
OBJECTIVES ANO REQUIREMENTS OF THE **FEDERAL** INFORMATION PROCESSING STANDARDS PROGRAM — FIPS 23
INTERPRETATION PROCEOURES FOR **FEDERAL** STANOARO COBOL — FIPS 29
GUIDE FOR THE USE OF INTERNATIONAL SYSTEM OF UNITS (SI) IN **FEDERAL** INFORMATION PROCESSING STANDAROS PUBLICATIONS — FIPS 34
FEDERAL STANOARO COBOL POCKET GUIDE — FIPS 47

FILE
TRANSMITTAL FORM FOR OESCRIBING COMPUTER MAGNETIC TAPE **FILE** PROPERTIES — FIPS 53

FIPS
GRAPHIC REPRESENTATION OF THE CONTROL CHARACTERS OF ASCII — FIPS 36
AIDS FOR COBOL PROGRAM CONVERSION (**FIPS** PUB 21 TO **FIPS** PUB 21-1) — FIPS 43

FLOWCHART
FLOWCHART SYMBOLS AND THEIR USAGE IN INFORMATION PROCESSING — FIPS 24

FORM, FORMATS, FORMS
GUIDELINES FOR OESCRIBING INFORMATION INTERCHANGE **FORMATS** — FIPS 20
GUIDELINE FOR OPTICAL CHARACTER RECOGNITION **FORMS** — FIPS 40
COBOL COOING **FORM** — FIPS 44
TRANSMITTAL **FORM** FOR OESCRIBING COMPUTER MAGNETIC TAPE FILE PROPERTIES — FIPS 53
COMPUTER OUTPUT MICROFORM (COM) **FORMATS** ANO REOUCTION RATIOS, 16MM AND 105 MM — FIPS 54

GENERAL
GENERAL OESCRIPTION OF THE FEOERAL INFORMATION PROCESSING STANOAROS REGISTER — FIPS 0

GLOSSARY
GLOSSARY FOR COMPUTER SYSTEMS SECURITY — FIPS 39

GRAPHIC
GRAPHIC REPRESENTATION OF THE CONTROL CHARACTERS OF ASCII — FIPS 36

GROUP
RECORDEO MAGNETIC TAPE FOR INFORMATION INTERCHANGE, 6250 CPI (246 CPMM), **GROUP** COOEO RECORDING — FIPS 50

GUIOE, GUIDELINE, GUIOELINES
GUIDELINES FOR REGISTERING OATA COOES — FIPS 19
GUIDELINES FOR OESCRIBING INFORMATION INTERCHANGE FORMATS — FIPS 20
GUIDELINES FOR AUTOMATIC DATA PROCESSING PHYSICAL SECURITY AND RISK MANAGEMENT — FIPS 31
GUIDE FOR THE USE OF INTERNATIONAL SYSTEM OF UNITS (SI) IN FEOERAL INFORMATION PROCESSING STANDAROS PUBLICATIONS — FIPS 34
GUIDELINES FOR OOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS — FIPS 38
GUIDELINE FOR OPTICAL CHARACTER RECOGNITION FORMS — FIPS 40
COMPUTER SECURITY **GUIDELINES** FOR IMPLEMENTING THE PRIVACY ACT OF 1974 — FIPS 41
GUIDELINES FOR BENCHMARKING AOP SYSTEMS IN THE COMPETITIVE PROCUREMENT ENVIRONMENT — FIPS 42-1

GUIDE, GUIOELINE, GUIDELINES (Continued)
GUIDE FOR THE DEVELOPMENT, IMPLEMENTATION ANO MAINTENANCE OF STANOAROS FOR THE REPRESENTATION OF COMPUTER PROCESSEO OATA ELEMENTS FIPS 45
FEOERAL STANOARO COBOL POCKET GUIDE FIPS 47
GUIDELINES ON EVALUATION OF TECHNIQUES FOR AUTOMATED PERSONAL IDENTIFICATION FIPS 48
GUIDELINE ON COMPUTER PERFORMANCE MANAGEMENT: AN INTROOUCTION FIPS 49
GUIDELINE FOR MANAGING MULTIVENOOR PLUG-COMPATIBLE AOP SYSTEMS FIPS 56
GUIDELINES FOR THE MEASUREMENT OF INTERACTIVE COMPUTER SERVICE RESPONSE TIME ANO TURNAROUNO TIME FIPS 57
GUIDELINES FOR OOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATEO DATA SYSTEMS FOR THE INITIATION PHASE FIPS 64
GUIDELINE FOR AUTOMATEO OATA PROCESSING RISK ANALYSIS FIPS 65
GUIDELINE FOR SELECTION OF OATA ENTRY EQUIPMENT FIPS 67

HANDPRINTING
CHARACTER SET FOR HANDPRINTING FIPS 33

HIGH
SYNCHRONOUS HIGH SPEED DATA SIGNALING RATES BETWEEN OATA TERMINAL EQUIPMENT ANO DATA COMMUNICATIONS EQUIPMENT FIPS 37

HOLES
RECTANGULAR HOLES IN TWELVE-ROW PUNCHEO CAROS FIPS 13

HOLLERITH
HOLLERITH PUNCHEO CARO CODE FIPS 14

IOENTIFICATION
GUIOELINES ON EVALUATION OF TECHNIQUES FOR AUTOMATEO PERSONAL IDENTIFICATION FIPS 48

IMPLEMENTATION, IMPLEMENTING
IMPLEMENTATION OF THE COOE FOR INFORMATION INTERCHANGE ANO RELATEO MEOIA STANOAROS FIPS 7
COMPUTER SECURITY GUIOELINES FOR IMPLEMENTING THE PRIVACY ACT OF 1974 FIPS 41
GUIOE FOR THE OEVELOPMENT, IMPLEMENTATION ANO MAINTENANCE OF STANOAROS FOR THE REPRESENTATION OF COMPUTER PROCESSED OATA ELEMENTS FIPS 45

IN (INCH, see also ONE-INCH)
RECOROEO MAGNETIC TAPE CARTRIOGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCOOEO FIPS 52

INOEX
FEOERAL INFORMATION PROCESSING STANOAROS INDEX FIPS 12-2

INOUSTRIAL
STANOARO INDUSTRIAL CLASSIFICATION (SIC) CODES FIPS 66

INFORMATION
GENERAL OESCRIPTION OF THE FEOERAL INFORMATION PROCESSING STANOAROS REGISTER FIPS 0
COOE FOR INFORMATION INTERCHANGE FIPS 1
PERFORATEO TAPE COOE FOR INFORMATION INTERCHANGE FIPS 2

INFORMATION (Continued)
RECORDED MAGNETIC TAPE FOR **INFORMATION** INTERCHANGE (800 CPI, NRZI) FIPS 3-1
IMPLEMENTATION OF THE CODE FOR **INFORMATION** INTERCHANGE AND RELATED MEDIA STANDARDS FIPS 7
DICTIONARY FOR **INFORMATION** PROCESSING FIPS 11-1
FEDERAL **INFORMATION** PROCESSING STANDARDS INDEX FIPS 12-2
SUBSETS OF THE STANDARD CODE FOR **INFORMATION** INTERCHANGE FIPS 15
BIT SEQUENCING OF THE CODE FOR **INFORMATION** INTERCHANGE IN SERIAL-BY-BIT DATA TRANSMISSION FIPS 16-1
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR SERIAL-BY-BIT DATA COMMUNICATION IN THE CODE FOR **INFORMATION** INTERCHANGE FIPS 17-1
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR PARALLEL-BY-BIT DATA COMMUNICATION IN THE CODE FOR **INFORMATION** INTERCHANGE FIPS 18-1
GUIDELINES FOR DESCRIBING **INFORMATION** INTERCHANGE FORMATS FIPS 20
OBJECTIVES AND REQUIREMENTS OF THE FEDERAL **INFORMATION** PROCESSING STANDARDS PROGRAM FIPS 23
FLOWCHART SYMBOLS AND THEIR USAGE IN **INFORMATION** PROCESSING FIPS 24
RECORDED MAGNETIC TAPE FOR **INFORMATION** INTERCHANGE (1600 CPI, PHASE ENCODED) FIPS 25
ONE-INCH PERFORATED PAPER TAPE FOR **INFORMATION** INTERCHANGE FIPS 26
TAKE-UP REELS FOR ONE-INCH PERFORATED TAPE FOR **INFORMATION** INTERCHANGE FIPS 27
GUIDE FOR THE USE OF INTERNATIONAL SYSTEM OF UNITS (SI) IN FEDERAL **INFORMATION** PROCESSING STANDARDS PUBLICATIONS FIPS 34
RECORDED MAGNETIC TAPE FOR **INFORMATION** INTERCHANGE, 6250 CPI (246 CPMM), GROUP CODED RECORDING FIPS 50
MAGNETIC TAPE CASSETTES FOR **INFORMATION** INTERCHANGE (3.810 MM 0.150 IN TAPE AND 32 BPMM 800BPI , PE) FIPS 51
RECORDED MAGNETIC TAPE CARTRIDGE FOR **INFORMATION** INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCODED FIPS 52
REPRESENTATIONS OF LOCAL TIME OF THE DAY FOR **INFORMATION** INTERCHANGE FIPS 58
REPRESENTATIONS OF UNIVERSAL TIME, LOCAL TIME DIFFERENTIALS AND UNITED STATES TIME ZONE REFERENCES FOR **INFORMATION** INTERCHANGE FIPS 59

INITIATION
GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS FOR THE **INITIATION** PHASE FIPS 64

INTERACTIVE
GUIDELINES FOR THE MEASUREMENT OF **INTERACTIVE** COMPUTER SERVICE RESPONSE TIME AND TURNAROUND TIME FIPS 57

INTERCHANGE
CODE FOR INFORMATION **INTERCHANGE** FIPS 1
PERFORATED TAPE CODE FOR INFORMATION **INTERCHANGE** FIPS 2
RECORDED MAGNETIC TAPE FOR INFORMATION **INTERCHANGE** (800 CPI, NRZI) FIPS 3-1
IMPLEMENTATION OF THE CODE FOR INFORMATION **INTERCHANGE** AND RELATED MEDIA STANDARDS FIPS 7
SUBSETS OF THE STANDARD CODE FOR INFORMATION **INTERCHANGE** FIPS 15
BIT SEQUENCING OF THE CODE FOR INFORMATION **INTERCHANGE** IN SERIAL-BY-BIT DATA TRANSMISSION FIPS 16-1

INTERCHANGE (Continued)
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR SERIAL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION **INTERCHANGE** FIPS 17-1
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR PARALLEL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION **INTERCHANGE** FIPS 18-1
GUIDELINES FOR DESCRIBING INFORMATION **INTERCHANGE** FORMATS FIPS 20
RECORDED MAGNETIC TAPE FOR INFORMATION **INTERCHANGE** (1600 CPI, PHASE ENCODED) FIPS 25
ONE-INCH PERFORATED PAPER TAPE FOR INFORMATION **INTERCHANGE** FIPS 26
TAKE-UP REELS FOR ONE-INCH PERFORATED TAPE FOR INFORMATION **INTERCHANGE** FIPS 27
RECORDED MAGNETIC TAPE FOR INFORMATION **INTERCHANGE** , 6250 CPI (246 CPMM), GROUP CODED RECORDING FIPS 50
MAGNETIC TAPE CASSETTES FOR INFORMATION **INTERCHANGE** (3.810 MM 0.150 IN TAPE AND 32 BPMM 800BPI , PE) FIPS 51
RECORDED MAGNETIC TAPE CARTRIDGE FOR INFORMATION **INTERCHANGE** , 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCODED FIPS 52
REPRESENTATIONS OF LOCAL TIME OF THE DAY FOR INFORMATION **INTERCHANGE** FIPS 58
REPRESENTATIONS OF UNIVERSAL TIME, LOCAL TIME DIFFERENTIALS AND UNITED STATES TIME ZONE REFERENCES FOR INFORMATION **INTERCHANGE** FIPS 59

INTERFACE
I/O CHANNEL **INTERFACE** FIPS 60
CHANNEL LEVEL POWER CONTROL **INTERFACE** FIPS 61

INTERNATIONAL
GUIDE FOR THE USE OF **INTERNATIONAL** SYSTEM OF UNITS (SI) IN FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATIONS FIPS 34

INTERPRETATION
INTERPRETATION PROCEDURES FOR FEDERAL STANDARD COBOL FIPS 29

INTRODUCTION
GUIDELINE ON COMPUTER PERFORMANCE MANAGEMENT: AN **INTRODUCTION** FIPS 49

I/O (INPUT/OUTPUT)
I/O CHANNEL INTERFACE FIPS 60

LEVEL
CHANNEL **LEVEL** POWER CONTROL INTERFACE FIPS 61

LOCAL
REPRESENTATIONS OF **LOCAL** TIME OF THE DAY FOR INFORMATION INTERCHANGE FIPS 58
REPRESENTATIONS OF UNIVERSAL TIME, **LOCAL** TIME DIFFERENTIALS AND UNITED STATES TIME ZONE REFERENCES FOR INFORMATION INTERCHANGE FIPS 59

MAGNETIC
RECORDED **MAGNETIC** TAPE FOR INFORMATION INTERCHANGE (800 CPI, NRZI) FIPS 3-1
RECORDED **MAGNETIC** TAPE FOR INFORMATION INTERCHANGE (1600 CPI, PHASE ENCODED) FIPS 25

MAGNETIC (Continued)
RECORDED **MAGNETIC** TAPE FOR INFORMATION INTERCHANGE, 6250 CPI (246 CPMM), GROUP CODED RECORDING — FIPS 50
MAGNETIC TAPE CASSETTES FOR INFORMATION INTERCHANGE (3.810 MM 0.150 IN TAPE AND 32 BPMM 800BPI , PE) — FIPS 51
RECORDED **MAGNETIC** TAPE CARTRIDGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCODED — FIPS 52
TRANSMITTAL FORM FOR DESCRIBING COMPUTER **MAGNETIC** TAPE FILE PROPERTIES — FIPS 53
OPERATIONAL SPECIFICATIONS FOR **MAGNETIC** TAPE SUBSYSTEMS — FIPS 62

MAINTENANCE
GUIDE FOR THE DEVELOPMENT, IMPLEMENTATION AND **MAINTENANCE** OF STANDARDS FOR THE REPRESENTATION OF COMPUTER PROCESSED DATA ELEMENTS — FIPS 45

MANAGEMENT, MANAGING
GUIDELINES FOR AUTOMATIC DATA PROCESSING PHYSICAL SECURITY AND RISK **MANAGEMENT** — FIPS 31
GUIDELINE ON COMPUTER PERFORMANCE **MANAGEMENT** : AN INTRODUCTION — FIPS 49
GUIDELINE FOR **MANAGING** MULTIVENDOR PLUG-COMPATIBLE ADP SYSTEMS — FIPS 56

MASS
OPERATIONAL SPECIFICATIONS FOR ROTATING **MASS** STORAGE SUBSYSTEMS — FIPS 63

MEASUREMENT
GUIDELINES FOR THE **MEASUREMENT** OF INTERACTIVE COMPUTER SERVICE RESPONSE TIME AND TURNAROUND TIME — FIPS 57

MEDIA
IMPLEMENTATION OF THE CODE FOR INFORMATION INTERCHANGE AND RELATED **MEDIA** STANDARDS — FIPS 7

METROPOLITAN
STANDARD **METROPOLITAN** STATISTICAL AREAS — FIPS 8-4

MICROFORM
COMPUTER OUTPUT **MICROFORM** (COM) FORMATS AND REDUCTION RATIOS, 16MM AND 105 MM — FIPS 54

MULTIVENDOR
GUIDELINE FOR MANAGING **MULTIVENDOR** PLUG-COMPATIBLE ADP SYSTEMS — FIPS 56

NAMED
CODES FOR **NAMED** POPULATED PLACES AND RELATED ENTITIES OF THE STATES OF THE UNITED STATES — FIPS 55

NRZI
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (800 CPI, **NRZI**) — FIPS 3-1

OBJECTIVES
OBJECTIVES AND REQUIREMENTS OF THE FEDERAL INFORMATION PROCESSING STANDARDS PROGRAM — FIPS 23

KEY WORD INDEX

ONE-INCH
ONE-INCH PERFORATED PAPER TAPE FOR INFORMATION INTERCHANGE FIPS 26
TAKE-UP REELS FOR ONE-INCH PERFORATED TAPE FOR INFORMATION INTERCHANGE FIPS 27

OPERATIONAL
OPERATIONAL SPECIFICATIONS FOR MAGNETIC TAPE SUBSYSTEMS FIPS 62
OPERATIONAL SPECIFICATIONS FOR ROTATING MASS STORAGE SUBSYSTEMS FIPS 63

OPTICAL
OPTICAL CHARACTER RECOGNITION CHARACTER SETS FIPS 32
GUIDELINE FOR OPTICAL CHARACTER RECOGNITION FORMS FIPS 40

OUTLYING
STATES AND OUTLYING AREAS OF THE UNITED STATES FIPS 5-1

OUTPUT
COMPUTER OUTPUT MICROFORM (COM) FORMATS AND REDUCTION RATIOS, 16MM AND 105 MM FIPS 54

PAPER
ONE-INCH PERFORATED PAPER TAPE FOR INFORMATION INTERCHANGE FIPS 26

PARALLEL-BY-BIT
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR PARALLEL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE FIPS 1B-1

PARITY
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR SERIAL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE FIPS 17-1
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR PARALLEL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE FIPS 18-1

PERFORATED
PERFORATED TAPE CODE FOR INFORMATION INTERCHANGE FIPS 2
ONE-INCH PERFORATED PAPER TAPE FOR INFORMATION INTERCHANGE FIPS 26
TAKE-UP REELS FOR ONE-INCH PERFORATED TAPE FOR INFORMATION INTERCHANGE FIPS 27

PERFORMANCE
GUIDELINE ON COMPUTER PERFORMANCE MANAGEMENT: AN INTRODUCTION FIPS 49

PERSONAL
GUIDELINES ON EVALUATION OF TECHNIQUES FOR AUTOMATED PERSONAL IDENTIFICATION FIPS 48

PHASE
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (1600 CPI, PHASE ENCODED) FIPS 25
RECORDED MAGNETIC TAPE CARTRIDGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCODED FIPS 52
GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS FOR THE INITIATION PHASE FIPS 64

PHYSICAL
GUIDELINES FDR AUTDMATIC OATA PRDCESSING **PHYSICAL** SECURITY AND RISK MANAGEMENT FIPS 31

PLACES
CDDES FOR NAMED PDPULATED **PLACES** AND RELATED ENTITIES DF THE STATES DF THE UNITED STATES FIPS 55

PLUG-CDMPATIBLE
GUIDELINE FOR MANAGING MULTIVENDOR **PLUG-COMPATIBLE** ADP SYSTEMS FIPS 56

PDCKET
FEDERAL STANDARD CDBDL **POCKET** GUIOE FIPS 47

POPULATED
COODES FDR NAMED **POPULATED** PLACES AND RELATEO ENTITIES DF THE STATES DF THE UNITED STATES FIPS 55

POWER
CHANNEL LEVEL **POWER** CONTRDL INTERFACE FIPS 61

PRIVACY
COMPUTER SECURITY GUIDELINES FDR IMPLEMENTING THE **PRIVACY** ACT OF 1974 FIPS 41

PRDCEDURES
INTERPRETATIDN **PROCEDURES** FDR FEOERAL STANDARO CDBDL FIPS 29

PROCESSED, PROCESSING
GENERAL DESCRIPTIDN DF THE FEDERAL INFDRMATION **PROCESSING** STANDARDS REGISTER FIPS D
DICTIDNARY FDR INFORMATIDN **PROCESSING** FIPS 11-1
FEOERAL INFDRMATION **PROCESSING** STANDARDS INDEX FIPS 12-2
DBJECTIVES AND REQUIREMENTS OF THE FEDERAL INFORMATION **PROCESSING** STANDARDS PRDGRAM FIPS 23
FLDWCHART SYMBOLS AND THEIR USAGE IN INFDRMATIDN **PROCESSING** FIPS 24
GUIDELINES FDR AUTDMATIC DATA **PROCESSING** PHYSICAL SECURITY AND RISK MANAGEMENT FIPS 31
GUIDE FOR THE USE OF INTERNATIONAL SYSTEM DF UNITS (SI) IN FEDERAL INFDRMATION **PROCESSING** STANDARDS PUBLICATIDNS FIPS 34
GUIDE FOR THE DEVELDPMENT, IMPLEMENTATION AND MAINTENANCE DF STANDARDS FDR THE REPRESENTATIDN DF CDMPUTER **PROCESSED** OATA ELEMENTS FIPS 45
GUIDELINE FDR AUTDMATED DATA **PROCESSING** RISK ANALYSIS FIPS 65

PRDCUREMENT
GUIDELINES FDR BENCHMARKING ADP SYSTEMS IN THE CDMPETITIVE **PROCUREMENT** ENVIRONMENT FIPS 42-1

PRDGRAM, PRDGRAMS
DBJECTIVES AND REQUIREMENTS DF THE FEDERAL INFDRMATIDN PRDCESSING STANDAROS **PROGRAM** FIPS 23
SDFTWARE SUMMARY FOR DESCRIBING CDMPUTER **PROGRAMS** ANO AUTOMATED DATA SYSTEMS FIPS 30
GUIDELINES FOR DDCUMENTATIDN DF CDMPUTER **PROGRAMS** AND AUTOMATED DATA SYSTEMS FIPS 3B
AIDS FDR CDBOL **PROGRAM** CDNVERSIDN (FIPS PUB 21 TO FIPS PUB 21-1) FIPS 43

PROGRAM, PROGRAMS (Continued)
GUIDELINES FOR OOCUMENTATION OF COMPUTER **PROGRAMS** AND AUTOMATEO OATA SYSTEMS FOR THE INITIATION PHASE FIPS 64

PROPERTIES
TRANSMITTAL FORM FOR OESCRIBING COMPUTER MAGNETIC TAPE FILE **PROPERTIES** FIPS 53

PUBLICATIONS
GUIOE FOR THE USE OF INTERNATIONAL SYSTEM OF UNITS (SI) IN FEOERAL INFORMATION PROCESSING STANOARDS **PUBLICATIONS** FIPS 34

PUNCHEO
RECTANGULAR HOLES IN TWELVE-ROW **PUNCHED** CAROS FIPS 13
HOLLERITH **PUNCHED** CARD COOE FIPS 14

RATES
SYNCHRONOUS SIGNALING **RATES** BETWEEN OATA TERMINAL ANO DATA COMMUNICATION EQUIPMENT FIPS 22-1
SYNCHRONOUS HIGH SPEEO OATA SIGNALING **RATES** BETWEEN OATA TERMINAL EQUIPMENT ANO DATA COMMUNICATIONS EQUIPMENT FIPS 37

RATIOS
COMPUTER OUTPUT MICROFORM (COM) FORMATS ANO REDUCTION **RATIOS** , 16MM ANO 105 MM FIPS 54

RECOGNITION
OPTICAL CHARACTER **RECOGNITION** CHARACTER SETS FIPS 32
GUIOELINE FOR OPTICAL CHARACTER **RECOGNITION** FORMS FIPS 40

RECOROEO, RECOROING
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (800 CPI, NRZI) FIPS 3-1
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (1600 CPI, PHASE ENCODEO) FIPS 25
RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE, 6250 CPI (246 CPMM), GROUP COOED **RECORDING** FIPS 50
RECORDED MAGNETIC TAPE CARTRIOGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCOOEO FIPS 52

RECTANGULAR
RECTANGULAR HOLES IN TWELVE-ROW PUNCHED CARDS FIPS 13

REOUCTION
COMPUTER OUTPUT MICROFORM (COM) FORMATS ANO **REDUCTION** RATIOS, 16MM ANO 105 MM FIPS 54

REELS
TAKE-UP **REELS** FOR ONE-INCH PERFORATEO TAPE FOR INFORMATION INTERCHANGE FIPS 27

REFERENCES
REPRESENTATIONS OF UNIVERSAL TIME, LOCAL TIME OIFFERENTIALS ANO UNITEO STATES TIME ZONE **REFERENCES** FOR INFORMATION INTERCHANGE FIPS 59

REGISTER, REGISTERING
GENERAL OESCRIPTION OF THE FEOERAL INFORMATION PROCESSING STANOARDS **REGISTER** FIPS 0

REGISTER, REGISTERING (Continued)
GUIDELINES FOR **REGISTERING** DATA CODES FIPS 19

RELATED
IMPLEMENTATION OF THE CODE FOR INFORMATION INTERCHANGE AND **RELATED** MEDIA STANDARDS FIPS 7
CODES FOR NAMED POPULATED PLACES AND **RELATED** ENTITIES OF THE STATES OF THE UNITED STATES FIPS 55

REPRESENTATION, REPRESENTATIONS
STANDARDIZATION OF DATA ELEMENTS AND **REPRESENTATIONS** FIPS 28
GRAPHIC **REPRESENTATION** OF THE CONTROL CHARACTERS OF ASCII FIPS 36
GUIDE FOR THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF STANDARDS FOR THE **REPRESENTATION** OF COMPUTER PROCESSED DATA ELEMENTS FIPS 45
REPRESENTATIONS OF LOCAL TIME OF THE DAY FOR INFORMATION INTERCHANGE FIPS 58
REPRESENTATIONS OF UNIVERSAL TIME, LOCAL TIME DIFFERENTIALS AND UNITED STATES TIME ZONE REFERENCES FOR INFORMATION INTERCHANGE FIPS 59

REQUIREMENTS
OBJECTIVES AND **REQUIREMENTS** OF THE FEDERAL INFORMATION PROCESSING STANDARDS PROGRAM FIPS 23

RESPONSE
GUIDELINES FOR THE MEASUREMENT OF INTERACTIVE COMPUTER SERVICE **RESPONSE** TIME AND TURNAROUND TIME FIPS 57

RISK
GUIDELINES FOR AUTOMATIC DATA PROCESSING PHYSICAL SECURITY AND **RISK** MANAGEMENT FIPS 31
GUIDELINE FOR AUTOMATED DATA PROCESSING **RISK** ANALYSIS FIPS 65

ROTATING
OPERATIONAL SPECIFICATIONS FOR **ROTATING** MASS STORAGE SUBSYSTEMS FIPS 63

SECURITY
GUIDELINES FOR AUTOMATIC DATA PROCESSING PHYSICAL **SECURITY** AND RISK MANAGEMENT FIPS 31
GLOSSARY FOR COMPUTER SYSTEMS **SECURITY** FIPS 39
COMPUTER **SECURITY** GUIDELINES FOR IMPLEMENTING THE PRIVACY ACT OF 1974 FIPS 41

SELECTION
GUIDELINE FOR **SELECTION** OF DATA ENTRY EQUIPMENT FIPS 67

SENSE
CHARACTER STRUCTURE AND CHARACTER PARITY **SENSE** FOR SERIAL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE FIPS 17-1
CHARACTER STRUCTURE AND CHARACTER PARITY **SENSE** FOR PARALLEL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE FIPS 18-1

SEQUENCING
BIT **SEQUENCING** OF THE CODE FOR INFORMATION INTERCHANGE IN SERIAL-BY-BIT DATA TRANSMISSION FIPS 16-1

KEY WORD INDEX

SERIAL-BY-BIT
BIT SEQUENCING OF THE CODE FOR INFORMATION INTERCHANGE IN **SERIAL-BY-BIT** DATA TRANSMISSION — FIPS 16-1
CHARACTER STRUCTURE AND CHARACTER PARITY SENSE FOR **SERIAL-BY-BIT** DATA COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE — FIPS 17-1

SERVICE
GUIDELINES FOR THE MEASUREMENT OF INTERACTIVE COMPUTER **SERVICE** RESPONSE TIME AND TURNAROUND TIME — FIPS 57

SET, SETS
OPTICAL CHARACTER RECOGNITION CHARACTER **SETS** — FIPS 32
CHARACTER **SET** FOR HANDPRINTING — FIPS 33

SIGNALING
SYNCHRONOUS **SIGNALING** RATES BETWEEN DATA TERMINAL AND DATA COMMUNICATION EQUIPMENT — FIPS 22-1
SYNCHRONOUS HIGH SPEED DATA **SIGNALING** RATES BETWEEN DATA TERMINAL EQUIPMENT AND DATA COMMUNICATIONS EQUIPMENT — FIPS 37

SOFTWARE
SOFTWARE SUMMARY FOR DESCRIBING COMPUTER PROGRAMS AND AUTOMATED DATA SYSTEMS — FIPS 30

SOVEREIGNTY
COUNTRIES, DEPENDENCIES, AND AREAS OF SPECIAL **SOVEREIGNTY** — FIPS 10-2

SPECIAL
COUNTRIES, DEPENDENCIES, AND AREAS OF **SPECIAL** SOVEREIGNTY — FIPS 10-2

SPECIFICATIONS
OPERATIONAL **SPECIFICATIONS** FOR MAGNETIC TAPE SUBSYSTEMS — FIPS 62
OPERATIONAL **SPECIFICATIONS** FOR ROTATING MASS STORAGE SUBSYSTEMS — FIPS 63

SPEED
SYNCHRONOUS HIGH **SPEED** DATA SIGNALING RATES BETWEEN DATA TERMINAL EQUIPMENT AND DATA COMMUNICATIONS EQUIPMENT — FIPS 37

STANDARD, STANDARDIZATION, STANDARDS
GENERAL DESCRIPTION OF THE FEDERAL INFORMATION PROCESSING **STANDARDS** REGISTER — FIPS D
IMPLEMENTATION OF THE CODE FOR INFORMATION INTERCHANGE AND RELATED MEDIA **STANDARDS** — FIPS 7
STANDARD METROPOLITAN STATISTICAL AREAS — FIPS 8-4
FEDERAL INFORMATION PROCESSING **STANDARDS** INDEX — FIPS 12-2
SUBSETS OF THE **STANDARD** CODE FOR INFORMATION INTERCHANGE — FIPS 15
OBJECTIVES AND REQUIREMENTS OF THE FEDERAL INFORMATION PROCESSING **STANDARDS** PROGRAM — FIPS 23
STANDARDIZATION OF DATA ELEMENTS AND REPRESENTATIONS — FIPS 28
INTERPRETATION PROCEDURES FOR FEDERAL **STANDARD** COBOL — FIPS 29
GUIDE FOR THE USE OF INTERNATIONAL SYSTEM OF UNITS (SI) IN FEDERAL INFORMATION PROCESSING **STANDARDS** PUBLICATIONS — FIPS 34
GUIDE FOR THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF **STANDARDS** FOR THE REPRESENTATION OF COMPUTER PROCESSED DATA ELEMENTS — FIPS 45
DATA ENCRYPTION **STANDARD** — FIPS 46
FEDERAL **STANDARD** COBOL POCKET GUIDE — FIPS 47
STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES — FIPS 66

STATES
STATES AND OUTLYING AREAS OF THE UNITED **STATES** FIPS 5-1
COUNTIES AND COUNTY EQUIVALENTS OF THE **STATES** OF THE UNITED **STATES** FIPS 6-3
CONGRESSIONAL OISTRICTS OF THE UNITEO **STATES** FIPS 9
CODES FOR NAMED POPULATED PLACES AND RELATED ENTITIES OF THE **STATES** OF THE UNITED **STATES** FIPS 55
REPRESENTATIONS OF UNIVERSAL TIME, LOCAL TIME DIFFERENTIALS AND UNITED **STATES** TIME ZONE REFERENCES FOR INFORMATION INTERCHANGE FIPS 59

STATISTICAL
STANDARD METROPOLITAN **STATISTICAL** AREAS FIPS 8-4

STORAGE
OPERATIONAL SPECIFICATIONS FOR ROTATING MASS **STORAGE** SUBSYSTEMS FIPS 63

STRUCTURE
CHARACTER **STRUCTURE** AND CHARACTER PARITY SENSE FOR SERIAL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE FIPS 17-1
CHARACTER **STRUCTURE** ANO CHARACTER PARITY SENSE FOR PARALLEL-BY-BIT DATA COMMUNICATION IN THE CODE FOR INFORMATION INTERCHANGE FIPS 18-1

SUBSETS
SUBSETS OF THE STANDARD CODE FOR INFORMATION INTERCHANGE FIPS 15

SUBSYSTEMS
OPERATIONAL SPECIFICATIONS FOR MAGNETIC TAPE **SUBSYSTEMS** FIPS 62
OPERATIONAL SPECIFICATIONS FOR ROTATING MASS STORAGE **SUBSYSTEMS** FIPS 63

SUMMARY
SOFTWARE **SUMMARY** FOR OESCRIBING COMPUTER PROGRAMS AND AUTOMATED OATA SYSTEMS FIPS 30

SYMBOLS
FLOWCHART **SYMBOLS** AND THEIR USAGE IN INFORMATION PROCESSING FIPS 24

SYNCHRONOUS
SYNCHRONOUS SIGNALING RATES BETWEEN OATA TERMINAL AND DATA COMMUNICATION EQUIPMENT FIPS 22-1
SYNCHRONOUS HIGH SPEED DATA SIGNALING RATES BETWEEN DATA TERMINAL EQUIPMENT AND DATA COMMUNICATIONS EQUIPMENT FIPS 37

SYSTEM, SYSTEMS
SOFTWARE SUMMARY FOR OESCRIBING COMPUTER PROGRAMS AND AUTOMATED OATA **SYSTEMS** FIPS 30
GUIOE FOR THE USE OF INTERNATIONAL **SYSTEM** OF UNITS (SI) IN FEDERAL INFORMATION PROCESSING STANOARDS PUBLICATIONS FIPS 34
GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS ANO AUTOMATEO OATA **SYSTEMS** FIPS 38
GLOSSARY FOR COMPUTER **SYSTEMS** SECURITY FIPS 39
GUIDELINES FOR BENCHMARKING ADP **SYSTEMS** IN THE COMPETITIVE PROCUREMENT ENVIRONMENT FIPS 42-1
GUIOELINE FOR MANAGING MULTIVENOOR PLUG-COMPATIBLE ADP **SYSTEMS** FIPS 56

SYSTEM, SYSTEMS (Continued)
GUIDELINES FOR DOCUMENTATION OF COMPUTER PROGRAMS AND AUTOMATED DATA **SYSTEMS** FOR THE INITIATION PHASE — FIPS 64

TAKE-UP
TAKE-UP REELS FOR ONE-INCH PERFORATED TAPE FOR INFORMATION INTERCHANGE — FIPS 27

TAPE
PERFORATED **TAPE** CODE FOR INFORMATION INTERCHANGE — FIPS 2
RECORDED MAGNETIC **TAPE** FOR INFORMATION INTERCHANGE (800 CPI, NRZI) — FIPS 3-1
RECORDED MAGNETIC **TAPE** FOR INFORMATION INTERCHANGE (1600 CPI, PHASE ENCODED) — FIPS 25
ONE-INCH PERFORATED PAPER **TAPE** FOR INFORMATION INTERCHANGE — FIPS 26
TAKE-UP REELS FOR ONE-INCH PERFORATED **TAPE** FOR INFORMATION INTERCHANGE — FIPS 27
RECORDED MAGNETIC **TAPE** FOR INFORMATION INTERCHANGE, 6250 CPI (246 CPMM), GROUP CODED RECORDING — FIPS 50
MAGNETIC **TAPE** CASSETTES FOR INFORMATION INTERCHANGE (3.810 MM 0.150 IN **TAPE** AND 32 BPMM 800BPI , PE) — FIPS 51
RECORDED MAGNETIC **TAPE** CARTRIDGE FOR INFORMATION INTERCHANGE, 4-TRACK, 6.30 MM (1/4 IN), 63 BPMM (1600 BPI), PHASE ENCODED — FIPS 52
TRANSMITTAL FORM FOR DESCRIBING COMPUTER MAGNETIC **TAPE** FILE PROPERTIES — FIPS 53
OPERATIONAL SPECIFICATIONS FOR MAGNETIC **TAPE** SUBSYSTEMS — FIPS 62

TECHNIQUES
CODE EXTENSION **TECHNIQUES** IN 7 OR 8 BITS — FIPS 35
GUIDELINES ON EVALUATION OF **TECHNIQUES** FOR AUTOMATED PERSONAL IDENTIFICATION — FIPS 48

TERMINAL
SYNCHRONOUS SIGNALING RATES BETWEEN DATA **TERMINAL** AND DATA COMMUNICATION EQUIPMENT — FIPS 22-1
SYNCHRONOUS HIGH SPEED DATA SIGNALING RATES BETWEEN DATA **TERMINAL** EQUIPMENT AND DATA COMMUNICATIONS EQUIPMENT — FIPS 37

TIME
GUIDELINES FOR THE MEASUREMENT OF INTERACTIVE COMPUTER SERVICE RESPONSE **TIME** AND TURNAROUND **TIME** — FIPS 57
REPRESENTATIONS OF LOCAL **TIME** OF THE DAY FOR INFORMATION INTERCHANGE — FIPS 58
REPRESENTATIONS OF UNIVERSAL **TIME** , LOCAL **TIME** DIFFERENTIALS AND UNITED STATES **TIME** ZONE REFERENCES FOR INFORMATION INTERCHANGE — FIPS 59

TRANSMISSION
BIT SEQUENCING OF THE CODE FOR INFORMATION INTERCHANGE IN SERIAL-BY-BIT DATA **TRANSMISSION** — FIPS 16-1

TRANSMITTAL
TRANSMITTAL FORM FOR DESCRIBING COMPUTER MAGNETIC TAPE FILE PROPERTIES — FIPS 53

TURNAROUND
GUIDELINES FOR THE MEASUREMENT OF INTERACTIVE COMPUTER SERVICE RESPONSE TIME AND **TURNAROUND** TIME — FIPS 57

TWELVE-ROW
RECTANGULAR HOLES IN **TWELVE-ROW** PUNCHED CARDS FIPS 13

UNITED
STATES AND OUTLYING AREAS OF THE **UNITED** STATES FIPS 5-1
COUNTIES AND COUNTY EQUIVALENTS OF THE STATES OF THE **UNITED** STATES FIPS 6-3
CONGRESSIONAL DISTRICTS OF THE **UNITED** STATES FIPS 9
CODES FOR NAMED POPULATED PLACES AND RELATED ENTITIES OF THE STATES OF THE **UNITED** STATES FIPS 55
REPRESENTATIONS OF UNIVERSAL TIME, LOCAL TIME DIFFERENTIALS AND **UNITED** STATES TIME ZONE REFERENCES FOR INFORMATION INTERCHANGE FIPS 59

UNITS
GUIDE FOR THE USE OF INTERNATIONAL SYSTEM OF **UNITS** (SI) IN FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATIONS FIPS 34

UNIVERSAL
REPRESENTATIONS OF **UNIVERSAL** TIME, LOCAL TIME DIFFERENTIALS AND UNITED STATES TIME ZONE REFERENCES FOR INFORMATION INTERCHANGE FIPS 59

USAGE, USE
FLOWCHART SYMBOLS AND THEIR **USAGE** IN INFORMATION PROCESSING FIPS 24
GUIDE FOR THE **USE** OF INTERNATIONAL SYSTEM OF UNITS (SI) IN FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATIONS FIPS 34

ZONE
REPRESENTATIONS OF UNIVERSAL TIME, LOCAL TIME DIFFERENTIALS AND UNITED STATES TIME **ZONE** REFERENCES FOR INFORMATION INTERCHANGE FIPS 59

VOLUNTARY INDUSTRY STANDARDS ADOPTED FOR FEDERAL USE

SECTION 6

ANSI DOCUMENT	TITLE	ADOPTED AS
X3.1 -1976	Synchronous Signaling Rates for Data Transmission	FIPS PUB 22-1
X3.4 -1968	Code for Information Interchange	FIPS PUB 1
X3.5 -1970	Flowchart Symbols and Their Usage in Information Processing	FIPS PUB 24
X3.6 -1965	Perforated Tape Code for Information Interchange	FIPS PUB 2
X3.15-1976	Bit Sequencing of the American National Standard Code for Information Interchange in Serial-By-Bit Data Transmission	FIPS PUB 16-1
X3.16-1976	Character Structure and Character Parity Sense for Serial-By-Bit Data Communication in the American National Standard Code for Information Interchange	FIPS PUB 17-1
X3.18-1967	One-Inch Perforated Paper Tape for Information Interchange	FIPS PUB 26
X3.20-1967	Take-up Reels for One-Inch Perforated Tape for Information Interchange	FIPS PUB 27
X3.21-1967	Rectangular Holes in Twelve-Row Punched Cards	FIPS PUB 13
X3.22-1973	Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI)	FIPS PUB 3-1
X3.23-1974	Programming Language COBOL	FIPS PUB 21-1
X3.25-1976	Character Structure and Character Parity Sense for Parallel-By-Bit Data Communication in the American National Standard Code for Information Interchange	FIPS PUB 18-1
X3.26-1970	Hollerith Punched Card Code	FIPS PUB 14
X3.31-1973	Structure for the Identification of the Counties of the United States for Information Interchange	FIPS PUB 6-3
X3.32-1973	Graphic Representation of the Control Characters of American National Standard Code for Information Interchange	FIPS PUB 36
X3.36-1975	Synchronous High-Speed Data Signaling Rates Between Data Terminal Equipment and Data Communication Equipment	FIPS PUB 37
X3.38-1972	Identification of States of the United States (including the District of Columbia) for Information Interchange	FIPS PUB 5-1

VOLUNTARY INDUSTRY STANDARDS
ADOPTED AS FIPS

ANSI DOCUMENT	TITLE	ADOPTED AS
X3.39-1973	Recorded Magnetic Tape for Information Interchange (1600 CPI, Phase Encoded)	FIPS PUB 25
X3.41-1974	Code Extension Techniques for Use with the 7-Bit Coded Character Set of American National Standard Code for Information Interchange	FIPS PUB 35
X3.43-1977	Representations of Local Time of the Day for Information Interchange	FIPS PUB 58
X3.45-1974	Character Set for Handprinting	FIPS PUB 33
X3.47-1977	Structure for the Identification of Named Populated Places and Related Entities of the States of the United States for Information Interchange	FIPS PUB 55
X3.48-1977	Magnetic Tape Cassettes for Information Interchange ((3.810 mm) (0.150 in) Tape at 32 BPMM (800 BPI), PE)	FIPS PUB 51
X3.51-1975	Representations of Universal Time, Local Time Differentials, and U.S. Time Zone References for Information Interchange	FIPS PUB 59
X3.54-1976	Recorded Magnetic Tape for Information Interchange (6250 CPI, Group-Coded Recording)	FIPS PUB 50
X3.56-1977	Recorded Magnetic Tape Cartridge for Information Interchange 4-Track, 0.250 Inch (6.30 mm), 1600 bpi (63 bpmm), Phase Encoded	FIPS PUB 52
X10.1-1973	Guidelines for Describing Information Interchange Formats	FIPS PUB 20
X3/TR-1-1977	Dictionary for Information Processing	FIPS PUB 11-1
X3T9/600 Rev. 2	I/O Channel Interface	FIPS PUB 60
X3T9/666 Rev. 2	Channel Level Power Control Interface	FIPS PUB 61
X3T9/780 Rev. 2	Operational Specifications for Magnetic Tape Subsystems	FIPS PUB 62
Z39.27-1976	Structure for the Representation of Names of Countries of the World for Information Interchange (Reference ISO Standard 3166)	FIPS PUB 10-2

* * * * * * * * * *

REFERENCES TO STANDARDS IN FEDERAL PROPERTY MANAGEMENT REGULATIONS

SECTION 7

FIPS NUMBER	FPMR SECTION	PAGE
1	101-36.1304-1	.49
2	101-36.1304-2	.49
3-1	101-36.1304-3	.49
4	101-36.1307-1	.62
5-1	101-36.1307-1	.62
6-3	101-36.1307-1	.62
7	101-36.1304-4	.50
8-4	101-36.1307-1	.62
9	101-36.1307-1	.62
10-2	101-36.1307-1	.62
13	101-36.1304-5	.50
14	101-36.1304-6	.50
15	101-36.1304-7	.50
16-1	101-36.1309-2	.64
17-1	101-36.1309-3	.64
18-1	101-36.1309-4	.65
21-1	101-36.1305-1	.58
22-1	101-36.1309-5	.65
24	101-36.1305-2	.61
25	101-36.1304-8	.51
26	101-36.1304-9	.51
27	101-36.1304-10	.52
30	101-36.1305-3	.61
32	101-36.1304-11	.52
33	101-36.1304-12	.52
35	101-36.1304-13	.52
36	101-36.1304-14	.53
37	101-36.1309-1	.63
46	101-36.1304-15	.53

FPMR REFERENCES

FIPS NUMBER	FPMR SECTION	PAGE
50	101-36.1304-16	.54
51	101-36.1304-17	.54
52	101-36.1304-18	.54
53	101-36.1305-4	.61
54	101-36.1304-19	.55
58	101-36.1307-1	.62
59	101-36.1307-1	.62
60	101-36.1304-20	.55
61	101-36.1304-21	.56
62	101-36.1304-22	.57
63	101-36-1304-23	.58
66	101-36-1307-1	.62

* * * * * * * * * *

U.S. GOVERNMENT PRINTING OFFICE : 1981 O -336-939

NBS TECHNICAL PUBLICATIONS

PERIODICALS

JOURNAL OF RESEARCH—The Journal of Research of the National Bureau of Standards reports NBS research and development in those disciplines of the physical and engineering sciences in which the Bureau is active. These include physics, chemistry, engineering, mathematics, and computer sciences. Papers cover a broad range of subjects, with major emphasis on measurement methodology and the basic technology underlying standardization. Also included from time to time are survey articles on topics closely related to the Bureau's technical and scientific programs. As a special service to subscribers each issue contains complete citations to all recent Bureau publications in both NBS and non-NBS media. Issued six times a year. Annual subscription: domestic $13; foreign $16.25. Single copy, $3 domestic; $3.75 foreign.

NOTE: The Journal was formerly published in two sections: Section A "Physics and Chemistry" and Section B "Mathematical Sciences."

DIMENSIONS/NBS—This monthly magazine is published to inform scientists, engineers, business and industry leaders, teachers, students, and consumers of the latest advances in science and technology, with primary emphasis on work at NBS. The magazine highlights and reviews such issues as energy research, fire protection, building technology, metric conversion, pollution abatement, health and safety, and consumer product performance. In addition, it reports the results of Bureau programs in measurement standards and techniques, properties of matter and materials, engineering standards and services, instrumentation, and automatic data processing. Annual subscription: domestic $11; foreign $13.75.

NONPERIODICALS

Monographs—Major contributions to the technical literature on various subjects related to the Bureau's scientific and technical activities.

Handbooks—Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications—Include proceedings of conferences sponsored by NBS, NBS annual reports, and other special publications appropriate to this grouping such as wall charts, pocket cards, and bibliographies.

Applied Mathematics Series—Mathematical tables, manuals, and studies of special interest to physicists, engineers, chemists, biologists, mathematicians, computer programmers, and others engaged in scientific and technical work.

National Standard Reference Data Series—Provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated. Developed under a worldwide program coordinated by NBS under the authority of the National Standard Data Act (Public Law 90-396).

NOTE: The principal publication outlet for the foregoing data is the Journal of Physical and Chemical Reference Data (JPCRD) published quarterly for NBS by the American Chemical Society (ACS) and the American Institute of Physics (AIP). Subscriptions, reprints, and supplements available from ACS, 1155 Sixteenth St., NW, Washington, DC 20056.

Building Science Series—Disseminates technical information developed at the Bureau on building materials, components, systems, and whole structures. The series presents research results, test methods, and performance criteria related to the structural and environmental functions and the durability and safety characteristics of building elements and systems.

Technical Notes—Studies or reports which are complete in themselves but restrictive in their treatment of a subject. Analogous to monographs but not so comprehensive in scope or definitive in treatment of the subject area. Often serve as a vehicle for final reports of work performed at NBS under the sponsorship of other government agencies.

Voluntary Product Standards—Developed under procedures published by the Department of Commerce in Part 10, Title 15, of the Code of Federal Regulations. The standards establish nationally recognized requirements for products, and provide all concerned interests with a basis for common understanding of the characteristics of the products. NBS administers this program as a supplement to the activities of the private sector standardizing organizations.

Consumer Information Series—Practical information, based on NBS research and experience, covering areas of interest to the consumer. Easily understandable language and illustrations provide useful background knowledge for shopping in today's technological marketplace.

Order the **above** *NBS publications from: Superintendent of Documents, Government Printing Office, Washington, DC 20402.*

Order the **following** *NBS publications—FIPS and NBSIR's—from the National Technical Information Services, Springfield, VA 22161.*

Federal Information Processing Standards Publications (FIPS PUB)—Publications in this series collectively constitute the Federal Information Processing Standards Register. The Register serves as the official source of information in the Federal Government regarding standards issued by NBS pursuant to the Federal Property and Administrative Services Act of 1949 as amended, Public Law 89-306 (79 Stat. 1127), and as implemented by Executive Order 11717 (38 FR 12315, dated May 11, 1973) and Part 6 of Title 15 CFR (Code of Federal Regulations).

NBS Interagency Reports (NBSIR)—A special series of interim or final reports on work performed by NBS for outside sponsors (both government and non-government). In general, initial distribution is handled by the sponsor; public distribution is by the National Technical Information Services, Springfield, VA 22161, in paper copy or microfiche form.

U.S. DEPARTMENT OF COMMERCE
National Bureau of Standards
Washington, D.C. 20234

OFFICIAL BUSINESS

Penalty for Private Use, $300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-215

U.S.MAIL

SPECIAL FOURTH-CLASS RATE
BOOK