

1
16 October 1985

Pascal 180 Design Requirements

Pascal 180 Design Requirements

M R Renfro

DISCLAIMER:

This document is an internal working paper and does not represent any intent on the part of Control Data Corporation.

Control Data Private

Pascal 180 Design Requirements

Table of Contents

1.0 DEFINITION	1-1
2.0 REFERENCES	2-1
2.1 INTERDEPENDENT DOCUMENTS	2-1
2.2 TECHNICAL REFERENCES	2-1
2.3 STANDARDS	2-1
2.3.1 CONTROL DATA STANDARDS	2-1
2.3.2 NATIONAL, INTERNATIONAL AND INDUSTRY STANDARDS	2-2
3.0 REQUIREMENTS	3-1
3.1 FUNCTIONAL REQUIREMENTS	3-1
3.1.1 FUNCTIONAL OPERATIONAL FEATURES	3-1
3.1.2 RAM FEATURES	3-1
3.1.2.1 Accessibility	3-1
3.1.2.2 Analytic System Trace	3-1
3.1.2.3 Automatic Code Maintenance History	3-1
3.1.2.4 Error/Failure Detection	3-2
3.1.2.5 Software Installation Aids	3-2
3.1.2.6 Software Modularity	3-2
3.1.2.7 User Notification	3-2
3.1.2.8 Validation Programs	3-2
3.1.3 PRODUCT SAFETY	3-2
3.1.4 CONFIGURATIONS	3-2
3.1.4.1 Minimum	3-2
3.1.4.2 Typical	3-2
3.1.4.3 Maximum	3-3
3.1.4.4 Test	3-3
3.1.5 ERGONOMICS	3-3
3.1.5.1 Targeted End User	3-3
3.1.5.2 Hardware Ergonomics	3-3
3.1.5.3 Software Ergonomics	3-3
3.1.5.3.1 DEBUG INTERFACE	3-3
3.1.5.3.2 ON-LINE MANUAL	3-3
3.1.6 PHYSICAL CHARACTERISTICS (HARDWARE)	3-3
3.2 PERFORMANCE REQUIREMENTS	3-3
3.2.1 OPERATIONAL PERFORMANCE CHARACTERISTICS	3-3
3.2.1.1 Statements/CPU Minute Objectives	3-4
3.2.1.2 Compiler Size	3-4
3.2.1.3 Page Faults	3-4
3.2.1.4 Object Time Performance	3-4
3.2.2 RAM PERFORMANCE CHARACTERISTICS	3-5
3.2.3 ENERGY REQUIREMENTS	3-5
3.2.4 MAINTENANCE/INSTALLATION	3-5
3.2.4.1 Preventive Maintenance (Hardware)	3-5
3.2.4.2 Customer Performed Maintenance	3-5
3.2.4.3 Capital Test Equipment	3-5
3.2.5 CALENDAR LIFE (HARDWARE)	3-6
3.3 COMPATIBILITY REQUIREMENTS	3-6

Pascal 180 Design Requirements

3.3.1	PREDECESSOR PRODUCTS	3-6
3.3.2	COMPANION PRODUCTS	3-6
3.3.3	OTHER PRODUCTS	3-6
3.3.4	COMPETITIVE PRODUCTS	3-6
3.4	INTERDEPENDENCIES	3-7
3.5	COST OBJECTIVES	3-7
3.6	PRODUCT VERIFICATION	3-7
3.7	DELIVERY SUPPORT REQUIREMENTS	3-7
3.7.1	PRODUCT SUPPORT MANUALS	3-7
3.7.2	SPECIAL PACKAGING	3-7
3.7.3	RELEASE MEDIA (SOFTWARE)	3-7
3.7.4	TRAINING	3-7
4.0	MASTER PROJECT AUTHORIZATION	4-1
5.0	APPENDIX A - STATEMENT OF COMPLIANCE	5-1
6.0	APPENDIX B - CDC STANDARDS CHECKLIST	6-1

Pascal 180 Design Requirements

1.0 DEFINITION

1.0 DEFINITION

This document represents the design requirements for Cyber 180 Pascal (hereafter called Pascal).

The Pascal compiler shall implement the ISO and ANSI Standards (see references) and such extensions to those standards as detailed in the Pascal 180 ERS (see technical reference 6).

The design goals for Pascal are enumerated (and ordered) below:

1) The chief design goal is for a standard conforming Pascal compiler which is easy to maintain. To this end, existing software modules will be used to provide the scanner and parser, the code generator and portions of the run time library. It is expected that Pascal will also be somewhat more reliable at an early release by use of modules which have already undergone extensive testing in support of their original products.

2) Quality (speed and space efficiency) of compiled code.

3) Compilation speed.

4) Compatibility with the predecessor product. This compatibility may be sacrificed when predecessor features/actions do not translate well in the NOS/VE environment.

Differences between the above stated goals and the listed ADR requirements are noted in Appendix A.

Pascal 180 Design Requirements

2.0 REFERENCES

2.0 REFERENCES

2.1 INTERDEPENDENT DOCUMENTS

The following references are to products or services as outlined in section 3.4 below:

1. Compiler Technology Project Plan, DCS Log ID S4359.
2. C180 CCM, DCS S2987.
3. C180 CMML, DCS Log ID S2929.
4. FRTL Interface Specification, DCS S3512.
5. Cyber 180 Common Code Generator Interface Specification, DCS S2634.
6. Cyber 180 Debug ERS, DCS S4028.
7. Memo, E.B.Buckley to D.W.Thompson, 15Jan85, 'Pascal Compile Rate Tests'.

2.2 TECHNICAL REFERENCES

1. PASCAL User Manual and Report
Kathleen Jensen & Niklaus Wirth
Springer-Verlag, New York/Heidelberg/Berlin, 1974.
2. Cyber 180 System Interface Standard [SIS], DCS S2196.
3. Pascal 180 Project Plan, DCS S4407.
4. Pascal 180 ERS, DCS S4509.
5. Cyber 180 ADSR, DCS A1688.
6. Pascal 180 1.1.4 Project Plan, DCS S4989.

2.3 STANDARDS

2.3.1 CONTROL DATA STANDARDS

See appendix B.

Pascal 180 Design Requirements

2.0 REFERENCES

2.3.2 NATIONAL, INTERNATIONAL AND INDUSTRY STANDARDS

2.3.2 NATIONAL, INTERNATIONAL AND INDUSTRY STANDARDS

1. Specification for Computer Programming Language Pascal
ISO 7185, 1983.
2. American National Standard Pascal Computer Programming
Language, ANSI X3J9/IEEE770X3.97-1983.

Pascal 180 Design Requirements

3.0 REQUIREMENTS

3.0 REQUIREMENTS

3.1 FUNCTIONAL REQUIREMENTS

3.1.1 FUNCTIONAL OPERATIONAL FEATURES

Pascal will implement the ISO and ANSI standards, and will additionally provide:

- o Extensions to those standards as enumerated in the Pascal ERS. (Chief among these are value initialization, case statement completor [otherwise clause] and additional predefined procedures.)
- o A compilation switch for flagging such extensions.
- o Diagnostics, both at compile time and run time.
- o Interface to the Cyber 180 interactive debugger.

3.1.2 RAM FEATURES

This section lists RAM features to be implemented. Features are from paragraph 4.4 of CDC Standard 1.12.006. RAM features not addressed below are either not applicable to a software product or are not available under the NOS/VE operating system.

3.1.2.1 Accessibility

The utilities for software maintenance under NOS/VE provide the means for maintaining source and object modules of Pascal. From an external point of view, only the object module manipulation is relevant, as Pascal will be an object code release only.

3.1.2.2 Analytic System Trace

Analytic systems trace will be part of the debug interface, for both the compiler and compiled programs.

3.1.2.3 Automatic Code Maintenance History

The normal CDC Programming System Report (PSR) mechanism will provide the code maintenance history.

Pascal 180 Design Requirements

3.0 REQUIREMENTS

3.1.2.4 Error/Failure Detection

3.1.2.4 Error/Failure Detection

Error detection will be provided at both compile time and run time.

3.1.2.5 Software Installation Aids

Software installation aids required for successful installation of Pascal will be described in the NOS/VE installation handbook.

3.1.2.6 Software Modularity

Pascal will be designed and developed according to the principles of structured programming.

3.1.2.7 User Notification

User notification will be in the form of meaningful diagnostics at both compile time and run time.

3.1.2.8 Validation Programs

The validation programs for Pascal will consist of the Pascal Validation Suite, the Pascal Performance Base, described in 3.2.1.1, and such tests that are written by Evaluation. Evaluation will maintain all tests on a single base.

3.1.3 PRODUCT SAFETY

Not applicable.

3.1.4 CONFIGURATIONS

3.1.4.1 Minimum

The minimum configuration will be that specified in the Cyber 180 AD/R as the entry level configuration for NOS/VE.

3.1.4.2 Typical

The typical configuration will be that specified in the Cyber 180 AD/R as the target configuration for NOS/VE.

Pascal 180 Design Requirements

3.0 REQUIREMENTS

3.1.4.3 Maximum

3.1.4.3 Maximum

The maximum configuration will be the maximum supported by NOS/VE.

3.1.4.4 Test

The test configuration will generally be the typical configuration.

3.1.5 ERGONOMICS

3.1.5.1 Targeted_End_User

The targeted end user will be a mixture of professional programmers and students learning programming (with Pascal, perhaps, as a first language). Without relevant usage data, it is impossible to state what the "typical" user will more closely resemble, the professional or the tyro.

3.1.5.2 Hardware_Ergonomics

Not applicable.

3.1.5.3 Software_Ergonomics

At first release, ergonomic features are limited to the following:

3.1.5.3.1 DEBUG INTERFACE As Pascal is using the NOS/VE debug utility, there should be no impact as to usability which is not present in all other products.

3.1.5.3.2 ON-LINE MANUAL The on-line Pascal manual should present no usability problems.

3.1.6 PHYSICAL CHARACTERISTICS (HARDWARE)

Not applicable.

3.2 PERFORMANCE REQUIREMENTS

3.2.1 OPERATIONAL PERFORMANCE CHARACTERISTICS

Pascal 180 Design Requirements

3.0 REQUIREMENTS

3.2.1.1 Statements/CPU Minute Objectives

3.2.1.1 Statements/CPU Minute Objectives

The objectives for statements compiled per CPU minute are stated in terms of P3 values. The Pascal compiler shall have an requirement of 9200 statements per CPU minute, upon initial release.

Measurements are to be made using tests developed by Evaluation. Developed in this context does not imply new tests need be written. Selection of a representative group of existing tests should be satisfactory. Tests for the measurements should be positive tests. The actual test names are listed in reference 2.1-7. Jobs should be run with the following command parameter settings: LO=(S A) DL=LOW DA=NONE RC=NONE. CPU time includes O/S time (job mode, not monitor mode). Compile rate is determined by dividing total lines (less blank and comment lines) of all tests by total time, the rate expressed as statements per minute.

3.2.1.2 Compiler Size

The Cyber 180 ADR specifies use of 100KB for Pascal. There is no initial requirement as no measurement tools are at present available. Compiler size will be measured when such tools become available.

3.2.1.3 Page Faults

The Cyber 180 ADR specifies total page faults as 65 and rereferenced page faults as 53. The figures are based upon a page size of 4KB. No measurement tools are at present available. Page faults will be measured when such tools become available. If tests are made at a different page size, the requirement values shall be:

$$\text{Max P.F. rate} = \frac{(\text{requirement}) * (4K \text{ bytes})}{(\text{New page size in bytes})}$$

Thus the figures for 8K page size is 33 total page faults and 27 rereferenced page faults.

3.2.1.4 Object Time Performance

Pascal has no object time performance requirements at present. At a future release, perhaps a hand coded assembly program with the same functionality as a corresponding

Pascal 180 Design Requirements

3.0 REQUIREMENTS

3.2.1.4 Object Time Performance

Pascal program could be developed, as was done with Cybil. Development of such a performance kernel should be a budgeted item. For initial release, emphasis will be placed on correctness and completeness of features.

3.2.2 RAM PERFORMANCE CHARACTERISTICS

The RAM performance characteristics will be as specified in the Cyber 180 AD&R and are listed below:

	PFR	PSR Rate	PIDFR
Release	4	3	.4
6 mo after release	2	.04	.2
18 mo after release	1	.02	.1

Note that there is no way to validate the above characteristics prior to release. Evaluation's test base is too small to measure RAM characteristics with a satisfactory degree of confidence.

Further, once the product is released, the PFR/PIDFR statistics require that product failure data be gathered from individual sites and analyzed. At present there is no process or procedure for doing this.

3.2.3 ENERGY REQUIREMENTS

Not applicable.

3.2.4 MAINTENANCE/INSTALLATION

3.2.4.1 Preventive Maintenance (Hardware)

Not applicable.

3.2.4.2 Customer Performed Maintenance

Customer performed maintenance will be limited to following installation procedures as outlined in the NOS/VE installation handbook, and to the submission of programming system reports (PSRs).

3.2.4.3 Capital Test Equipment

Not applicable.

Pascal 180 Design Requirements

3.0 REQUIREMENTS

3.2.5 CALENDAR LIFE (HARDWARE)

3.2.5 CALENDAR LIFE (HARDWARE)

Not applicable.

3.3 COMPATIBILITY REQUIREMENTS

3.3.1 PREDECESSOR PRODUCTS

The predecessor product for Pascal will be Cyber 170 Version 2.0. Differences in accepted source between the two products are detailed in reference 2.2-4. [ERS, section 3.2.4]. Since Pascal will support the ASCII character set and 170 Pascal supports only CDC Scientific Character set, there may be incompatibilities for data sets. Differences between the products are detailed in the ERS. Due to the differing hardware architectures, there can be no binary compatibility.

While there will be source compatibility between the two products, due to the differing environments, no guarantee can be made that a Cyber 170 Pascal program will execute in the same manner, or even execute, on Pascal under NOS/VE.

3.3.2 COMPANION PRODUCTS

A Pascal on-line manual will be available.

Pascal has as companion products the other members of the Cyber 180 product set in the sense that the Cyber 180 System Interface Standard will be observed.

There is a Programming Environment Interface (release 1.1.4). ;
;

3.3.3 OTHER PRODUCTS

Not applicable.

3.3.4 COMPETITIVE PRODUCTS

Compatibility with competitive products will be limited to implementation of the ISO/ANSI standards. Extensions to that standard will follow guidelines suggested by the ANSI/IEEE Joint Pascal Committee. This was the direction followed by the predecessor product, and should provide reasonable compatibility with competitive products.

Pascal 180 Design Requirements

3.0 REQUIREMENTS

3.4 INTERDEPENDENCIES

3.4 INTERDEPENDENCIES

Pascal has the following dependencies:

TWS: will provide an automatically generated scanner and parser.

CCM: will provide compile time utility routines.

CCG180: will provide the code generator.

CMML: will provide run time mathematical library.

DEBUG: will provide run time support for debug facilities.

CYBIL: will provide run time storage management.

3.5 COSI-OBJECTIVES

Not applicable

3.6 PRODUCT VERIFICATION

Product verification will be as outlined in Section 5 of the project plan (see technical reference 5).

3.7 DELIVERY-SUPPORT-REQUIREMENTS

3.7.1 PRODUCT SUPPORT MANUALS

Customer documentation for Pascal is outlined in the project plan (technical reference 5).

3.7.2 SPECIAL PACKAGING

No special packaging required.

3.7.3 RELEASE MEDIA (SOFTWARE)

Pascal will be released through Software Maintenance and Distribution on magnetic tape. The contents of the tape will be object code.

3.7.4 TRAINING

While there are no training requirements for Pascal, a Pascal Tutorial will be produced by Publications and

16 October 1985

Pascal 180 Design Requirements

3.0 REQUIREMENTS

3.7.4 TRAINING

Graphics.

15 October 1985

Pascal 180 Design Requirements

4.0 MASTER PROJECT AUTHORIZATION

4.0 MASTER PROJECT AUTHORIZATION

Pascal 180 design, implementation and evaluation activities are funded as part of the overall Cyber 180 program. Pascal 180 funding is authorized under MPA 9530 and is summarized below:

Project Number	Prior Actual	Authorized			Life Total
		1983	1984	1985	
Design and Development 43NW8602	8.0	64.7	140.0	160.0	372.7
Evaluation 43EV8602	0.0	0.0	70.0	77.0	147.0

(figures are \$1000.)

16 October 1985

Pascal 180 Design Requirements

5.0 APPENDIX A - STATEMENT OF COMPLIANCE
-----5.0 APPENDIX A - STATEMENT OF COMPLIANCE

The Cyber 180 AO/R needs to be updated to reflect the direction given to Pascal. The area of non-compliance with the AO&R is compilation rate, which is 8000 statements per minute. Based upon local experience using the available code generator, the compilation rates specified are unrealistically high. A more objective value based upon what has been measured for existing products using the same level of code generator would be 2700-3000 statements per minute. An optimistic 4500 statements per minute was chosen as a goal.

The above compilation rates are in terms of P2 values. Section 3.2.1.1 states values in P3 terms. The corresponding values above would be 16400 (AO&R), 5500-6200 (objective value) and 9200 (goal).
:
:
:
:

Pascal 180 Design Requirements

6.0 APPENDIX B - CDC STANDARDS CHECKLIST

6.0 APPENDIX B - CDC STANDARDS CHECKLIST

CDC STANDARDS CHECKLIST

Revision H - Jan. 1984

Page 1 of 11

Verification/Certification Needed	Option Chosen	Waiver Needed	Applicable Standards
AVAILABLE STANDARDS - Identify those applicable by alphabetic (a,b,c etc.)			
Category - DATA COMMUNICATIONS			
Synchronous Signaling Rates-(a) ANSI X3.36-1975 (b) FIPS 22-1 (c) FIPS 37			
Bit Sequencing of ASCII in Serial-by-Bit Data Transmission-(a) ANSI X3.15-1976 (b) FIPS 16-1			
Character Structure & Parity Sense for Serial-by-Bit Data Communications in ASCII-(a) ANSI X3.16-1976 (b) FIPS 17-1 (c) ISO 1711-1973			
Character Structure & Parity Sense for Parallel-by-Bit Data Communications in ASCII-(a) ANSI X3.25-1976 (b) FIPS 18-1			
Structure for Formatting Message Headings-(a) ANSI-X3.57-1977			
Procedures for Using ASCII Control Characters in Specified Links-(a) ANSI X3.28-1976 (b) ISO 1745-1975 (c) ISO 2111-1972 (d) ISO 2628-1973 (e) ISO 2629-1973			
Advanced Data Communication Control Procedures-(a) ANSI X3.66-1979 (b) FIPS 78 (c) FS 1003-1979 (d) ISO 3309-1979 (e) ISO 4335-1979 (f) ISO 6159-1980 (g) ISO 6256-1981			
Determination of Data Communication System Performance-(a) ANSI X3.44-1974 (b) FIPS 57			
Use of Longitudinal Parity to Detect Errors in Information Messages-(a) ISO 1155-1978			
Teletex Services-(a) CCITT S.70 (b) CCITT S.200			
International Information Exchange for Interactive Videotex-(a) CCITT S.100			

CDC STANDARDS CHECKLIST

Revision H - Jan. 1984

Page 2 of 11

	Verification/Certification Needed	Option Chosen	Waiver Needed	Applicable Standards
AVAILABLE STANDARDS - Identify those applicable by alphabetic (a,b,c etc.)				
Category - SYSTEM INTERFACES				
Interface Between DTE & DCE Employing Serial Binary Interchange-(a) EAI RS 232-C (b) CCITT V.24-1976				
Interface Between DTE & DCE for Start-Stop Transmission Services/(Synchronous Operations) on Public Data Networks-(a) CCITT X.20-1980 / (b) (CCITT X.21-1980)				
Interface Between DTE & DCE for Terminals Operating in Packet Mode on Public Data Networks-(a) CCITT X.25-1980				
Signal Quality at Interface Between DTE & DCE for Serial Data Transmission-(a) ANSI-X3.24-1968 (b) EIA RS-334				
Terminal & Transit Call Control Procedures & Data Transfer System on International Circuits Between Packet-Switched Data Networks (a) CCITT X.75-1980				
Electrical Characteristics of Balanced/(Unbalanced) Voltage Digital Interface Circuits-(a) EIA RS 422A (b) FS 1020-1979 (c) CCITT X.26-1980 (d) EIA RS423A (e) FS 1030-1979 (f) CCITT X.27-1980 (g) ISO 4902-1980				
General Purpose 37 & 9 Position Interface for DTE & DCE Employing Serial Binary Interchange-(a) EIA RS 449 (b) FS 1031-1979 (c) ISO 4902-1980				
I/O Channel Interface-(a) FIPS 60-2				
Channel Power Control Interface-(a) FIPS 61-1				
Interface Between Flexible Disk Cartridge Drives & Their Host Controllers-(a) ANSI X3.80-1981				

CDC STANDARDS CHECKLIST

Revision H - Jan. 1984

Page 3 of 11

	Verification/Certification Needed		
	Option Chosen		
	Waiver Needed		
	Applicable Standards		
AVAILABLE STANDARDS - Identify those applicable by alphabetic (a,b,c etc.)			
Category - CODES			
Code for Information Interchange-(a) ANSI X3.4-1977 (b) FIPS 1-1 (c) FIPS 7 (d) ISO 646-1973 (e) ISO 4873-1979			
Hollerith Punched Card Code-(a) ANSI X3.26-1980 (b) FIPS 14-1 (c) ISO 6586-1980			
Subsets-(a) CDC STD 1.10.003 (11/81) (b) FIPS 15 (c) ISO 963-1982			
Additional Controls for Use With ASCII-(a) ANSI X3.64-1979 (b) FIPS 86 (c) ISO 6429-1982			
Graphic Representation of ASCII Control Characters-(a) ANSI X3.32-1973 (b) FIPS 36 (c) ISO 2047-1975			
Code Extension Techniques for Use With ASCII-(a) ANSI X3.41-1974 (b) FIPS 35 (c) ISO 2022-1982			
Coded Character Sets for X4.22 & X4.23 Keyboard Arrangements-(a) ANSI X3.114-1983			
Text Information Interchange in Page Information Format-(a) ANSI X3.98-1983			
Coded Character Sets for Text Communication-(a) ISO 6937 parts 1, 2, & 3			
Videotex/Teletex Presentation Level Protocol Syntax-(a) ANSI X3.110-1983			

CDC STANDARDS CHECKLIST

Revision H - Jan. 1984

Page 4 of 11

!Verification/Certification Needed

!Option Chosen

!Waiver Needed

!Applicable Standards

!AVAILABLE STANDARDS - Identify those applicable
!by alphabetic (a,b,c etc.)

!Category - MAGNETIC TAPE MEDIA

!Recorded Magnetic Tape for Information Inter-
!change, 200 CPI NRZI-(a) ANSI X3.14-1973 (b)
!ISO 962-1964 (c) ISO 1862-1973

!Recorded Magnetic Tape, 0.5 Inch, 7-Track, 200
!CPI, NRZI-(a) CDC-STD 1.10.013 (11/81) (b)
!ISO 1861-1975

!Recorded Magnetic Tape for Information Inter-
!change, 800 CPI, NRZI-(a) ANSI X3.22-1973 (b)
!FIPS 3-1, (c) FIPS 7 (d) ISO 962-1974 (e) ISO
!1863-1976

!Recorded Magnetic Tape for Information Inter-
!change, 1600 CPI, Phase Encoded-(a) ANSI
!X3.39-1973 (b) FIPS 7 (c) FIPS 25 (d) ISO 962-
!1974 (e) ISO 3788-1976

!Recorded Magnetic Tape for Information Inter-
!change, 6250 CPI, Group Coded Recording-(a)
!ANSI X3.54-1976

!Unrecorded Magnetic Tape for Information Inter-
!change-(a) ANSI X3.40-1983

!Category - ENCRYPTION

!Data Encryption Algorithm-(a) ANSI X3.92-1981
!(b) FIPS 46

!Guidelines for Implementing & Using the DES-
!(a) FIPS 74

!DES Modes of Operation-(a) FIPS 81

CDC STANDARDS CHECKLIST

Revision H - Jan. 1984

Page 5 of 11

	Verification/Certification Needed			
	Option Chosen			
	Waiver Needed			
	Applicable Standards			
AVAILABLE STANDARDS - Identify those applicable by alphabetic (a,b,c etc.)				
Category - ROTATING MAGNETIC MEDIA				
Unrecorded Single-Disk Cartridge, Front-Loading 2200 BPI-(a) ANSI X3.52-1976				
Unrecorded Single-Disk, Double-Density Cartridge (a) ANSI X3.89-1981				
Interchangeable Magnetic Single-Disk Cartridge, Top Loaded-(a) ISO 3562-1976 (b) ISO 3563-1976				
Unrecorded Magnetic Six-Disk Pack; General Physical and Magnetic Characteristics-(a) ANSI X3.46-1974 (b) ISO 2864-1974 (c) ISO 3561-1976				
Unrecorded Eleven-Disk Pack; General, Physical and Magnetic Requirements-(a) ANSI X3.58-1977 (b) ISO 3564-1976				
Interchangeable Magnetic Twelve-Disk Pack; 100 MBytes-(a) ANSI X3.63-1981 (b) ISO 4337-1977				
Operational Specifications for Variable-Block Rotating Mass Storage Subsystems-(a) FIPS 63-1				
Operational Specifications for Fixed-Block Rotating Mass Storage Subsystems-(a) FIPS 97				
Single-Sided, Unformatted, Flexible Disk Cartridges for 6631 BPR Use-(a) ANSI X3.73-1980				
One-Sided, Single-Density, Unformatted, 5.25 Inch Flexible Disk Cartridge for 3979 BRP Use-(a) ANSI X3.82-1980				

CDC STANDARDS CHECKLIST

Revision H - Jan. 1984

Page 6 of 11

Verification/Certification Needed	Option Chosen	Waiver Needed	Applicable Standards
AVAILABLE STANDARDS - Identify those applicable by alphabetic (a,b,c etc.)			
Category - CASSETTE/CARTRIDGE MEDIA			
Magnetic Tape Cassettes for Information Interchange, 0.150 Inch, 800 BPI, PE-(a) ANSI X3.48 1967 (b) FIPS 51 (c) ISO 3275-1974 (d) ISO 3407-1976			
Recorded Magnetic Tape Cartridge for Information Interchange, 4-Track, 0.250 Inch, 1600 BPI, PE-(a) ANSI X3.56-1977 (b) FIPS 52 (c) ISO 4057-1979			
Unrecorded Magnetic Tape Cartridge for Information Interchange, 4-Track, 0.250 Inch, 1600 BPI PE-(a) ANSI X3.55-1982			
Magnetic Tape Cassettes for Information Interchange, Dual-Track, CRB Four State Recording, on 3.81 mm. (0.150 Inch) Tape-(a) ANSI X3.51-1981 (b) FIPS 91			
Parallel Recorded Magnetic Tape Cartridge for Information Interchange, 4-Track 0.250 Inch (6.30 mm), 1600 BPI (63 BPMN), PE-(a) ANSI X3.72-1971 (b) FIPS 93			
Category - OPERATING SYSTEMS			
Magnetic Tape Labels & File Structure for Information Interchange-(a) ANSI X3.27-1978 (b) FIPS 79 (c) ISO 1001-1979			
Magnetic Tape Cassette & Cartridge Labels & File Structure for Information Interchange-(a) ISO 4341-1978			

CDC STANDARDS CHECKLIST

Revision H - Jan. 1984

Page 7 of 11

	Verification/Certification Needed			
	Option Chosen			
	Waiver Needed			
	Applicable Standards			

AVAILABLE STANDARDS - Identify those applicable by alphabetic (a,b,c etc.)				

Category - PROGRAMMING LANGUAGES				

Programming Language APT-(a) ANSI X3.37-1980				
Programming Language COBOL-(a) ANSI X3.23-1974 (b) FIPS 21-1 (c) ISO 1989-1978				
Programming Language FORTRAN-(a) ANSI X3.9-1978 (b) FIPS 69 (c) ISO 1539-1972 (d) MIL 1753-1978				
Programming Language PL/1-(a) ANSI X3.53-1976 (b) ISO 6160-1979				
Minimal BASIC-(a) ANSI X3.60-1978 (b) FIPS 68				
Programming Language PASCAL-(a) ANSI/IEEE-770- X3.97-1983	x			x
Programming Language Ada-(a) ANSI/MIL-STD- 1815-A-1983				

Category - DATA PRESENTATION				

Representation of Calendar & Ordinal Dates-(a) ANSI X3.30-1971 (b) FIPS 4 (c) ISO 2711-1973				
Representations of Time-(a) ANSI X3.43-1977 (b) ANSI X3.51-1975 (c) FIPS 58 (d) FIPS 59 (e) ISO 3307-1975 (f) ISO 4031-1978				
Representations of Numeric Values in Character Strings-(a) ANSI X3.42-1975				
Representation of SI & Other Units in Limited Character Set Systems-(a) ISO 2955-1974				

CDC STANDARDS CHECKLIST

Revision H - Jan. 1984

Page 8 of 11

! Verification/Certification Needed !

! Option Chosen !

! Waiver Needed !

! Applicable Standards !

! AVAILABLE STANDARDS - Identify those applicable !
! by alphabetic (a,b,c etc.) !

! Category - KEYBOARDS !

! Ten-Key Keyboards for Numeric Data Entry-(a) !
! CDC-STD 1.10.004 (11/81) !

! Keyboard Arrangements for Alphanumeric Machines- !
! (a) ANSI X4.23-1982 !

! Alternate Keyboard Arrangement for Office !
! Machines-(a) ANSI X4.22-1983 !

! Keyboard for International Information Process- !
! ing-ISO 2530-1975 !

! Keyboards for Countries Using Alphabetic Extend- !
! ers; Harmonization Guide-(a) ISO 3243-1975 !

! Principles for Positioning Control Keys on !
! Keyboards-(a) ISO 3244-1974 !

! Category - GENERAL DESIGN !

! Component Selection-(a) CDC-STD 1.03.002 (5/83) !

! Component Qualification-(a) CDC-STD 1.03.003 !
! (6/81) !

! Approved Vendor List-(a) CDC-STD 1.03.005 (6/81) !

! Electronic Logic Packaging-(a) CDC-STD 1.03.006 !
! (6/81) !

! Microcircuit Selection-(a) CDC-STD 1.03.010 !
! (5/81) !

! Reliability, Availability & Maintainability !
! Standards-(a) CDC-STD 1.12.000 (12/82) !

CDC STANDARDS CHECKLIST

Revision H - Jan. 1984

Page 9 of 11

	Verification/Certification Needed	Option Chosen	Waiver Needed	Applicable Standards
AVAILABLE STANDARDS - Identify those applicable by alphabetic (a,b,c etc.)				
Category - DOCUMENTATION				
Configuration Management-(a) CDC-STD 1.01.016 (4/83)				
Mech. Drafting Practices-(a) CDC-STD 1.41.000 (8/83)				
Programming Project Management Standards Manual- Entire Contents Apply-(a) CDC-STD 1.01.100 (12/83)		x		
Test Reports-(a) CDC-STD 1.03.004 (6/81)				
Preparation of Microcircuit Procurement & Acceptance Test Specs.-(a) CDC-STD 1.03.007 (6/81)				
Graphic Symbols for Electrical & Electronic Diagrams-(a) ANSI Y14.15-1966				
Reference Designations for Electrical & Electronics Parts & Equipment-(a) ANSI Y32.16-1975				
Graphic Symbols for Logic Diagrams-(a) CDC-STD 1.41.104 (1/79)				
Logic Diagrams-(a) CDC-STD 1.41.108 (10/82)				
Hardware & Software Product Support Manual Standards-Entire Contents Apply-(a) CDC-STD 1.50.000 (12/82)				
Dictionary for Information Processing Systems-(a) X3/TR-1-1982 (b) FIPS 11-1 (c) ISO 2382				
Flowchart Symbols & Their Usage-(a) ANSI X3.5-1970 (b) FIPS 24 (c) ISO 1028-1973 (d) ISO 2636-1973				
Metric Reference Guide-(a) 15007000 (8/80)				

