Gilbert
D. McBride
Bruce
Charlie
Owen
Mike
& Master to Bruce

RJ's MODLST ,, VSW = work-->

Software Notice

90/25, 30, 30B, 40

product level OS/3 6.0

document SRD

issue no. 3

software type 1

date May 31, 1979

Product: SPERRY UNIVAC Operating System/3 (OS/3)

distribution

Lists:

18, 19, 20, 21, 75, 76, CZ

SPERRY UNIVAC COMPUTER SYSTEMS

Philadelphia Software Development Center
Bluebell, Pa.

OS/3 RELEASE 6 DOCUMENTATION SUMMARY

The OS/3 Release 6 Documentation Summary is a history of current (*) and scheduled (**) issues providing a chronological list of published release documentation items.

Item names are abbreviated as follows:

CIB - Correction Information Bulletin
RUB - Release Update Bulletin
SRD - Software Release Description
SRA - Software Release Announcement

The following summarizes the OS/3 Release 6 documentation:

Issue	Date	Level	Item and Description
1	1/01/79	6.0	SRD - PRELIMINARY (Incorporates both the General Information and the Product Overview sections of the Release 6.0 SRD to provide early release definition internally, and to facilitate planning for release qualification.)
2	2/15/79	6.0	SRD - Q1 (A total base release document, giving details on installing and using Release 6.0 along with other guidelines and restrictions as provided for release qualification.)
*3	5/31/79	6.0	SRD (A total base release document, giving details on installing and using Release 6.0 along with other guidelines and restrictions; this is a general distribution item.)
**4	6/15/79	6.0	SRA (Release ordering information for Release 6.0.)
**5	6/30/79	6.0	SRD - Rev. 1 (A replacement release document revised to include all guidelines, restrictions, and related information applicable at the time of general field release.)

PREFACE

This Software Release Description describes the current functionality of the Operating System/3 (OS/3) software. This publication is first issued for a major release of the product. The entire document is cumulative, with subsequent interim releases causing updates, revisions, or reissues of the base document; a complete history of such issues is given on page iii.

Changed material in a revision is indicated by a FLAG in the left margin of a page. When a revision completely replaces the previous issue, all pages will have a new date and revision number at the bottom of the page. Changes are indicated by the following FLAGS:

6.0 - reflects items specifically updated for this release, Section 1.7 only.

Q1 - reflects changes introduced in the SRD-Q1, Sections 1 and 2 only.

F - reflects changes made between SRD-Q1 and SRD (final); the SRD-Q1 document was not made available to general distribution.

R1 - reflects changes made between the SRD (final) and SRD Revision 1; SRD Revision 1 is a printable file on the release disk media

New features and enhancements accompanying the release are described in Section 2. The complete list of supported components is found in Section 3, while guidelines and restrictions for using the product are provided in Section 4. Finally, system initialization and system generation considerations are outlined in Sections 5 and 6.

The four appendices give supplemental information for the available release version. Appendix A describes a method for obtaining a description of each module on the release disk; Appendix B (see note); Appendix C (see note); Appendix D provides estimated storage sizes for the software.

NOTE: Appendix B - Issued with Interim releases only.

Appendix C - References to Software User Reports (SURs) corrected by this release should be directed to your local UNIVAC branch office.

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Q1 Refer to Section 3 for Software Components supported and Software
Q1 no longer contained on the release media.

1.1 RELEASE DESCRIPTION

Release 6.0 is the sixth major release of the Operating System/3
F (OS/3). The release supports the 90/25, 90/30, 90/30B and 90/40
processors.

1.2 RELEASE IDENTIFICATION

Library System: SPERRY UNIVAC Operating System/3 (OS/3)
Release Number: 6.0
Acronym: OS/3 6.0
Release Medium: The release system can be ordered for delivery on any of the following disk pack media, or on dump/restore tapes of one of the disk pack types.

OS/3 6.0 Release Disk Packs

8414, 8415R, 8416, 8418 (high or low density), 8424, 8425, 8430, 8433

The Software System Request form attached with the 6.0 Software Release Announcement will list the tapes and disks that can be ordered.

1.3 ORDERING PROCEDURE

Software described in release documents can be obtained by completing and forwarding the request form that accompanies each
F Software Release Announcement. Requests should be mailed to either the local Sperry Univac branch office, or directly to Software Order Services:

Sperry Univac
Software Order Services
Township Line & Union Meeting Roads
Blue Bell, Pa. 19424

If the request is made directly to Software Order Services, a copy of the request form should also be forwarded to the local Sperry Univac branch office.

NOTE:

Users outside the United States should check with their Local Sperry Univac subsidiary office for distribution procedures. The ordering procedure given above applies only to U. S. customers.

1.4 RELEASE ENHANCEMENTS

The primary Release 6.0 enhancements are:

- American National Standard 1974 COBOL
- Lifting of Job Control Table Limits
- OCL Enhancements (Phase 3)
- 8424/8425 Disk Support
- Error Log - Record Recovered Errors
- 90/40 Performance Enhancements
- 0716 Error Recovery
- File Share/File Lock
- Variable Sector Size - IRAM
- Data Utility - MIRAM Support
- ICAM Enhancements
  - DATAPAC PDN Support
  - User Termination
  - One-Tenth Second Polling
  - Full Duplex Queueing
  - Disk to Disk Acknowledgment
F - Global ICAM Networks Phase I

F ***Item deleted***

- Librarian Enhancements:
  - UPSI Byte Setting
  - ESC Command
- RFC Implementation:

- EM20
- Spooling
- System Utility (SU)
- ISAM

o Restriction Removal in Data Management and System Utility (SU)

o Verify System Build (VSB)

o On-Line Maintenance Products

1.5 ERROR REPORTING PROCEDURE

Users discovering errors or deficiencies in the software being released should communicate this information to the local Sperry Univac branch office, using a Software User Report (SUR), Form UD1-745, to describe the problem encountered. SUR's must be accompanied by appropriate documentation, such as main storage printouts, system console printouts, program listings and Patch History Table listing. For language processors, a copy of the source program and data must be supplied on cards or tape together with complete JCL. SUR's should also include the release number, along with any additional information that might aid error analysis. The local Sperry Univac personnel, when they have ascertained that the errors in question are adequately documented, should forward these SUR's to:

Sperry Univac
Development Support
Township Line & Union Meeting Roads
P. O. Box 500
Blue Bell, Pa. 19424
Attn: SUR Coordinator, 1C2-NE25

Users discovering new techniques or considerations in using system software are encouraged to forward this information directly to Sperry Univac at the above address. The information is then disseminated to all users via a technical bulletin.

Paragraph deleted

1.6 RELEASE DOCUMENTATION

1.6.1 Software Release Description File

- The user has the ability to print the Software Release Description (SRD) document released with the current software. Included on all release volumes is a file (YSRD) which contains the current release document. A canned jobstream filed in YJCS allows the user to print the Software Release Description (SRD) document. To obtain a listing of this document the user should type-in:

  RV PRTSRD

1.6.2 Special Considerations

- The SRD file is in upper case format.
- The file contains special characters, "=", "(", ")", etc. When printing this file with a 48 character print band the special characters are replaced or not printed. A 63 character print band is used to print the special characters.
- The file is not copied when a user does SETREL/COPYREL.
- The file is not copied when the user Resgen's a tailored system pack.

1.7 RELATED PUBLICATIONS

1.7.1 Software User Manuals

The following manuals are applicable to this release:

	UP-7503 R1	Fundamentals of COBOL Series Programmer Reference (contents section)
	UP-7503.1 R1	Fundamentals of COBOL-Language Programmer Reference
	UP-7503.2 R1	Fundamentals of COBOL-Table Handling Programmer Reference
	UP-7503.3 R1	Fundamentals of COBOL-Sorting Programmer Reference
	UP-7503.4	Fundamentals of COBOL-Mass Storage Programmer Reference
F		***UP-7505 deleted***
	UP-7503.6	Fundamentals of COBOL-Glossary Programmer Reference
	UP-7536 R1	Fundamentals of FORTRAN Programmer Reference
	UP-8002 R1	Introduction to Emulation/Conversion (360/20)
	UP-8004	Introduction to the Report Program Generato (RPGII)
	UP-8022 R2	Data Base Management System (DMS 90) Dat Description Language Programmer Reference
	UP-8026 R2	Introduction to the Series 90 Informatio Management System (IMS 90)
	UP-8030 R1	Introduction to the Assembler
	UP-8031 R1	Introduction to Data Management
	UP-8036 R2	Data Base Management System (DMS 90) Dat Manipulation Language Programmer Reference
	UP-8042	Introduction to Integrated Communications Acces Method (ICAM)
	UP-8043 R2	Introduction to the System Service Programs (SSP
6.0	UP-8044 R1-C	Report Program Generator II (RPGII) Programme
6.0		Reference
6.0	UP-8046 R2-A	Management Control System (MCS 90) Programme
6.0		Reference
	UP-8051 R1	Introduction to Data Utilities
	UP-8053 R2	Introduction to Job Control
6.0	UP-8054 R3-B	Sort/Merge User Guide/Programmer Reference
6.0	UP-8055 R5	Extended COBOL Summary
6.0	UP-8056 R5	Basic COBOL Summary
6.0	UP-8057 R2-A	Basic COBOL Supplementary Reference
	UP-8058 R1	Introduction to the Supervisor
6.0	UP-8059 R2-B	Extended COBOL Supplementary Reference
	UP-8060 R2	System Description
F	UP-8061 R3	Assembler User Guide
6.0	UP-8062 R6	System Service Programs (SSP) User Guide
	UP-8063 R4	Emulation/Conversion (9200/9300) User Guide/Programmer Reference
6.0	UP-8064 R4-B	Emulation/Conversion (360/20) User
6.0		Guide/Programmer Reference
6.0	UP-8065 R6	Job Control User Guide
	UP-8066 R1	Introduction to Emulation/Conversion (9200/9300)

6.0	UP-8067	R3-B	Report Program Generator II (RPG II) User Guide
6.0	UP-8068	R3-B	Data Management User Guide
F	UP-8069	R6	Data Utilities User Guide/Programmer Reference
6.0	UP-8072	R4	Operations Handbook for Operators
	UP-8073	R1	Introduction to Sort/Merge
6.0	UP-8074	R7	System Installation User Guide/Programmer
6.0			Reference
6.0	UP-8075	R2-A	Supervisor User Guide
6.0	UP-8076	R7	Systems Messages Programmer/Operator Reference
	UP-8077	R1	Introduction to 90/30 System Installation
	UP-8144	R6	Emulation/Conversion (9200/9300) Summary
	UP-8145	R6	Emulation/Conversion (360/20) Summary
6.0	UP-8159	R2	Data Management Programmer Reference
6.0	UP-8193	R1-A	FORTRAN Supplementary Reference
6.0	UP-8194	R4-C	Integrated Communications Access Method (ICAM)
6.0			User Guide
6.0	UP-8203	R2-B	Hardware and Software Summary
6.0	UP-8209	R4	System Service Programs (SSP) Programmer Reference
6.0	UP-8217	R5	Job Control Programmer Reference
6.0	UP-8227	R1-C	Assembler Programmer Reference
6.0	UP-8241	R2-A	Supervisor Programmer Reference
6.0	UP-8253	R1	Report Program Generator II (RPG II) Reference
6.0			Card
6.0	UP-8262	R1-B	Extended FORTRAN Supplementary Reference
6.0	UP-8269	R4	Integrated Communications Access Method (ICAM)
6.0			Programmer Reference
	UP-8272		DMS 90 System Support Functions User Guide/Programmer Reference
6.0	UP-8278	R2	Verify System Build User Guide/Programmer
6.0			Reference
6.0	UP-8342	R2-A	Sort/Merge User Guide
6.0	UP-8348	R1	Fortran Summary
	UP-8359		Universal Terminal System 400 Programmers Reference
6.0	UP-8364	R4	Information Management System 90 (IMS 90) System
6.0			Support Functions User Guide/Programmer Reference
6.0	UP-8376	R5	Spooling and System Operation Summary
6.0	UP-8379	R3	System/3 to OS/3 Transition User Guide/Programmer
6.0			Reference
	UP-8413		Universal Terminal System 400 Text Editor Programmer Reference
	UP-8424		Interfacing a Remote Device Handler Programmer Reference
	UP-8447		Introduction to OCL Transition (IBM System/3)
6.0	UP-8474	R1	FORTRAN IV Supplementary Reference
	UP-8479	R2	IMS 90 Terminal User Commands
	UP-8482		Universal Terminal System 400 MAC80 Assembler Programmer Reference
	UP-8483		Universal Terminal System 400 Utility Library Programmer Reference
6.0	UP-8511	R1	90/25 Operations Handbook for Operators
6.0	UP-8512	R1-A	Online Diagnostics Operator Reference
6.0	UP-8515		OS/4 to OS/3 Communications Conversion Guide, User
6.0			Guide Programmer Reference

6.0	UP-8516		OS/4 to OS/3 Assembly Program Conversion Utility
6.0	UP-8549	R2	Integrated Communications Access Method (ICAM)
6.0			Direct Data Interface (DDI) User Guide
6.0	UP-8550	R2	Integrated Communications Access Method (ICAM)
6.0			Standard MCP Interface (STDMCP) User Guide
6.0	UP-8551	R2	Integrated Communications Access Method (ICAM)
6.0			Transaction Control Interface (TCI) User Guide
6.0	UP-8552	R2	Integrated Communications Access Method (ICAM)
6.0			Utilities User Guide
6.0	UP-8553		OS/4 to OS/3 Conversion Guide
6.0	UP-8554		Universal Data Link Control General Description
6.0	UP-8589		OS/4 to OS/3 Job Control Conversion Utility
6.0	UP-8596		Introduction to OS/4 to OS/3 Conversion
6.0	UP-8606		OS/4 Disk Data Conversion Utility (DCON4)
6.0	UP-8611		UTS400 Utilities User Guide/Programmer Reference
6.0	UP-8612		1974 American National Standard COBOL Summary
6.0	UP-8613		1974 American National Standard COBOL Programmer
6.0			Reference
F	UP-8614	R1	Information Management System90 (IMS 90)
6.0			Applications Programmer Reference
6.0	UP-8741		IMS 90 Terminal User Commands Summary

1.7.2 Hardware References

The following manuals are applicable to this release:

	UP-7511	R1	DCT 2000 General Description
	UP-7532		DCT 2000 Programmer Reference
	UP-7545		DCT 2000 Operator Reference
	UP-7553		DCT 2000 Introduction Reference
	UP-7595	R1	Paper Tape S/S Type 0920-00 General Description
F			***UP-7605 deleted***
F	UP-7640		DCT 2000 Paper Tape S/S General Manual
	UP-7644		Uniservo VI C S/S Programmer/Operator Reference
	UP-7661		Uniservo 12/16 Mag Tape S/S Programmer/Operator
			Reference
	UP-7669		Paper Tape S/S General Manual
	UP-7688		Type 0768 Printer S/S Programmer/Operator
			Reference
	UP-7691		8414 Disk File Direct Access S/S Component
			Description
F			***UP-7704 and UP-7710 deleted***
	UP-7772		Card Punch S/S Types 0603-04, 0604-00, 0604-99
			Programmer Reference
	UP-7773		Card Punch S/S Types 0603-04, 0604-00, 0604-99
			Operator Reference
	UP-7782	R2	DCT 1000 Data Communications Terminal General
			Description
	UP-7788	R2	Uniscope Display Terminal Operator Reference
	UP-7802		8411/8414 Direct Access S/S Operator Reference
	UP-7804	R2	DCT 500 Series Data Communications Terminal
			General Description
	UP-7807	R2	Uniscope Display Terminal Programmer Reference

	UP-7827	R1	DCT 1000 Data Communications Terminal Operator Reference
	UP-7830		0920-02 Paper Tape Subsystem Operator Reference
	UP-7832	R2	DCT 500 Series Data Communications Terminals Operator Reference
	UP-7836	R2	DCT 500 Series Data Communications Terminal Programmers Reference
	UP-7839		1004/1005 S/S Operator Reference
	UP-7859	R1	DCT 1000 Data Communications Terminal Programmers Reference
	UP-7921		0716 Card Reader Subsystem Operator Reference
	UP-7938	R2	0770 Printer Subsystem Operator Reference
	UP-7939		Uniscope 100 Communications Output Printer Functional Description
	UP-7956	R1	Uniservo 20 Magnetic Tape Subsystem Operator Reference
	UP-7977		8411/8414 Disk Subsystems Programmer Reference
F			***UP-7993 and UP-7994 deleted***
F	UP-7983		Operator Reference for 8424 Disk Subsystem
	UP-7998		0920 Paper Tape Subsystem Programmer Reference
	UP-8016	R1	0770 Printer Subsystem Reference
	UP-8041	R1	Integrated Peripheral Channel Programmer Reference
6.0	UP-8052	R1	Processor Programmer Reference
	UP-8086		0773 Printer S/S Operator Reference
	UP-8088		0605 Card Punch S/S Operator Reference
	UP-8089		0717 Card Reader S/S Operator Reference
	UP-8097		Processor Operator Reference
	UP-8141		0773 Printer Subsystem Media and Expendable Supplies
	UP-8142		0717 Card Reader S/S Media and Expendable Supplies
	UP-8150	R2	Computer Assisted Data Entry System Supervisor's Quick Reference Guide
	UP-8190		0605 Card Punch S/S Media and Expendable Supplies
	UP-8191	R2	0773 Printer Subsystem General Description
	UP-8192		0605 Card Punch General Description
	UP-8196		0717 Card Reader Subsystem General Description
	UP-8205		Uniservo 10 and 14 Magnetic Tape Subsystems Subsystem Reference
	UP-8206		Uniservo 10 and 14 Magnetic Tape Subsystems General Description
	UP-8207		Uniservo 10 and 14 Magnetic Tape Subsystems Operator Reference
	UP-8208	R1	Uniservo Magnetic Tape Subsystems Media and Expendable Supplies
F	UP-8230		Operator Reference for 8425 Disk Subsystem
	UP-8247	R1	Communications Adapter Subsystem Reference (Preliminary)
	UP-8250		0776 Printer Subsystem Operator Reference
	UP-8273		Communications Adapter General Description (Preliminary)
	UP-8282		Series 600 Tape Cassette System Concept and Applications
	UP-8298		Model 800 Terminal Printer Operator's Guide
	UP-8335		0775 Line Printer General Description

	UP-8339		Model 800 Terminal Printer Component Description
	UP-8343		8405/8430/8433 Disk Subsystem Operator Reference
	UP-8344		8405/8430/8433 Disk Subsystem Subsystem Reference
	UP-8357	R1	Universal Terminal System 400 System Deskription
	UP-8358		Universal Terminal System 400 Operator's Guide
	UP-8361		8418 Disk Subsystem Operator Reference
	UP-8362		8418 Disk Subsystem Subsystem Reference
	UP-8411	R1	Universal Terminal System 400 Text Editor System Description
	UP-8441		0776 Printer Subsystem Subsystem Reference
	UP-8445		0776 Printer Subsystem Media and Expendable Supplies
F	UP-8458		Integrated Peripheral Channel Programmer Reference 90/25
	UP-8459		90/25 System Processor Operator Reference
	UP-8460		Processor Programmer Reference
	UP-8463		8413 Diskette Subsystem General Description
	UP-8470		Model 800 Terminal Printer Type 0774-07,08 Operator's Guide
	UP-8471		Model 800 Terminal Printer Type 0774-07,-01 General Description
	UP-8475		8406 Diskette Subsystem General Description (fo UTS 400.DCP)
	UP-8476		8406 Diskette Subsystem Operator's Guide (for UT 400/DCP)
	UP-8489		2521 Channel Transfer Switch Operator Reference
	UP-8490		8413 Diskette Subsystem Operator Reference
	UP-8491		0719 Card Reader Subsystem Operator Reference
	UP-8493		0719 Card Reader Subsystem General Descriptio..
	UP-8495		0786 Printer Subsystem General Description
	UP-8496		0786 Printer Subsystem Operator's Guide
	UP-8502		Distributed Communications Processor Syste. Operator Reference
	UP-8521		Processor Programmer Reference
	UP-8522		Processor Operator Reference
F	UP-8523		Integrated Peripheral Channel Programmer Referenc 90/40
	UP-8524		0778 Printer Subsystem General Description
	UP-8525		0778 Printer Subsystem Operator Reference
	UP-8527		0778 Printer Subsystem Expendable Supplies
	UP-8579		Universal Terminal System 400 Text Editor Operator'S Quick Reference Guide

1.7.3 Technical Bulletins

The following Technical Bulletins are applicable to this release:

Q1	UP-8605.4	8413 Diskette File Creation Utility
Q1	UP-8605.6	IMS 90 Multi-Thread Concept Guide
F	UP-8605.7	Iram User Consideration
F	UP-8605.8	UTS400 Character Protection Mode Utility
F	UP-8605.9	3741 Media Compatibility Utility

This section contains a brief description of the new features and enhancements provided for this release.

where applicable, a cross-reference (XREF) of the documents containing the respective information will follow the heading for the particular item or product. This XREF will correspond to the list of manuals contained in the Related Publications section and indicates where the enhancement is documented.

Likewise, where applicable, features are identified with a Request for Change (RFC) and User Association (AUUA,UUA/E) number following the description.

2.1 CONTROL SYSTEM

2.1.1 New Device Support

2.1.1.1 Support of 8424/8425 Disk

F XREF: UP-8072 R4, UP-8074 R7

- The OS/3 software is enhanced to provide support of the 8424/25 disk. This disk will be attached via the selector channel using the same device logic as the 8414. The 8424/25 has twice the storage capacity of the 8414.

2.2 SUPERVISOR ENHANCEMENTS

2.2.1 Max Job Time

XREF: UP-8217 R5, UP-8076 R7

- Support is provided for the "Max Time" parameter in positional parameter 6 of // JOB Job Control statement. The time specified may refer to elapsed wall-clock time or CPU time, depending upon the SYSGEN option specified. If the job exceeds that limit, the operator is given the opportunity to either cancel the job or extend the limit by any increment he chooses.

  This enhancement is supported only on Supervisors configured with NORMAL or MAX Timer Services.

2.2.2 Dynamic Expansion of User Jobs for ANSI-1974 COBOL

- The Supervisor supports a facility to dynamically expand and contract a user job region based on usage of the CALL and CANCEL statements in ANSI-1974 COBOL

2.2.3 GETCS

XREF: UP-8075 R2-A, UP-8241 R2-A, UP-8023 R2-B

- The Supervisor macro instruction GETCS is modified to optionally return to the caller the original image size, e.g., 80, 96, 128.

2.2.4 Supervisor Initialization Enhancements

F XREF: UP-8072 R4, UP-8074 R7

RFC #465, 737

- Enhancements to Supervisor Initialization are:

  a. The default disk pack to be used as SYSRUN is configurable (by VSN) rather than being fixed as SYSRES. This enhancement was requested by RFC #465.

  b. The format of the date to be keyed in at Supervisor Initialization is configurable. This enhancement was requested by RFC #737.

2.2.5 Tasking Enhancements

XREF: UP-8075 R2-A, UP-8241 R2-A, UP-8203 R2-B

RFC #951

- Enhancement to Tasking are:

  a. Two new Supervisor macro instructions, TPAUSE and TGO, are added to allow users to better control task synchronization.

  b. A new parameter is provided on the EXIT interval timer IT macro to allow Island Code to reset the SETIME and EXIT, all with one SVC. This is intended to eliminate problems (error code 28) if IT Island Code loses control for a "long" period of time immediately prior to the EXIT.

  c. The CHAP macro is enhanced to allow a task's priority to be raised (up to the priority level of the primary task) as well as lowered. This enhancement was requested by RFC #951.

  d. The restriction which limits the number of ATTACH/DETACH sequences to 255 for each job step is removed.

2.2.6 Error Log Enhancement

F XREF: UP-8072 R4, UP-8076 R7

- o The Error Log facility is enhanced to provide for logging of necessary error information on the SYSRES device and an interface for logging Machine Check errors.

2.2.7 Cancel NODUMP

F XREF: UP-8075 R2-A, UP-8241 R2-A, UP-8203 R2-B

AUUA #76021

- o The Supervisor macro instruction CANCEL is enhanced to allow the caller to specify NODUMP in order to override the // OPTION DUMP statement in the JCL.

2.3 SYSTEM GENERATION ENHANCEMENTS

F XREF: UP-8074 R7, UP-8072 R4

a. Sysgen Support for 8424/25

1. SYSGEN is enhanced to recognize a disk type specification for "8424" and "8425".

b. SPOOLING

New parameters are provided in the SUPGEN section to support the following new spooling options:

1. elimination of spooler compression of source records
2. increase output writer main storage region
3. increase output writer spool buffers
4. update spool file subdirectories by file rather than track boundary

F 5. console log printout elimination

6. selection of output writer search criterion by general category.

c. SYSTEM INITIALIZATION

New parameters are provided in the SUPGEN section to support the following new system initialization options:

1. system date format specification
2. RUN device default VSN

d. ERROR LOG

New parameters in both the SUPGEN and I/OGEN sections are provided to configure the following new ERROR Log specification: Number of resident buffers

e. DLOAD Table Configuration

A new parameter is provided in the SUPGEN section to configure the size of the resident DLOAD table (ANSI-1974 COBOL).

f. RESGEN Component Selection Expansion

Additional items are now available through the RESGEN INCLUDE/DELETE parameter specifications to configure more precisely the items to be included on the generated SYSRES.

g. RESIDENT SUPERVISOR SECONDARY STORAGE KEY ASSIGNMENT FUNCTION

A new subparameter is provided to the RESMOD Keyword in the SUPGEN section to specify that the secondary storage key assignment function should be resident.

h. NINETY COLUMN SUPPORT FOR 0716 CARD READER

The FEED parameter in the I/OGEN section is enhanced to accept 96 as a valid value for the 0716 card reader.

i. COMMUNICATIONS NETWORK GENERATION

Support for the verification of new ICAM macro keywords and the corresponding inclusion of the proper object modules is provided due to enhancements in the following areas:

1. enhanced user remote device handlers
2. global network enhancements
3. journaling enhancements

2.4 SPOOLING

2.4.1 Spooling Enhancements

XREF: UP-8065 R6, UP-8072 R4, UP-8074 R7, UP-8217 R5, UP-8376 R5

AUUA #2-3, 7004, 7003, 7007 RFC #709, 1046, 1087, 1003, 970, 1043, 937, 348, 659

o Reduce Number of Console Messages in Burst Mode (AUUA 2-3,

7004)

The means by which an Output Writer is loaded as a result of a BE SPL command is enhanced to load the Output Writer in burst mode according to the parameters entered with BE SPL command. When the Output Writer is loaded automatically it processes only the files so designated. This will remove the necessity to load the Output Writer in burst mode when the system is set for non-burst mode.

- Spool SYSGEN Option by Group (AUUA 7003)

  When an Output Writer is loaded in burst mode, it will batch files by the specified group without requesting operator intervention to change the burst mode criteria after each group.

- Optional Suppression of Printing of Console Log (RFC 709)

  This enhancement provides the user the ability to suppress via SYSGEN the printing of the console log.

- Allow breakpoint by specified number of pages/cards

F This enhancement permits the user to specify via job control that a breakpoint is to be issued after reaching a specified number of pages/cards.

- Permit Reposition by Page or Card Number (RFC 1046)

  This enhancement provides the operator to specify to the Output Writer that repositioning should be to a specific page or card number.

- Retain Diskette Input Reader Files (RFC 1087)

  This enhancement permits the operator to indicate that an input file from diskette read by the Input Reader should not be deleted after a job has accessed this spooled-in file.

- Tape Termination Message by the Output Writer (RFC 1003)

  The Output Writer is enhanced to display a message that tape output has been created prior to terminating.

- Remove Extraneous Page Ejection (RFC 970)

  The Output Writer is modified to remember the last page eject command. If another eject is issued (without intervening printing) it is ignored to prevent extraneous blank pages.

- Special Forms Alignment (RFC 1043)

The Output Writer does not cause a page ejection when a change of form name is detected.

- o Display Message After DE, HO, and BE SPL Commands are Entered (AUUA 7007)

  A message indicating the number of files deleted, held, or released from hold is displayed.

- o Permit Output Writer to Process RBP Files (RFC 937)

  The Output Writer, by command, processes print or punch files by remote id.

- o Provide Protection for DE SPL command (RFC 348,659)

  The DE SPL symbiont checks for the presence of a subdirectory or the keyword "ALL". Failure to enter the proper value causes an error to be displayed.

2.4.2 Spooling Performance Enhancements

F XREF: UP-8065 R6, UP-8074 R7, UP-8217 R5, UP-8376 R5

- o Enhancements to the Spooler are provided to increase the throughput of user jobs in a Spooling environment. These enhancements are offered to the user as System Generation and JCL specified features. The following features can be selected exclusive of each other:

  a. Increase the size of the spooling buffers to specifications of 16 and 32 sector buffers.

  b. Update subdirectory entries on a file boundary instead of a track boundary and reduces I/O and disk head movement.

  c. Increase the size of Output Writer buffer to 12 K bytes.

  d. Optionally provide for space character compression.

2.5 JOB CONTROL

2.5.1 Job Queue Commands

F XREF: UP-8065 R6, UP-8072 R4, UP-8217 R5

- The HO and BE console commands are enhanced to allow specifying that they apply to all remotely initiated or all locally initiated jobs on a queue. They are changed to allow specifying that they apply to jobs already in the system or to jobs that will be newly entered. The syntax of the command is changed so jobs with names of N, H, P, and ALL can be referenced.

  The DE console command is enhanced to allow deleting all remote initiated or all locally initiated jobs on a queue. The syntax of the command is changed so jobs with names of N, H, P, and ALL can be deleted.

F The DI console command is enhanced to display all remotely or locally initiated jobs on a queue. The command displays jobs in hold with the job name in parentheses. The syntax of this command is changed to conform to the syntax of the HO, BE, and DE commands.

2.5.2 Job Control Disk Files

- The run library and job control related tables have been restructured to raise the limits on number of jobs per job queue, on number of VSN's in use at one time, and on number
F of devices per job. This restructuring requires the SAT file YSYSTEMTABLES on SYSRES.

2.5.3 Run Processor New Option Statement Parameters

- If the letter "G" is put before any of the dump option parameters, that parameter will apply to the entire job stream, not just one job step.

  ```
  GABRDUMP
  GDUMP
  GJOBDUMP
  GSYSDUMP
  ```

- JOB statement positional parameters can be specified on OPTION parameters:

  ```
  MIN = minimum memory
  MAX = maximum memory
  TSK = number of tasks
  MXT = maximum time
  OPL = listing option list
  ```

ACN = account number
BUF = nXm
PRT = log and accounting print option
HDR = page separator printing option

- The HOLD parameter causes the job to be placed in the schedule queue in hold status.
- The NULL parameter is a dummy parameter primarily for use as an initial value for set symbols used as option parameters.
- The SEVERE parameter will not permit the job to be placed in a schedule queue if there are any errors, even warning errors.
- The TEST parameter will not permit the job to be placed in a schedule queue. No catalog updating is done. The job stream is merely tested and listed.
- The UNDEFINED parameter causes a warning error whenever an undefined (no value assigned) set symbol is encountered in the job stream.
- The UNEQUAL parameter causes a warning error for every comparison of character strings made in an IF statement when the strings are not of equal length and when neither string is null.
- The XSNAP parameter turns off SE DE, JC at run processor termination.

2.5.4 RENname Statement

A new statement to change a file label via job control is provided.

The statement's format is:

```
                              (new-label  )
//[symbol] REN lfdname,<                  >
                              ('new-label')
```

the "lfdname" points to a previously defined disk file.

2.5.5 CC Statement

A statement to initiate any symbiont that can be console command initiated is provided. This statement can be used instead of the RUN statement for cardless systems:

```
// CC  RU(010,XYZ)
```

2.5.6 Other New Run Processor Features

- Multi-volume diskette or spool file card image input.
- Warning message for duplicate LFD names in the same job step.
- RECV, RCB, and VMNT DD statement parameters.
- Addition of page or card breakpoint to SPL statement.
- Addition of NOCMP (no compress) and NOUPD (no update) parameters to SPL statement.
- Addition of DLOAD parameter to SFT statement.
- Accepting of arbitrary number of extents on YJCS.

2.6 JOB SCHEDULER

2.6.1 Display Job Status

F XREF: UP-8076 R7, UP-8072 R4

RFC #501, 504, 672, 1151, 1172, 1218

- This facility allows the user to display the reason a particular job in a schedule queue has not gone into execution.

2.6.2 Data Management Shared Code

- The maximum size data management shared code module is always loaded.
- A problem in previous releases relating to memory fragmentation when initiating a job which required a shared code module already in memory has been eliminated.

2.7 OCL ENHANCEMENTS

F XREF: UP-8379 R3

2.7.1 New UNIT Keywords

- OCL supports new UNIT keywords on the FILE statement. This statement must be added if the user wishes to read cards from a card reader, if the user desires an additional printer file, or if the user desires an additional punch file.

2.7.2 OS/3 JCL Enhancements to OCL

- The CR, RST and SPL statements are accepted by the OCL processor.
- The DVC statement parameter which defines the physical address of the unit to be used for the value is accepted by the OCL process.
- The DVC statement parameter which defines the SYSRES and SYSRUN packs by specifying RES or RUN is accepted by the OCL processor.
- The JOB statement parameter which defines the maximum amount of memory for a job is accepted by the OCL processor.
- The SKIP, NOP, GBL, JSET, IF, and GO statements are accepted

by the OCL processor.

- The EXEC statement parameters to define an alternate user load library and a switching priority are accepted by the OCL processor.

- The DD statement ACCESS, LACE, and RCB parameter are accepted by the OCL processor.

- The LFD statement parameter to specify how to open an existing file is accepted by the OCL processor, for the $DELET utility.

- The LBL statement parameter to specify tape block numbering is accepted by the OCL processor.

- The SCR statement parameters to scratch by prefix or by date is accepted by the OCL processor.

- The LFD statement parameter to specify that a file is read only is accepted by the OCL processor.

- The LFD statement parameter to specify how much main storage to reserve for extent information for the file is accepted by the OCL processor.

- All applicable JCL Option parameters are accepted by OCL.

- The JCL CC statement is supported by OCL.

- The JCL REN statement is supported by OCL.

- Increased Procedure Name Length Support

- The OCL processor accepts a procedure name with a maximum length of 8 characters.

- Multiple Printer/Punch Forms Control Support

- The OCL processor accepts PUNCH, FORMS/PRINTER, IMAGE statements for any appropriate printer or punch file, not only for the default.

2.7.3 Stored OCL Control Stream Support

- A request via the OCL console command to run a stored OCL stream from one of the four OCL libraries is accepted by the OCL processor.

2.7.4 System/3 Sort Support

- OCL recognizes an execution of the System/3 sort and sets up

an OCL stream to run the OS/3 SORT3 program.

2.7.5 Model 12/15 Support

- The OCL COMPILE, DATE, FILE, FORMS, LOG, NOHALT, PRINTER, PUNCH READER, and STIMULATE statements are added/modified to include the Module 12/15 specifications.
- OCL utility routines COPY, $DELET, and $MAINT are modified to include the Model 12/15 specifications
- Currently ignored FILE statement parameters (BLKL, RECL, RECFM, and END) which have equivalent parameters in the JCL DD statement are accepted by the OCL processor.
- OCL supports the Model 12, Model 15 and the JCL JOB Statements.

2.7.6 Diskette File Scratching Support

- OCL $DELET routine supports a new diskette UNIT keyword specification on the SCRATCH and REMOVE control statements.

2.7.7 Alternate Source and Load Library Support

- OCL supports the specification of alternate source and output libraries on the COMPILE statement for RPG compilations.

2.7.8 OCL Processor Specifications

- The OCL processor accepts specifications to define disk, tape, and diskette VSN's which are to be substituted for certain VSN's given in the FILE statement.
- The OCL processor accepts a file label length of 44 characters for disk or diskette files and 17 for all other file types. These are the maximum lengths allowed in JCL.

2.7.9 OCL Processor Input

- The OCL processor accepts Multi-volume diskette or spool file card image input.

2.8 DATA MANAGEMENT

2.8.1 DM Support of Error Subcodes

F XREF: UP-8068 R3-B, UP-8076 R7

- Data Management is enhanced to provide a subcode facility for error messages. Selected DM error messages that presently have multiple meanings are subcoded.

2.8.2 Variable Sector Support for IRAM/MIRAM Files

XREF: UP-8068 R3, UP-8217 R5

- In IRAM and MIRAM files, both the data and the index partitions in the DTF specify a fixed sector size of 256 bytes. This is required for the sectorized devices (ie. 8415 8416, 8418) which are formatted for a 256 byte sector. However, the selector channel devices (i.e., 8414, 8424, 8425, 8430, 8433) have no such constraint, so they are pre-formatted at OPEN time to accept the 256 byte sector size. Since this "sectorization" requires a hardware overhead, it results in decreasing the effective capacity of the disk.

  Variable sector support is designed to enable the user to create IRAM and MIRAM files with a data partition sector size larger than 256 on the selector channel devices. Since the hardware overhead per sector remains constant, a larger sector size will increase the effective capacity of the disk.

2.8.3 Recovery Support for IRAM/MIRAM Files

F XREF: UP-8068 R3-B, UP-8217 R5

- When the physical file structure of an IRAM or MIRAM file is changing (e.g., adding records or updating records with a key change in an indexed MIRAM file), the file must be successfully closed to update the file limits information which is recorded in the file labels. If there is a system crash, no files are closed and the effect on IRAM/MIRAM files whose file structures were changing is that: (1) a non-indexed file reverts back to its state prior to OPEN (e.g., added records are "lost") or (2) an indexed file may be compromised (e.g., must be rebuilt).

  File recovery support has been implemented so that should a file not be closed, the previously mentioned conditions will not result. Whenever a function is performed which effects the file limits values, these values are written on the disk and are automatically mapped into the DTF on subsequent

OPENs of the file.

2.8.4 Data Management Support for ANSI-1974 COBOL (MIRAM)

F XREF UP-8068 R3-B

- The OS/3 Release 6.0 system is enhanced with a new disk Data Management which incorporates the functional capabilities of IRAM in a more versatile system capable of supporting ANSI-1974 COBOL for relative and indexed I/O. The access method is called MIRAM.

2.9 COMMUNICATIONS

2.9.1 ANSI-1974 COBOL Communications Interface

F XREF: UP-8194 R4-C, UP-8269 R4

- The COBOL Message Control System (CMCS) provides the software interface between a COBOL communications program and the system communications software (ICAM).

  CMCS performs the basic function of translating and processing communications commands, responses and indications in such a way as to fulfill the requirements of the ANSI-1974 COBOL Communications standards.

2.9.2 User Termination Enhancement

RFC #1018, 1056, 1065

- This feature allows TCI users in general and/or TCI or STDMCP users with Disk Queuing to issue the NETREL imperative macro followed by a NETREQ imperative macro without having to reload the ICAM symbiont between these twc imperative macros.

2.9.3 One Tenth Second Polling

F XREF: UP-8424, UP-8550 R2, UP-8551 R2, UP-8552 R2

F RFC #286

F - ICAM allows the time interval between poll messages to the
F UNISCOPE terminal to be a minimum of one-tenth of a second.
F This is a configuration parameter for not-transient ICAM
F which allows the interval to be controlled by the user.
F This configuration parameter is also available to user
F written remote device handlers. ICAM users must specify the
F polling interval of terminals in tenths of seconds. The
F polling intervals permitted are 1, 2, 5, 10 or any greater
F value. This enhancement is available for user written or
F Uniscope type remote device handlers. The keyword, PINTV,
F of the TERM macro specifies the number of tenths of seconds
F between poll messages to the terminal. The default value is
F 10 (1 second).

2.9.4 User Written Remote Device Handlers (RDHs)

- New ICAM generation parameters are provided to users who have written or intend to write their own REMOTE DEVICE HANDLER "RDH". These parameters have been implemented on the LINE macro to indicate that the RDH wants full duplex

queuing at the CPIOCS level and also that the RDH wants terminal queuing at the RDH level.

2.9.5 Line Output Queues

XREF: UP-8550 R2, UP-8551 R2

- A new procedure is available for ICAM generation of output line queues. The current procedure is still supported, but this new procedure simplifies the user definition.

2.9.6 Journal File Data Reduction Utility

- The SELECT input parameter statement of the JOURNAL FILE DATA REDUCTION UTILITY previously restricted is supported.

2.9.7 STDMCP Enhancements for Cobol

XREF: UP-8550 R2

- New optional DTFCP TYPE=(GT) parameters provides a DATE/TIME stamp of the input message in new fields of the DTF. DATE/TIME stamp are provided in these new fields of DTF if and only if ICAM is configured to do so via new DATIME subparameter in FEATURES Keyword of CCA macro.

- The STDMCP interface is enhanced to allow a user to request to be notified when a message is put onto a list of destinations specified by the user when issuing a GETCP. No message is returned to the CUP with this GETCP.

- The user program submits a message segment via the PUTCP and then later via another PUTCP to tell ICAM to replace the first 4 bytes of that message segment. This satisfies the special requirements of COBOL communications for the Before/After Advancing Clause of Send Verb and may be useful to other CUPS.

2.9.8 TCI UTS400 Phase 2 Enhancements

XREF: UP-8551 R2

- The TCI interface does not include Field Control Character (FCC) Sequences in the preview of input from the terminal.

- New peripheral initiation commands submitted via output prefix indicators are supported. These additional UTS400 peripheral initiation commands are:

  - Print Form

- o Transfer All
- o Transfer Variable
- o Transfer Changed

2.9.9 TCI MTABLES Greater Than 32K

F XREF: UP-8551 R2

- o In previous releases of ICAM, the interface tables residing in the user's memory could not be larger than 32K bytes because of halfword displacement fields between various tables which make up the MTABLE.

NOTE:

This enhancement changes the halfword displacements to a fullword. This change requires changes to IMS and other TCI users who reference these fields.

2.9.10 Job Scheduling From A Terminal/CUP

XREF: UP-8550 R2

F
- o In a Global Network, the COBOL CUP is scheduled if not already in memory as a result of initial input from a terminal or another CUP. In addition, the CUP will optionally be notified via the DATAGRAM interface of GAWAKE of who initiated him. This capability, however, does not provide a dialogue between ICAM and the initiator in case system resources or system load prevent or delay the scheduling of the called CUP.

2.9.11 Disk to Disk Acknowledgment

- o Global ICAM incorporates an additional level of acknowledgment between adjacent nodes. Acknowledgment is performed when a message has been successfully queued in the receiving node. The messages are not released from the queue in the sending node until this acknowledgment is received.

2.9.12 Qualification of DATAPAC PDN

- o This release provides simultaneous two-way data transmission between two Series 90 systems in a permanent virtual channel
F environment. The Series 90 systems may be a 90/25, 90/30, 90/30B, 90/40 90/60, 90/70 or 90/80. The interface utilizes X.25 Level 2 and Level 3, in order to support the Canadian DATAPAC Public Data Network.

2.9.13 Automatic Line Turnaround

F XREF: UP-8194 R4-C, UP-8269 R4

- The automatic line turnaround enhancement improves system performance in the transaction-oriented environment. The feature is applicable to a half-duplex, and synchronous line. After each input completion, the line is turned around to be ready for output.

2.9.14 Full Duplex Queueing

F XREF: UP-8194 R4-C, UP-8269 R4

- Full duplex queueing provides the capability to perform data transfer on an input port and output port simultaneously. Full duplex queueing is utilized only by NTR and ILA lines at present; this feature is not available to other disciplines even though a full duplex line configuration is employed.

2.9.15 Format Edit and Cobol Batch Accommodation

F XREF: UP-8194 R4-C, UP-8550 R2, UP-8551 R2

- Format Editing is extended to accomodate output addressed to any ICAM-supported interactive device. The editing faciltiy is available to STDMCP and COBOL communication users.

F 2.9.16 Global ICAM Networks Phase 1

- F Global networking permits arrays of computer systems, F terminals, and application programs to be linked, via F communication lines or virtual channels, so that any single F unit may communicate with any other unit(s) in adjacent F nodes of the network. Application programs are addressable F units which may, via network generated sessions, communicate F with other application programs or terminals regardless of F their physical location and connecting links.

  F OS/3 6.0 Global Networking operates using the Series 90 F Integrated Communications Access Method (ICAM). In addition F to supporting the classical user program/terminal F relationships, global networks supports the following F additional capabilities:

  - F STDMCP application programs may interface with other F STDMCP application programs or terminals residing in F adjacent nodes of the network.

F Terminal to terminal sessions without the need for MPPS
F or application programs interface to these terminals.

F Any user or system task on OS/3 may awake any ICAM user
F task with the ability thru this capability to pass a
F DATAGRAM to the awakened task when both tasks reside in
F the same node of the network.

F All capabilities available in a dedicated network are
F available in a global network with the exception of the
F LNEREL/LNEREQ/TRMREP Imperative macros whose functions
F are now performed by ICAM and not the application
F program.

F Global and dedicated networks may operate
F simultaneously in the same node.

F Only one global network at a time may be in operation.

F New hardware is being provided for Series 90 systems whic
F supports a bit-oriented line control procedure. For Univa
F systems, this new procedure is called Universal Data Lin
F Control (UDLC). It is compatible with the High Level Dat
F link Control (HDLC) procedure that has been approved by th
F Consultative Committee for International Telephone an
F Telegraph (CCITT) X.25 as an International Standard.

F UDLC provides for the transmission of data records over ful
F duplex communication lines in a pure transparent fo.mat
F The protocol itself is bit-oriented with no defined n mbe
F of bytes, words, etc. For ICAM, record length may be an
F size; however, the length must be modulo 8 bits within th
F Series 90 family.

F Framing and error control conform to X.25 Level 2 procedures
F defined by CCITT using line access protocol A in a permanent
F virtual channel environment. The global network enhancement
F feature with its global CCA Implementation, new routing and
F transmission control features, are required to support the
F UDLC procedures. This provides a virtual networking
F capability for ICAM systems.

F In OS/3 6.0, this enhancement provides computer to computer,
F bit oriented servicing of private, full duplex,
F point-to-point communications lines on the 90/30 utilizing
F the CA with the Intelligent Line Adapter operating at 9600
F baud maximum.

F With the release of VS/9 5.0, operation between the Series
F 90 processors will be available.

2.10 INFORMATION MANAGEMENT SYSTEM (IMS 90)

2.10.1 General Information

- IMS 90 enhancements are implemented for both Single-thread and Multi-thread except where noted.

2.10.2 First Field of Edit Table

XREF: UP-8364 R4, UP-8614 R1

RFC #453

- The user may now define through the Expanded Input Edit Generator (ZH#EDT), the first field of the generation to be larger than five characters. The first field of the edited message at execution time (online processing) may be two characters or longer in length. However, if the first field is longer than five characters, then only the first five characters are used as the transaction code to schedule the action programs.

2.10.3 Configurator File Section Defaults

XREF: UP-8364 R4

RFC #890

- All optional keywords which are specifiable to the Configurator's FILE section, assume the default value as described in the Data Management User Guide UP-8068 and the OS/3 Data Management PRM UP-8159.

- Under the Configurator FILE section, certain required keywords may be omitted. The configurator automatically generates the required keyword in accordance with the format listed for each file type.

2.10.4 Termination Error Message (ST previously available in MT)

XREF: UP-8364 R4

RFC #1068

- The following information is displayed on the operators console, log, and the initiating terminal when a transaction cancels:

  - terminal identifier
  - transaction identification
  - transaction code

- action name
- program name
- code and description of reason for transaction
- cancel code, inserted into successor-ID by action program when user terminates with "S" or "A"
- detailed status code

2.10.5 Optional 'IMS Ready' Message

XREF: UP-8364 R4

RFC #897

- The user, by specifying IMSREADY=NO in the TERMINAL section of the configurator, inhibits the 'IMS READY' message to selected or all terminals in the IMS 90 network.

2.10.6 Unsolicited Output to Terminal in Interactive Mode

XREF: UP-8364 R4

RFC #400, 935

- A user requests to be notified of switched unsolicited output messages at the destination terminal at the end of an action (i.e., while in interactive mode). By specifying UNSOL=ACTION or TRANS in the TERMINAL section of the configurator, the terminal operator receives switched unsolicited messages on an action or transaction basis.

2.10.7 Output Message to Master Terminal

F XREF: UP-8614 R1

- This feature allows an action program to send a message to the master terminal without knowing the logical name of the master. This is useful for sending error messages to the master terminal when the originating terminal is not in a position to handle the error.

- In addition, terminal operators using the SWTCH transaction are able to send a message to the master terminal without knowing its logical name.

2.10.8 Remove Limitation on Number of Configurable Terminals

- Modifications were made to IMS 90 to allow support of 256 or more terminals. Single Thread IMS 90 supports up to 256 terminals and Multi Thread IMS 90 imposes no limitation upon the number of terminals that can be configured.

2.10.9 Physical Close and Open of Files

F XREF: UP-8364 R4

RFC #M-60, M-69, 433, 542, 617, 660, 884

F F o Single-thread and Multi-thread versions of IMS 90 are enhanced to perform physical open and physical close of the specified file. ZZCLS and ZZOPN are the master terminal commands that enable the user to physically close and open a file, thus permitting off-line access of that file.

2.10.10 IRAM File Support (MT previously available in ST)

F XREF: UP-8614 R1, UP-8364 R4

o The Multi-thread version of IMS 90 is enhanced to allow IRAM files to be accessed in the IMS 90 environment, either via action programs or via UNIQUE.

2.10.11 Online Action Program Replacement

F XREF: UP-8364 R4

F F o Single-thread and Multi-thread version of IMS 90 are enhanced to support a new master terminal command, ZZPCH, which directs IMS 90 to the load library to reload the designated action program when that program is next invoked. This command enables the replacement of an action program which is already in memory and would not otherwise be reloaded during the current IMS 90 session.

2.10.12 Tab Stops in UNIQUE

RFC #161, 401, 812, 1076, 1144

o The ADD and CHANGE commands (display style) of UNIQUE are enhanced to precede each item update format (asterisks or exclamation points) with a tab stop to make the terminal operator's task quicker and more convenient.

2.10.13 Blanking of Asterisks and Exclamation Points by UNIQUE

RFC #1124, 1145

o For 'MUST ADD' items, the UNIQUE ADD command displays update formats which contain exclamation points (!) in those positions that are to be overlaid by characters keyed in by the terminal operator. Update formats for items that need

not be keyed in, and all update formats displayed by the UNIQUE CHANGE command, contains asterisks (*). (All update formats contained asterisks prior to release 6.0.)

- For numeric items, asterisks or exclamation points that are left unchanged by the terminal operator will be treated as zeros (0).

- For alphabetic and alphanumeric items, asterisks or exclamation points that are left unchanged by the terminal operator are treated as spaces (hexadecimal 40).

2.10.14 Improved Snap of Action Programs

F XREF: UP-8364 R4

- Single-thread (always) and Multi-thread (configurable option) versions of IMS 90 are enhanced to print an edited directory preceding any SNAP dump of an action program, and to include in the dump any currently active resident subprogram. The directory includes addresses of control blocks and program areas, the cause of the dump and other information that is useful while debugging the action program.

2.10.15 Warm Restart (MT, previously available in ST)

F XREF: UP-8364 R4

- Warm restart is part of the IMS 90 startup procedure. It is responsible for the rollback of all updates performed by transactions that were active at the time of the last IMS 90 or OS/3 system failure. Transactions are considered to be active whenever the last record written to the audit file for a transaction is not a transaction record.

- Retransmit Last Output Message

  Warm restart automatically rollbacks all updates for transactions that are found to be active in the audit file. The terminal output message file remains unaltered, since it contains the output messages of the last completed transactions. Upon termination of a warm restart the message:

  IMS READY DLMSG

  is displayed upon all terminals connected to IMS 90. By pressing the TRANSMIT key on the UNISCOPE 100 or UNISCOPE 200, the output message of the last transaction completed for the terminal is retrieved.

The terminal output message file (TOMFILE) consists of one TOM record for each terminal attached to the IMS 90 system. Each terminal is allocated its own record for output message logging. Whenever a rollback point or a transaction termination is encountered, the contents of the user's output message area is written to the output message file. Therefore the TOMFILE will always contain the output message of the last performed transaction by IMS 90. Messages from the TOMFILE can be retrieved at any given time by submitting the transaction code DLMSG to IMS 90 from any configured terminal. This transaction code is automatically displayed at each terminal after either COLD or WARM restart in order to be submitted to IMS 90 by the terminal operator. The TOMFILE is also updated by the offline recovery and will, therefore, always reflect the state of the data base after the accomplishment of the recovery.

2.11 IMS 90 UTS400 SUPPORT

2.11.1 UTS400 Function Key and Native Mode Support

XREF: UP-8364 R4

- All 22 UTS400 function keys are used to schedule transactions or are passed to action programs as data. The function keys are configurable as transaction-ids. When a transaction is not interactive, the function key is scanned against the transaction-id table and the action program is scheduled. If the transaction is in interactive mode, the function key is presented as data (e.g. Function key 1='F#01') to the action program.

- The FCC is treated by IMS 90 as a DICE sequence. By specifying EDIT= tablename or a character in the ACTION section of the Configurator, all of the FCC characters are eliminated. The FCC will remain in the message text if EDIT=NONE is specified.

2.11.2 UTS400 Additional Peripheral Initiation Commands

XREF: UP-8611 R1

- IMS 90 is enhanced to include four new initiation commands for COP support. The command PRINT FORM, TRANSFER ALL, TRANSFER VARIABLE, and TRANSFER CHANGE are available to user written action programs. The user supplies in the Auxiliary Device field of the Output Message Header the aux-function code for the initiation command and the aux- device-number for the COP.

2.11.3 UTS400 Downline Load Support

F XREF: UP-8364 R4, UP-8614 R1

- This feature permits IMS 90 users to down-line load UTS400 programs from a load file to a UTS400 terminal. Down-line loading can be accomplished by the IMS 90 supplied Action Program ZUKLOD, or a user written action program. Through the use of two new function calls, SETLOAD and GETLOAD, action programs read blocks of data from the load file and send them in proper formats to the UTS400 terminal.

2.12 SORT MERGE

2.12.1 ANSI-1974 COBOL Support

XREF: UP-8054 R3-B, UP-8342 R2-A

RFC #1045

The OS/3 Sort/Merge program is enhanced to provide the necessary support for ANSI-1974 COBOL. This support includes the use of the extended data formats, the capability of merging sixteen files and the ability to compare fields which require an alternate collating sequence.

- The extended data formats required by ANSI-1974 COBOL are leading sign numeric, trailing sign numeric, numeric data overpunched leading sign and numeric data overpunched trailing sign.
- The Merge function is increased to support sixteen files.
- The ability to support an alternate collating sequence is added to the subroutine sort. This will include the support of multiple characters with an equal compare value.

2.12.2 8424/8425 Disk Support

- SORT and SORT3 support the 8424/8425 disk devices.

2.13 LINKAGE EDITOR

2.13.1 ANSI-1974 COBOL Support

Q1 XREF: UP-8062 R6

- The OS/3 Linker is enhanced to support the specification of Dynamic Loading for load modules.

2.14 LIBRARIAN

2.14.1 ESC Command

Q1 XREF: UP-8062 R6, UP-8209 R4

RFC #52, 149, 409, 578

- The ESC Librarian command allows the inclusion of other Librarian commands and imbedded data from diskette, tape, disk sequential files, or Librarian modules.

2.14.2 UPSI Byte Support

F XREF: UP-8065 R6, UP-8076 R7, UP-8217 R5

RFC #97

- The Librarian is enhanced to set the USER Programmable Switch Indicator Byte (UPSI) on various error conditions.

- The Librarian error count message is enhanced to contain the UPSI byte setting.

2.15 DUMP/RESTORE (DMPRST)

2.15.1 Stand Alone Selector Copy, Copy Routine and Disk Dump 8424/25

Q1 XREF: UP-8062 R6, UP-8209 R4

- Disc Dump/Restore (DMPRST), Stand Alone Selector Copy Routine (SU$SEL) and the Selector Copy Utility (SU$CSL) are enhanced to recognize the 8424 and 8425 disc device types.

2.15.2 Relocatable Disk DUMP/RESTORE File Copy

F XREF: UP-8062 R6

RFC #77 AUUA #76061

- DUMP/RESTORE is enhanced to relocate files being copied or restored. This routine is only used when DMPRST is doing file processing. It is called when a file cannot be moved to the exact position from which it was originally copied. The file is relocated to any available space which is allocatable on the output disk.

  This relocation process also removes the previously published restriction that the VTOC be in the same position as when file was dumped. Similarly, the disk to disk copy will not require that the VTOC be at the same address on both volumes.

2.16 CATALOG MANIPULATION UTILITY (JC$CAT)

2.16.1 Catalog Password Modification

XREF: UP-8062 R6, UP-8209 R4

RFC #1088

- A new command to change the password on a catalog has been added.

- If multiple catalogs are being processed, a different password can be specified for each catalog.

2.17 DATA UTILITIES

2.17.1 MIRAM Support

XREF: UP-8069 R5-A

- DATA Utilities is enhanced to allow the user to process MIRAM files including those which contain variable length records, deleted records and multi-keyed records. The user is given the opportunity to select:

  a. which key to use for controlling the sequence of input records

  b. the definition of the output files' key characteristics (location, size, dupes allowed, and key changes allowed)

  c. whether the output file must allow for deleted records.

2.17.2 Data Definition (DD) and Variable Sector Support:

XREF: UP-8069 R5-A

- The parameters specified on Data Definition (DD) statements are accepted. The hierarchy of the accepted Data Utilities input parameters is:

  1. If the file is a disk input file, then the file characteristics specified in the FORMAT1 label for the file overrides all other parameter specifications. The FORMAT1 label specifications have the highest priority, (priority 1).

  2. The parameters specified on the DD statement have an intermediate priority, (priority 2), and override all parameter specifications except FORMAT1 label specifications for disk input files.

  3. The parameters specified on the Utility Input and Output (UIO) statement have the lowest priority, (priority 3) and override only those parameters specified by default.

- IRAM and MIRAM files with variable sector sizes are processed. For IRAM or MIRAM input files the sector size specified in the FORMAT1 label for that file is used. For IRAM or MIRAM output files. The user may specify a specific sector size or have DATA compute a sector size based on the

record slotsize and output buffer size.

2.18 DISK PREP

2.18.1 Disk Initialization Support

XREF: UP-8217 R5

- The disk initialization program (DSKPRP) is enhanced to support 8424/8425 disks.

2.19 LANGUAGES

2.19.1 American National Standard 1974 Cobol (COBL74)

F XREF: UP-8613

- The OS/3 ANSI-1974 Cobol release supports the full facilities (without REPORT WRITER) of the American National Standards Institute X3.23-1974 Cobol language specification; and it compiles source programs written in ANSI for these modules/levels:

- NUCLEUS	LEV-2
- TABLE HANDLING	LEV-2
- SEQUENTIAL I-O	LEV-2
- RELATIVE I-O	LEV-2
- INDEXED I-O	LEV-2
- SORT-MERGE	LEV-2
- SEGMENTATION	LEV-2
- LIBRARY	LEV-2
- DEBUG	LEV-2
- INTER-PROGRAM COMMUNICATION	LEV-2
- COMMUNICATION	LEV-2

- The COBOL compiler also supports the following extensions to standard COBOL-1974:

  - ISAM file support via indexed Level-1 I/O verbs
  - SAM file support via Sequential I/O verbs
  - USER Label Processing
  - Non-English Language Support
  - TRACE
  - DEBUG
  - EXHIBIT
  - TRANSFORM
  - COMP-1 (Short Floating Point)
  - COMP-2 (Long Floating Point)
  - COMP-3 (Packed Decimal)
  - COMP-4 (Binary)
  - FD and SD as using arguments with the CALL statement THEN with IF statement
  - SYSIN with ACCEPT statement
  - SYSOUT with DISPLAY statement
  - Apostrophe or Quote as Non-Numeric Literal Delimiter Non-Numeric Literal Length extended to 132
  - DISPLAY Floating Point Data Format
  - SYSLOG with DISPLAY statement (Display to console printer)
  - IMS 90 ACTION PROGRAM

- A new JPROC is supplied to use the new ANSI-1974 COBOL compiler COBL74. This JPROC, similar to those for the existing Cobol compilers, sets up parameters necessary to execute the compiler based on user specified keyword

parameters.

2.19.2 ASSEMBLER

XREF: UP-8061 R3

F RFC #295, 61.6, 683, 869

- The OS/3 Assembler is enhanced to provide printing of the symbol cross reference listing in double column format. Each printed page contains two columns of cross reference data. Each line contains up to a maximum of five references to the current symbol. Continuation can occur from the bottom of the left-hand column to the top of the right-hand column and from the bottom of the right-hand column to the top of the left-hand column on the next page. The last page of the listing contains any part of a partial page.

- The OS/3 Assembler is enhanced to optionally flag all absolute base/displacement fields of machine instructions that yield values less than 4096. Each offending source statement is flagged with an "Addressability Error" flag.

  The following parameter will invoke this feature:

  ```
  // PARAM RO=YES
  ```

  The default value is no.

- The OS/3 Assembler is enhanced to supply the object module length in bytes 9 through 12 of the object module header record.

2.19.3 FORTRAN IV

F XREF: UP-8262 R1-B

- Subscript Checking

  When debugging a FORTRAN program, the user has the option of having the compiler check all subscripts. Whenever an actual subscript is outside the declared limits of the array, the message

  ```
  "FL530 SUBSCRIPT OF -------- OUT OF RANGE ON
       CARD ---- OF MODULE ------."
  ```

  is written to the diagnostic device. No recovery of the erroneous subscript is attempted. The number of messages output to the diagnostic device can be controlled by the error definition procedure (ERRDEF).

To activate the subscript checking, compilation with the following form of the PARAM statement is required:

```
// PARAM OPT=C
```

This causes code to be generated before every subscripted reference to dynamically check the values.

- Label Trace

The label trace facility is a debugging tool which allows the user to follow the execution path of his program. Each time a labeled statement is executed, the label of the statement is output to the diagnostic device.

A program that is to be traced must be compiled with the following form of the PARAM statement:

```
// PARAM OPT=T
```

This causes code to be generated for each label in the program to write the message

"FL050 CONTROL AT STATEMENT ----- ON CARD
---- OF MODULE ------."

if tracing is activated. To activate tracing, the program must execute a

```
TRACE ON
```

statement. To deactivate tracing after it has started, the program must execute a

```
TRACE OFF
```

statement.

- Asterisk Comment Card

An asterisk in column 1 of a card will be treated the same as a 'C' in column 1, i.e., the card is treated as a comment card.

- BLOCKDATA Modules

BLOCKDATA processing has been enhanced to allow a maximum of 85 common blocks per BLOCKDATA subprogram instead of 16.

- MIRAM Support

The FORTRAN user is able to create and access a MIRAM disk file. He has the ability to create a file as a sequential or random file and access it in either way.

2.19.4 RPGII

F o The RPGII compiler supports the 8424/8425 disk devices.

2.20 EMULATOR EM20

2.20.1 EM20 Enhancements

XREF: UP-8064 R4-B

- The OS/3 Emulator EM20 is enhanced to provide the following new features:
  - A console error message is displayed if the emulated program issues a printer skip command to a channel that does not exist in the carriage tape.
  - A capability exists to load a 360/20 object program into any location in emulated memory.
  - A capability is provided to interrupt an emulated program whether or not an I/O sequence is encountered.

2.21 VERIFY SYSTEM BUILD (VSB's)

2.21.1 VSB Enhancements

XREF: UP-8278 R2

- The Verify System Build (VSB) User Guide is enhanced to include 8424/8425 disk specifications and a new test is added for ANSI-1974 COBOL.

F ** Paragraph deleted **

2.22 ON-LINE MAINTENANCE DIAGNOSTICS

- ONDISC

  The ONDISC program is enhanced to include support for the
F 8424/8425 Disk Subsystem.

- ONCOMM

  The ONCOMM Program is enhanced to provide an on-line diagnostic capability for testing the Uniscope 100 and 200, UTS400, DCT-475, DCT-500, DCT-524 and DCT-1000 communications terminals. ONCOMM provides the same functionality for terminals previously supported by the ONTERM OLM program and is enhanced to allow simplified parameter entry and improved operations via optimization of program logic flow.

- o ONTAPE

  The ONTAPE program tests the Uniservo 6c, 10, 14, 12, 16 and 20 tape devices on the 90/30 Selector and Multiplexer Channels. This program is enhanced to provide tests for the 0858, 5017, 5034 and 5045 Control Units. Additionally, the program will provide an optional test segment to allow a utility tape copy function.

- o ONUERL

  This product consists of an On-Line Error Log Edit program (ONUERL). It obtains error data logged into YELOG and prints it in a format consistent with other supported systems for use by customers and Customer Engineering.

- o ONBPXR

  The new On-Line Basic Processor Exerciser (ONBPXR) program is designed to test all non-privileged instructions with the exception of the Set Program Mask (SPM) and Supervisor Call (SVC).

2.23 Joblog BEM Terminal Usage Summary

XREF: UP-8062 R6

RFC#1236

- o The JOBLOG report program is modified to provide a BEM Terminal Usage Summary at the end of the standard JOBLOG Report Listing.

Q1 2.24 UTS 400 SCREEN MANAGEMENT SYSTEM (SMS 400)

Q1 - o The UTS 400 Screen Management System (SMS 400) is designed to provide the MAC80 user the necessary "front end" to his program which interfaces with firmware and provides the functions common to most programs written to run on the UTS 400 system. Its feature include:

Q1 a. A display routine which moves messages from user memory to the screen.

Q1 b. Peripheral I/O control.

Q1 c. Time sharing of a program or program segments between the CRTs.

Q1 d. Keyboard control such as:

Q1 1. Identifying routine to be activated by attention

Q1 keys

Q1 2. Identifying routines to be activated by function
Q1 keys

Q1 3. The ability to identify which
Q1 normal/function/attention keys activate desired
Q1 routines

Q1 4. Lock and unlocking desired key boards

Q1 e. Processing data in fields. A screen can be defined to
Q1 be made up of fields. Each field has many descriptive
Q1 attributes which are independently defined. Key board
Q1 entries are placed in the fields and processed as
Q1 input, or processed after the field is filled. The
Q1 programmer is given many options as to how to define
Q1 each field, and how to process the data therein.

Q1 f. Floating point arithmetic is provided.

Q1 g. Editing of numeric results in several formats on the
Q1 screen

The following software components are provided and supported in this release:

Job Control (JC)
OCL Processor (OC)
Data Utilities (DATA)
System Librarian (LIBS)
Tape Prep (TPREP)
Disk Prep (DSKPRP)
Sort/Merge (SORT)
Sort/Merge (SORT3)
Assembler (ASM)
Report Program Generator (RPG II)
ANSI-1968 COBOL Extended (COBOL)
ANSI-1968 COBOL Basic (COBOLB)
ANSI-1974 COBOL (COBL74)
FORTRAN Basic (FORT)
FORTRAN IV (FOR4 or FOR4L)
Linkage Editor (LNKEDT)
Program Conversion (SCAN, ASMTRN, JCON1 and COPY94)
Information Management System/90 (IMS 90: generated)
F Data Base Management System/90 (DMS 90)
Nine Thousand Remote (NTR)
Dump/Restore (DMPRST)
Diskette Utility
JOBLOG Report Program
Print SRD (PRTSRD)
Print Patch History Table (PTLIST)
Catalog Manipulation Utility (JC$CAT)
System Patch Routine (SU$PAT)
9200/9300 Emulator (generated)
9200/9300 Data Conversion (DCON92, UNLOAD, UNLOAD10, UNLD1011)
360/20 Emulator (generated)
360/20 Data Conversion (DCON20, CU$120)
Data Management (SAM, DAM, IRAM, ISAM, NI)
Online Maintenance (OLM)
Boot/IPL (DISKBT, IPL)
S/3 Conversion (SCONS3)
F 360/20 & 9300 Data Conversion Reload
System Dump (SYSDUMP)
Job Step Dump (JOBDUMP)
IDA Copy (SU$C16)
Selector Copy (SU$CSL)
Error Log Edit Utility (ONUERL)
Integrated Communications Access Method (ICAM)
System Generation (SG)
System Utility (SU)
Supervisor (Generated)
Verify System Build (VSB)
Correction Verification (COR#, COR#V)
Log Accum. Routine (SL$LOG)
UTS400 PHASE II Support

PL/M
MAC80
Host Macros
UTS400 Utilities
UTS400 Screen Management System (SMS 400)

3.1 DECOMMITTED SOFTWARE

- Extended FORTRAN

  The Extended FORTRAN compiler is decommitted with this release of the software.

3.2 APPLICATION SOFTWARE

- The following software products are not included on the release media:

  Critical Path Method/30 (CPM 30)
  Linear Programming System/90 (LPS 90)
  Management Control System/90 (MCS 90)

  Application software products should be ordered through your Sperry Univac marketing representative.

3.3 OS/3 RELEASE TO RELEASE COMPATIBILITY

- This is a general statement regarding compatibility between major releases of OS/3. It applies unless superceded by specific restrictions documented in the SRD.

  Forward compatibility is supported between consecutive major releases (e.g., 4.0 with 5.0, 5.0 with 6.0). This support extends to data files, library files, job control streams, and programs compiled on the earlier release. Compatibility between non-consecutive major releases (e.g., 3.0 and 5.0) is not necessarily supported.

  Backward compatibility between consecutive releases is generally provided for data files and library files where functions being used are provided on both releases. In general, it is not a good idea to execute programs compiled on a later release on an earlier release; the later system will support interfaces of programs from the earlier system, but the earlier system does not necessarily support interfaces of programs from the later system. Obviously, backward compatibility is restricted to those functions which are supported on both releases.

F o The following is a definition of:

F o Restriction

F A restriction is a temporary limitation in the functions of
F the software product. Restrictions are lifted as soon as
F possible. Restrictions are documented only in the SRD.

F o Guideline

F A guideline is special information related to the use of a
F product. Guidelines are offered to call attention to
F aspects of a product that may not be readily apparent from
F the current user manuals. Guidelines are permanently
F applicable, and will be included in subsequent revisions to
F the user manuals.

F 4.1 CONTROL SYSTEM

F There are no Guidelines or Restrictions.

F 4.2 SUPERVISOR

F 4.2.1 Guidelines

F 4.2.1.1 Dynamic Expansion of User Jobs for ANSI-1974 COBOL Guidelines

F Jobs which have any active interfaces with ICAM or DBS cannot be
F rolled out. This is a requirement of the ICAM and DBS symbionts,
F not of the Supervisor. An error condition occurs if a rollout is
F required under these circumstances.

F 4.2.1.2 UP-8076 Manual Guidelines

F o Any system I/O error message (refer to UP-8076 Section 5) or
F the SYSRES disk channel must be responded to before
F initiating any more system commands.

F Add to UP-8076 page 5-2 as an italicized note: "Any I/O
F error message on the SYSRES disk channel must be responded
F to immediately."

F 4.2.2 Restrictions

F 4.2.2.1 PIOCS Magnetic Tape Restriction

F o If a block number error occurs on magnetic tape and the user
F CCB indicates the program will accept unrecoverable errors

F (CCB byte 3, bit 1=1), the error is returned as
F unrecoverable (CCB byte 2, bit1=1), but the block number
F mismatch bit is not set as stated (CCB byte 2, bit 5).

F 4.3 SYSTEM GENERATION

F 4.3.1 Guidelines

F 4.3.1.1 8415 RES PACKS Consideration

F o The system will not fit on two 8415 packs. Modifications
F have been made to SYSGEN to accommodate the system on three
F packs.

F 4.3.2 Restrictions

F There are no Restrictions.

F 4.4 SPOOLING

F There are no Guidelines or Restrictions.

4.5 JOB CONTROL

4.5.1 Run/OCL Guidelines

- When coding the LCB Job Control statement, do not use the character form for coding single quote (apostrophe) or ampersand (&). These characters have special meaning to the Run Processor; use the hexadecimal form to represent them.

- Caution must be used when specifying a RCSZ/RCSZn and/or BKSZ/BKSZn on a // DD statement. The user is advised to refer to the appropriate documentation to determine if a particular type of program supports the dynamic changing of record and/or block sizes at run time. There are also considerations for the sizes acceptable to a particular Data Management access method. Failure to follow the rules described in the appropriate documentation will result in errors or unpredictable results during execution.

- Execution of different jobs may be coordinated by use of // OPTION HOLD to put a job in the schedule queue in HOLD status. The // CC BE <jobname> statement may be used to start up that job from another job.

- The run processor will accept any length card image as input but only the first 72 columns are examined for job control statements. The entire card image is used for imbedded data.

- The run/OCL processor passes the exact record length of imbedded data thru to GETCS. However a record length may be increased if set symbol substitution adds additional characters to the record.

4.5.2 Job Scheduler Guidelines

- The scheduler and step processor will only load the maximum size shared code data management module for a function type (maximum ISAM, maximum PRINTER, etc). Thus use of two smaller modules with a total size greater than the largest module is inhibited and overall less memory is used.

4.5.3 Display Job Status Guidelines

- A new option or the DI console command to display the reason a job in a schedule queue has not gone into execution, has been implemented. The syntax is:

```
DI  JS, jobname
```

F - If an operator message cannot be written to the console log,

F an "end blink character" is appended to the end of the
F message when it is displayed.

4.5.4 Job Control Restrictions

- The maximum number of job steps in a job is 254. The maximum number of unique unit record devices in a job is 56.

- The maximum number of jobs in the pre-emptic schedule queue is 15; in the high priority schedule queue is 39; and in the normal priority schedule is 71.

- The maximum number of volumes in use in the system is 166.

- Within any job step, DVC-LFD sequences with identical LFD names overlay each other. The last of these is presented as the active sequence when an open is performed, using the file name in question. In order to establish uniqueness for all files within a job step, a unique LFD name must be used for each file.

F The above is standard procedure. Warning message R480 is displayed.

- Whenever using both a real and a virtual device of the same type within one job, do not use the same logical unit number for both the real and virtual device.

  This restriction applies to all devices which can be accessed in a real as well as a virtual form, i.e.;

  1. readers
  2. printers
  3. punches
  4. diskettes

  For example, if

  ```
  // DVC 130,I
  ```

  has been specified in an environment which supports input spooling, assigning a virtual diskette, do not use

  ```
  // DVC 130
  ```

  subsequently, in the same job, to assign a real diskette. Rather, use

  ```
  // DVC 131
  ```

  to get a real assignment.

- The SCRATCH volume specification is not available.

- Job step temporary split-cylinder files are not available.

- The keyword SCRATCH should not be used as positional parameter 1 on the // VOL statement.

- The REN statement cannot rename Y files on SYSRES or YRUN files on SYSRUN.

- The SCR statement cannot scratch Y files on SYSRES or YRUN files on SYSRUN.

- The CC statement only initiates symbionts, not all console commands. The symbiont is requested during job step execution, however execution of the symbiont may be delayed until memory and time is available. Execution of the job does not wait for symbiont completion. The fact that the symbiont is requested and control returned immediately to the job should be considered in using the CC statement to initiate ICAM networks, e.g., // CC CN.

- Jobs using the GETCS record length feature from existing filed job streams, must re-file those streams.

4.5.5 Additional OCL Restrictions

- OCL control streams cannot be filed into the OCL libraries thru the FI console command. They must be added using the OS/3 Librarian or the $MAINT routine of OCL.

- The Model 15 /. statement is only allowed in a job started with an OCL JOB statement. It is then treated as the /& in JCL which means end of job.

- The Model 15 /& statement is ignored when placed between an OCL JOB statement and a /. or // FIN statement.

- The REN and SPL statements cannot be used in the LOAD-RUN sequence for $COPY, $KCOPY or $DCOPY.

- On multi-step jobs, the device id on the unit parameter of the FILE statement causes a R278 error. These declarations must be in all steps and always in the same order.

4.6 JOB SCHEDULER

Refer to Section 4.5 for Guidelines and Restrictions.

4.7 OCL

Refer to Section 4.5 for Guidelines and Restrictions.

4.8 DATA MANAGEMENT

4.8.1 Guidelines

4.8.1.1 Variable Sector Support for IRAM/MIRAM Files

- The user specifies the sector size via the VSEC parameter on the // DD job control statement at file creation:

```
// DD VSEC= (n   )
         <    >
         (YES)
```

VSEC=n
: Explicitly specifies the sector size to be used in creating the file, where n is the number of bytes.

VSEC=YES
: Specifies that the sector size is to be computed at OPEN time, based on record size and buffer size. Sector size will be the largest multiple of record size which does not exceed buffer size.

Once the // DD statement has been used to specify a sector size, the statement must be used in all job streams which access the file, unless the ACCEPT parameter is used on the //LFD statement (in which case the VSEC specification may be omitted).

Incorrect use of the VSEC specification can result in a DM17 - Invalid Block Size - error. This can be caused by:

1. Specifying a sector size other than 256 for a sectorized device (the VSEC parameter should not be used for these devices).

2. Specifying a sector size different from the size used to create the file (if the file already exists).

3. The specified buffer size is less than the minimum buffer size required.

To compute minimum buffer size, the following rules apply:

- if record size divides evenly into sector size, mimimum buffer size is equal to sector size;

- if record size is a multiple of sector size, minimum buffer size is equal to record size;

- if neither of the above applies, add sector size to record size, subtract 1, then round up to next multiple of sector size. This result is the minimum buffer size.

NOTE:

Only a release 6 version of the IRAM processor can create or process files which employ the recovery or variable sector facilities. Once created with one of these facilities files must be processed with a release 6 version of the IRAM processor.

4.8.1.2 Recovery and Support for IRAM/MIRAM Files

- The recovery facility is invoked via the RECV parameter on the //DD job control statement:

```
// DD RECV=YES
```

This specification is valid only at file creation time and ignored all other times (e.g., the file is processed in the same fashion in which it was created). The recovery facility is not "activated" until after the successful CLOSE at file creation (e.g., recovery cannot be performed if the system crashed during file creation). Once the facility is activated, recovery is performed automatically whenever the file is opened.

With an indexed file, if the file structure is changing and the process is physically interrupted (i.e., operator cancel, HPR, hardware I/O error), the file can be left in a compromised state. Should this situation occur, when the file is attempted to be re-opened, a DM66 FILE COMPROMISED error will result. This informs the user that the file should not be used. If the user wishes to OPEN this file and use it solely for the purpose of reading through the data partition to facilitate re-creating the file, a facility has been provided for this purpose via the RECV parameter on the //DD job control statement:

```
// DD RECV=FCE
```

This specification causes the File Compromised Error to be ignored and the DM66 message will not result. It should not be used unless the user receives a DM66, and then only to open the file for the purpose of re-creating the file.

NOTE:

Only a release 6 version of the IRAM processor can create or process files which employ the recovery or variable sector facilities. Once created with one of these facilities, files must be processed with a release 6 version of the IRAM processor.

F #### 4.8.1.3 IRAM/MIRAM Compatibility

F MIRAM provides all of the functionality of IRAM plus some major F enhancements. Therefore any IRAM file (e.g., created by the IRAM F processor) can be processed by the MIRAM processor. But not all

F MIRAM files can be processed by IRAM due to MIRAM's additional
F functionality.

F There are two types of MIRAM files:

F o IRAM characteristic - none of the "new" features were used
F to create the file. The file is
F totally compatible with the IRAM
F processor.

F o MIRAM characteristics - at least one of the "new" features
F was used to create the file. The
F file is not compatible with the
F IRAM processor (A DM61 SUB TYPE 19
F error message will be displayed
F upon attempting to open a MIRAM
F characteristic file with the IRAM
F DTF, and the file will not be
F opened).

F A file has MIRAM characteristics if it has:

F o more than 1 key
F o key size is 1 or 2 bytes
F o duplicate keys permitted
F o key changes permitted on update
F o variable length records
F o Record Control Byte (RCB)

F Users have control through language specifications over each of
F the characteristics except for the last one, the RCB. If there
F is an RCB, the following functionality is provided: (1) record
F deletion (providing the user language supports it); (2)
F sequential read will skip over any deleted records; (3) random
F read of a deleted record will result in a no-find condition; (4)
F random write beyond the last record in the file will result in
F the "gap" being filled with deleted records; and (5) (random
F write within the file deleted) record is at the specified
F location. A facility has been provided to give the user the
F choice of whether or not the RCB will be present. (For IRAM
F compatibility, the user must choose not to have the RCB).

F Record Control Byte selection is invoked via the RCB parameter on
F the //DD job control statement:

F
F // DD RCB = <(NO)>
F (YES)
F
F RCB=NO

F No Record Control Byte is present and therefore, none of the
F associated functionality is provided. (This specification must
F be used to create an IRAM characteristic file.)

F RCB=YES

F Record Control Byte is present and all associated functionality
F is provided.

F Use of this parameter is valid only for MIRAM files at creation
F time, and is ignored all other times (e.g., the file is processed
F in the same fashion in which it was created).

F The products which create MIRAM disk files (and their respective
F "default" RCB usage) are:

F ANSI-1974 COBOL ORGANIZATION SEQUENTIAL	(NO RCB)
F ANDI-1974 COBOL ORGANIZATION RELATIVE	(RCB)
F ANSI-1974 COBOL ORGANIZATION INDEXED	(RCB)
F FORTRAN - SEQUENTIAL	(RCB)
F FORTRAN - DIRECT ACCESS	(RCB)

F 4.8.1.4 ISAM Files

F o ISAM files created under Release 4.3 or earlier withou
F COR#352 may have an invalid record size and format set i
F the VTOC. When the file is accessed by 'Data Utilities
F under Release 5.2 or later a message occurs, (DU25-S-SEL/DE
F ARG NOT CONTAINED IN RECORD).

F To correct the problem, the file must be copied or recreate
F under Revision R4.3 with COR#352 applied or must be copie
F under Revision R5.0 or later.

F COR#352 is a 4.0 (wrap-around COR)

4.8.2 Restrictions

There are no Restrictions.

4.9 COMMUNICATIONS

4.9.1 Guidelines

- To expedite the resolution of ICAM SUR's it is required that all dumps submitted include the TRACEMAX facility. For those installations where it is impractical to run day to day production with TRACEMAX active, it is suggested that two systems be generated, one with and one without TRACEMAX. If and when a problem occurs, re-IPL the system with TRACEMAX and when the problem reoccurs, take a dump and submit as documentation for the SUR.

4.9.1.1 ANSI-1974 COBOL Communication Interface

- In initial implementations, the processing and data base sections are combined in a single module which is unique for a given COBOL program. In subsequent implementations, the processing section, which is coded re-entrantly, may be separated into a single module which is shared by multiple COBOL programs. Data base modules are unique for individual COBOL programs.

- COBOL Communications support is provided with both dedicated and Global CCA's except for the "REMOTE SCHEDULING" feature which is available with Global CCA's only.

4.9.1.2 User Termination

- All ICAM console messages requiring a reply must be answered before the ICAM user will leave the system.

4.9.1.3 One Tenth Second Polling

- Since ICAM does not generally specify polling, the PINTV specification only applies to the first terminal in a poll group. PINTV on other terminals in the group is ignored.

4.9.1.4 TCI U400 Phase 2

- Preview area of TTT may be misleading to user CUP if any translate table substitution or no translation is configured in ICAM. TCI preview processing expects input text to be in EBCDIC.

4.9.1.5 Job Scheduling From A Terminal/CUP

- This enhancement is only available to the COBOL user in a Global Network and the initiator and the called CUP must

both reside in the same node. The initiator (terminal or CUP) cannot determine the status of the called CUP. The called CUP'S JCL must reside in YJCS of the SYSRES pack.

4.9.1.6 Full Duplex Queueing

- Current ICAM Remote Device Handlers other than NTR and ILA operate in half-duplex mode. Therefore, this feature should not be used if a user plans to use UNIVAC supplied software and the line discipline is other than NTR or ILA.

4.9.1.7 Network Generation

- When specifying an ICAM CCA generation which includes journaling, the buffer size on the BUFFERS macro should not be greater than two hundred and forty (240) words.

- A new error bit has been added to the NETREQ error field of the NETREQ macro expansion. The value is X'01'. This bit is set when any job other than GUST attempts a NETREQ of a GLOBAL CCA. The offending job will receive control at the ERRET address.

4.9.1.8 Global Network

- Global network support is availabe in ICAM/VICAM with OS/3 Release 6.0 and VS/9 Release 5.0. Enhancements to OS/3 ICAM in release 6.0, however, prohibit the interconnection of VS/9 R5.0 and OS/3 R6.0 using multi-node global networks unless specific // Alter to OS/3 6.0 GUST are applied.

  The protocol headers of data exchanged between these systems is not compatible because of the OS/3 disk to disk Acking and COBOL Date/Time STAMP enhancements in Release 6.0.

  The following OS/3 job control // ALTER statements must be included in the OS/3 job control for GUST if interconnection of OS/3 Release 6.0 and VS/9 Release 5.0 is desired. These ALTER statements are not necessary if it is desired to connect OS/3 Release 6.0 to another OS/3 Release 6.0 system. These OS/3 Release 6.0 GUST ALTER statements will not be necessary when connecting OS/3 Release 6.0 to a VS/9 Release 5.1 system.

  The // ALTER statements are:

```
// ALTER  ML$$GM00                    // ALTER  ,3D6,47F0F416
// ALTER  ,35F0,,ORG                  // ALTER  ,47A,47F0F49A
// ALTER  ,F6,47F0F130                // ALTER  ,4648,,ORG
// ALTER  ,140,94DF501747F0F150       // ALTER  ,25C,47F0F26C
// ALTER  ,33A,47F0F392               // ALTER  ,4968,,ORG
```

```
F               // ALTER   ,6A,47F0
F               // ALTER   ,8C,47F0F0A0
F               // ALTER   ,A0,4450F096
F               // ALTER   ,A4,5B50F0B4
F               // ALTER   ,A8,4450F0B0
F               // ALTER   ,AC,07FE
F               // ALTER   ,B0,96004001
F               // ALTER   ,B4,00000002
F
```

F This condition also requires that the new OS/3 Release 6.0 F enhancement for input message DATE/TIME STAMP not be specified in F the GBL CCA (configured by FEATURES=(DATIME) on CCA macro).

F o With global networks, the GUST job must be terminated only F by the shutdown command. If the console operator attempts F to cancel GUST, an ICAM program exception may occur followed F by the cancellation of all other ICAM user CUPS with an F error code 460.

4.9.1.9 ICAM Restart

- User may not do an ICAM Restart with I/P file having the same name as the O/P file.

4.9.1.10 COBOL CUP Users

- If a COBOL CUP terminates prior to output transmission of his data to a terminal, the output transmission of the data is also terminated and the data is not recoverable. This is true for COBOL users using the dedicated CCA. It is not a problem for COBOL users using the Global CCA.

4.9.1.11 UTS400 Error Recovery

- UTS400 Error Recovery on COP out of forms, or power down causes unpredictable results.

- - 8-bit high speed (T0786) printer should be internally strapped (Paper Control Board) to perform a carriage return and a live feed on XFER command.

  - 7-bit high speed (T0786) printer should be internally strapped (Paper Control Board) to perform an automatic line feed on XFER command.

4.9.2 Restrictions

4.9.2.1 ANSI-1974 COBOL Communications Interface

- Batch devices are not supported with ANSI-1974 Cobol

Communications.

4.9.2.2 Automatic Line Turnaround

- This feature is restricted.

F 4.9.2.3 DATAPAC Public Data Network Support

- The following information is required for a Sperry Univac Series 90 ICAM/VICAM global network customer who wishes to connect his series 90 computers to DATAPAC:

  The X25 level 3 window (or credit value) within DATAPAC at subscription time must be set at a value of 1. In addition the window value in the SESSION Macro VLINE Keyword of an ICAM/VICAM Global CCA should be set to 1.

  The Window conflicts between the Host computer and DATAPAC exist when the Host cannot send more packets to close the window. When this condition arises, DATAPAC will in 1[illegible] minutes automatically send an acknowledgement and close the window allowing the Host to clean up and send more packet if it has any.

F 4.9.2.4 COBOL CUP Programs

F - COBOL CUP programs should not be scheduled from a termina
F unless Initial CD is defined in the user program.

F 4.9.2.5 DICE Function

F - The DICE function "100A", forms control with clear
F (protected/unprotected), is ignored in a Print Transparent
F operation to an auxiliary device on the Uniscope/UTS40[illegible]
F terminal

F 4.9.2.6 Network Request

F - If a CUP issues two network requests (NETREQ) for the same
F CCA without an intervening NETREL, the CUP will be locked
F indefinitely from further processing.

F 4.9.2.7 Multiple Destination Messages

F - The current implementation of multiple destination message
F routing within (V)ICAM does not provide for the rerouting or
F redirecting of the message to another destination. Once a
F multiple destination message has been queued none of the

F following functions should be used to reroute the message.

F 1. MPPS - REROUTO
F RETRANS
F INTERCPT
F 2. DUST - QTRANS
F 3. TERM macro - ALTD parameter
F - INTERCPT parameter

F Patches will be supplied to prohibit the use of these functions
F by effectively rendering them a NO-OP when dealing with a
F multiple destination message.

F The restriction only exists in a main storage queuing
F environment. Any multiple destination messages going to all disc
F queues can be redirected.

F This restriction will be removed in a future release.

F NOTE: A multiple destination message is any message going to
F more than one destination. This type of message is
F generated by a DLIST, a user defined DLIST, or the MPPS
F functions route or direct.

4.10 INFORMATION MANAGEMENT SYSTEM 90 (IMS 90)

4.10.1 IMS 90 General Guidelines

NOTE:

Users of submitting SURs for online IMS 90 problems should include all of the following items with the SUR report; a copy of the linkage editor output for the ICAM/IMS 90 system, ICAM dump, ICAM generation listing, and output from the IMS 90 configurator.

Release 6.0 ICAM CCA generation must be used with the Release 6.0 IMS 90 Configurator when configuring IMS 90. This also means that 6.0 IMS 90 must be executed with 6.0 ICAM.

4.10.2 ICAM Considerations

- o Transient ICAM supports only UNISCOPE 100 and UNISCOPE 200.
- o The following devices are supported via resident ICAM:
  - DCT 500
  - UNISCOPE 100
  - Teletype models 33 and 35
  - Full UNISCOPE 200
  - DCT 1000 Interactive
  - Communications Output Printer (COP)
  - UTS400 in Uniscope mode
  - UTS400 in Native mode
- o IMS 90 supports the UTS400 in Uniscope mode subject to the following conditions:
  - UTS400 with FCC switch in protect mode.
  - The DLE6 (Power on Confidence) disabled.

F User is referred to Technical Bulletin #3, UP-8605,3,Rev, 1.

- o Unattended answer feature is only available via resident ICAM.
- o Autodial feature is available via resident ICAM.
- o Use of IMS 90 with resident TCI.
  - If the user intends to use the SHOW command with transient TCI, the DICE parameter of the BUFFERS ICAM macro definition must be specified as DICE=2. Note that specification of this parameter causes an increase in the size of ICAM and impacts the ability of IMS90 to operate in a 65K environment.
  - The value of the DICE parameter must be the greatest

number of erase-to-end-of-line or screen DICE sequence used in a given output message.

F F F
- When ICAM detects journaling file errors such as ran-out of file space or disc error, ICAM will cancel the user with error code X'480'.

4.10.2.1 IMS 90/ICAM Restrictions

- All Single-Thread IMS 90 users and those Multi-Thread users who use only the Continuous Output feature, must specify FEATURES=(OUTDELV) in the CCA macro in the ICAM generation.

- UNIQUE does not process input text properly when DICE=OFF is specified in the CCA generation. The DICE characters are replaced by hardware characters which IMS 90 does not edit. Because of this, editing passes the text to the input Message Area with the hardware character.

4.10.3 IMS 90 Release 6.0 Enhancement Guideline

4.10.3.1 Configurator File Section Default

- There is less information required from the user if the data management parameters required for the file defined are the default values.

4.10.3.2 Termination Error Message

- There is no user impact for the Termination Error Message Enhancement, in fact, it improves the error diagnostic reporting of IMS 90.

4.10.3.3 Optional 'IMS READY' Message

- There is no user impact for the Optional 'IMS READY' Message feature since it is configurable and only affects users who select it as an option. If selected, the user will not see the 'IMS READY' message when IMS 90 is loaded.

4.10.3.4 Unsolicited Output to Terminal In Interactive Mode

- There is no user impact for the Unsolicited Output to Terminal in Interactive Mode feature since it is configurable and only affects users that select it as an option.

4.10.3.5 Output Message to Master Terminal (ST & MT)

- This feature requires the specification of UNSOL=YES in the OPTIONS section of the configurator.

4.10.3.6 Remove Limitation on No. of Configurable Terminals

- The 6.0 version of IMS 90 must be used with the 6.0 version of ICAM.

4.10.3.7 Tab Stops in UNIQUE (ST,MT)

- The insertion of a tab stop control byte at the beginning of a line reduces the length of the line by one character.

  Data which, in earlier releases, began in the leftmost character position appears shifted one byte to the right. In the case that an item previously occupied the rightmost character position of a line, that item is displaced to a lower line on the screen. In the extreme case, very large defined records or subrecords which previously fit on the screen no longer do so, requiring a change to the data definition, and a rerun of the data definition processor.

4.10.3.8 Warm Restart (MT)

- In order to employ this feature, the user must configure IMS 90 with parameter TOMFILE=YES. This option generates a TOMFILE partition within the CONDATA file. All output messages at the Rollback point and at termination of a transaction are written to this TOMFILE partition. Only one message per terminal is retained in the TOMFILE. If TOMTRCE=YES is specified, then these output messages are also written to the tracefile. To reconstruct the TOMFILE in multi-thread the user should change job control stream (6.4.5.5 UP-8364) and specify CONDATA file instead of AUDCONF.

- The use of Warm Restart is a significant time saver over the use of Quick Recovery which requires a search of the trace file.

4.10.3.9 IMS 90 UTS400 Support

4.10.3.10 UTS400 Function Key and Native Mode Support

- Each feature is configurable and only affects those users who select them as options.

- The input message created for the function key is preceded

F by the dice sequence X'10010101'. This dice sequence will
F be present in the input message even if CCA option of
F DICE=NO is selected. IMS 90 deletes this sequence only if
F EDIT=c or a table-name is specified in the ACTION section of
F the Configurator.

4.10.3.11 Compatibility

- Both the function key and FCC editing are compatible with existing features of IMS 90 (UNISCOPE function - key support and DICE editing).

4.10.3.12 UTS400 Additional Peripheral Initiation Commands

- The additional peripheral initiation commands can only be used with the COP as an auxiliary device. Support for cassete/diskette is provided in a future release.

  The Transfer command alters the appearance of the data when it is printed on the COP since FCC's are part of the message text.

4.10.3.13 UTS400 Downline Load Support (ST and MT)

- This feature is configurable and only affects those users who select it as an option.

F - When executing the ZUKLOD action program for down-line
F loading UTS-400 terminals, the following error message can
F occur:

F Message
F INVALID CHARACTER IN OFFLINE LOAD PROGRAM NAME

F Meaning
F The name of the program being down-line loaded to a
F cassette/diskette can only be alphanumeric (A through Z
F and 0 through 9). Re-enter the DLOAD transaction
F parameters using the corrected program name.

F 4.10.3.14 IMS 90 ERROR MESSAGES

F - All console error messages that were documented in the IMS
F 90 SSF User Guide UP-8364 have been moved to the Systems
F Messages Manual UP-8076 Appendix F. Error messages that
F have been moved include:

F - Table 2-3 ICAM Network Open Errors
F - Table 3-1 Action Program Error Codes S.T.
F - Table 3-3 Action Program Error Returns M.T.

- Table 5-8 Configurator File Processing Error Codes
- Table 6-1 Single and Multi Thread Diagnostic Messages

4.10.4 IMS 90 Considerations

4.10.4.1 Expanded Input Edit Considerations

- When using the Expanded Input Editor for online editing, the separator character, used between fields, must also be used as the last character to signify the end of the input message. Otherwise the input message could be partially deleted. This is true when IMS 90 is executing online or in batch processing mode.

- When using the Expanded Input Editor, all of the off-line edit records must be rerun using the Release 6.0 version of ZH#EDT.

- A user must specify an "INSIZE" parameter for an action whose input message may not be as large as the number of bytes specified in the off-line editor.

  Suggestion:

  Add all the "LEN=" parameters specified in the off-line editor and use this figure as the "INSIZE" length in the configurator's action section.

- When a user specifies the "MIN" and/or "MAX" parameters in the off-line Expanded Input Editor, no length check is made. If the length of a field is 4 (LEN=4), then MIN=0000 and MAX=9999 would be a valid combination for this field. But, if the user has LEN=4 and a MAX=99999 field, an error will not be produced from the off-line editor. The user should make sure that the MIN and MAX fields do not exceed the length specified by the LEN= parameter.

4.10.4.2 Action Program Considerations

- When configuring IMS 90 with RPG II Action Programs; actions which contain RPG II Action Programs, must specify the INSIZE= keyword in the ACTION section of the Configurator. This value must be equal to the largest record size FILE DESCRIPTION specification for the IMA. Do not use EDIT=NONE. RPG II cannot process the resultant DICE sequences. EDIT=C must be used; where "C" is some special character. If the EDIT keyword is omitted multiple blanks is edited out, this is also unacceptable to RPG II.

- COBOL action programs that are written for transactions that

use the function key as a transaction code cannot have F#nn (function key) as a PROGRAM-ID name in the IDENTIFICATION DIVISION. The # symbol is treated by the COBOL compiler as invalid when used within a program name. The user should supply any valid PROGRAM-ID name and at LNKEDT time include a LOADM statement with F#nn as the LOADM name.

- When a GETUP function is issued to a deleted record, the record is delivered in the user specified record area with X'01' set in the status code of the PIB. Note that the first byte of the record area contains a X'FF'. If the user intends to build a record in this area and insert it into the data base, the X'FF' must be replaced with another value.

F - The maximum size action program that can be supported under
F single thread IMS 90 is 65K. Also, the maximum size for a
F resident subprogram is 32K. In both cases, the maximum size
F includes associated resources (Activation record, etc.).

4.10.4.3 UNIQUE Considerations

- When UNIQUE ADDs or CHANGES a defined record, it sets the sign of any new value for a packed decimal item to 'F' instead of 'C'.

- THE UNIQUE LIST command returns END LIST with no data when a defined file is accessed and the physical file which is used to create the defined record has been closed via the ZZCLS terminal command.

4.10.4.4 Data Definition Processor Considerations

- It is possible that a data definition that compiled successfully in previous releases will exceed the NAMREC record size if recompiled by the Release 6 Data Definition
F Processor. There is an increased requirement of eight bytes per FD statement and twenty bytes per DEFINED RECORD or SUPPLEMENT statement. If this happens, the user must either:

  - shorten the data definition
  - revert to an earlier version of the DDP
  - increase the record size in the NAMEREC file

4.10.4.5 Batch Transaction Processor Consideration

- When executing IMS 90 with the Batch Transaction Processor, a user action program cannot do a 'CALL SEND' to a batch terminal.

- DM88 Error message - when the user enters ZZBTH module/file command and the FILE name is not a source file, a DM88 error will be sent to this System console. No error message is sent to the master terminal. IMS 90 may not be able to process additional input and may have to be reloaded to enable batch transaction processing.

4.10.4.6 UTS400 Screen Bypass Considerations

- A UTS400 Screen Bypass device is defined to ICAM as a logical terminal, but since it is physically a printer with a separate buffer, it has no input medium. It is uniquely addressable for output, but cannot be used to enter input. In the IMS 90 environment therefore, the only way to access a Screen Bypass is to use the IMS 90 output-for-input queuing feature. That is, another terminal in the IMS 90 network can generate an output message via CALL SEND to be processed as input on behalf of the Screen Bypass. The transaction initiated by that input can then be simple transaction or a print transaction using continuous output. Neither interactive transactions nor switched messages can be processed by a Screen Bypass because both require input.

4.10.4.7 Master Terminal Commands

- ZZOPN and ZZCLS for dedicated sequential output files - if ZZOPN/ZZCLS functions are used on a dedicated sequential file, the EXTEND parameter in the LFD statement for this file must be provided in order to resume with the next ascending record number after ZZOPN.

F #### 4.10.4.8 General Message Editing

F - When the user specifies EDIT=c in the Action of the F configurator, the following rules apply to the use of F apostrophes. Paired apostrophes around a blank field in an F input message, will allow those blanks to be part of the F input without editing. For example, an input message F appears as:

F ´ØØOLD´ØØØPARTetx -- will appear in the input message area F as ´ØØOLD´ØPART

F - If the user inputs only one apostrophe, blanks will not be F edited from the apostrophe to the end of the input message. F For an example:

F ´ØØOLDØØØPARTetx - will appear in the input message area as F ´ØØOLDØØØPART

4.10.5 Configurator Considerations

4.10.5.1 IMSCONF JPROC

F

- When using previously catalogued files with read/write password protection, the user must specify file-ids for any of the IMSCONF files in accordance with the LBL format described in UP-8065 JOB Control User Guide Rev 4 pages 6-19 through 6-21. In this case catalogued and password protected files should be treated as a USER file by specifying 'USR' as one of the JPROCs positional parameters. This procedure must be followed even for system files on SYSRES or SYSREL.

  For example:

  a) LIBO=(RES,,YOBJ(rpw/wpw))
  b) LIBL=(50,OS3REL,YLOD(rpw/wpw))
  c) IMSFIL=(RES,,NAMEREC(rpw/wpw),AUDCONF)

  where:

  rpw= Read password
  wpw= Write password

- Note that the default for the number of blocks in the INIT is 75. This default is suitable for average size configurations. Larger configurations should specify some value greater than 75 (usually 100 or 150) or a NAMEREC FILE exhausted, or FILE exhausted, or an abnormal termination condition occurs.

- When the memory specified is not enough or the CCA load module generated is one with a zero length phase, then the warning error 'CCA LOADING ERROR' is displayed. In this event, the configuration process continues with the assumption that only one terminal was encountered. User must correct the problem and reconfigure before attempting to execute the generated on-line IMS 90 load module.

- The user should ignore the 'ERRORS ENCOUNTERED' - 000n 'message that appears at the end of the CCA linkage editor run when executing the IMSCONF JPROC. Indication of a good CCA link is when N is not equal to zero.

- If REL is specified in the CCA= parameter or the ZCNF= parameter, DVC 50 is the logical unit number assigned by the IMSCONF for SYSREL. Consequently, DVC 50 cannot be used in the LIBS, LIBO or LIBL specifications unless those libraries reside on the SYSREL pack.

- The IMSCONF JPROC depends on the USESYS PROC to be present in the YJCS of the SYSRES pack when calling on IMSCONF. (This is used to establish the standard VSN for the release

pack).

4.10.5.2 Input Considerations

- Do not use the Librarian to sequence the configurator input parameter cards when the configurator is being executed with its input stream residing in a source library file since this causes the Configurator to abnormally terminate. Sequencing of the input parameter card is optional and should only be done independently from the Configurator execution.

- The default feature within a configurator section is not effective at the broader section to section level. Consequently, a configuration consisting of just the NETWORK SECTION results in an abnormal termination.

- During Configurator printing of its input source, certain keywords that have dependencies on other keyword specifications for their operands do not show the actual configured operand values.

  The two instances when this situation occurs are with:

  BASIC= and INBUFSIZ= parameters
  CONTOUT= and UNSOL= parameters

  Examples of these situations are:

  Example 1:

  BASIC=YES is specified in the OPTIONS section
  INBUFSIZ= is not specified in the GENERAL section
  (default is assumed)

  The Configurator prints INBUFSIZ=2048 under the GENERAL section even though the effective default value for INBUFSIZ is actually 1024 and is configured as such.

  Example 2:

  CONTOUT=YES is specified in the OPTIONS section.
  UNSOL= is not specified in the OPTIONS section, default of NO is assumed.

  The Configurator prints UNSOL=NO even though the Unsolicited Output modules is actually configured. Continuous Output (CONTOUT) requires the Unsolicited Output module for performing Continuous Output functions. All features available with Unsolicited Output would be available to the user.

4.10.5.3 FILE Section

- The Mis-specification of the 'Filetype' keyword in the 'FILE' section of the IMS 90 Configurator causes unrecoverable I/O errors on the Name Record file. Therefore it is suggested that if the user is adding or changing a Configuration the filename specified for the Name Record file must differ from the Name Record filename currently in use.

- DTF keywords must be written in the long form under the FILE section of the configuration. The short form, i.e., RCFM for RECFORM or BLKZ for BLKSIZE cannot be used.

- When configuring for IRAM file support, the user should be aware that the BLKSIZE= keyword parameter in the FILE section of the configurator follows the same rules as the BFSZ= keyword described in the UP-8068 (current version) Data Management User Guide. That is, the BLKSIZE= specification must be at least 256 and a multiple of 256.

- IOROUT=ADDRTR in the FILE section must be specified for an ISAM file that is intended to be used in an update or add mode. If the ISAM file is to be used for retrieval only, then IOROUT=RETRVE and UPDATE=NO should be specified.

  Failure to adhere to this consideration will compromise the data file for which IOROUT=ADDRTR was not specified.

- If the BUFFSIZE= keyword parameter or KEYLEN=0 for a DAM file is specified in the FILE Section, an error code of 0303 will be generated. This error can be ignored.

4.10.5.4 ACTION Section

- Continuation feature (non-blank in col. 72) is not supported. In cases where a user has to declare many user files within an ACTION SECTION, the FILES keyword can be repeated as many times as required on additional cards.

- If the CDASIZE keyword parameter of the configurator ACTION section is not specified and UNIQUE=YES, or RES of the OPTIONS section is specified, CDASIZE defaults to a continuity data area size of 1536 bytes.

- The work area size as specified by the WORKSIZE= keyword parameter in the ACTION section of the Configurator for DAMR files must be a multiple of 256 for a sectorized disk.

- The user must specify the proper MAXSIZE= value in the ACTION Section of the Configurator. Failure to do so may result in the transaction being cancelled with error code of AS01.

F o The MAXSIZE keyword parameter must be specified if the user
F intends to use the ACTION with Immediate Internal or Delayed
F Internal succession under Single Thread IMS 90. For
F multi-thread, MAXSIZE need only be specified if the ACTION
F is to use Immediate Internal succession. Failure to adhere
F to this guideline will result in an online error 'MAXSIZE
F Too Small' when an attempt is made to execute this action.

4.10.5.5 MISC Considerations

- MNOTES with Error Code A037 generated by the Configurator assembly should be ignored.

- An incomplete execution of the IMS 90 Configurator can compromise the NAMEREC file. In order to correct this situation, the NAMEREC file must be scratched and initialized, before any further configuration can be generated on this same NAMEREC file. The user should assign a temporary NAMEREC file for use in debugging his Configurator specifications. If previous NAMEREC records are to be recovered, the OS/3 Data Utilities Manual should be consulted as to how to copy an ISAM file to another disk.

- The named record (NAMEREC) file is the only IMS 90 file that can be interchanged between single-thread and multi-thread IMS 90 load modules. All other IMS 90 internal files are not interchangeable between single-thread and multi-thread load modules and should be assigned accordingly. Note also that AUDCONF and AUDFILE may be used by various IMS 90 load modules but the following configuration parameters must be equal for each load module which are in the FILE section BLKSIZE=, in the General section AUDITNUM=, and the number of terminals defined in the CCA.

- When responding 'Y' to a DUMP (Y,N) Console message, the Configurator uses a cancel code of X'CFD' or X'0CF' or X'CFE'.

- When the Configurator terminates with a DM31 error, the abnormal termination may be caused by:

  1. Data management error. Consult page 5-85 IMS 90 SSF UP-8364 Rev. 2 or page 5-87 UP-8364 Rev. 3.

  2. Insufficient memory specified on the job card. Consult formula on page 5-27 of IMS 90 SSF UP-8364 Rev. 2 and Rev. 3 to calculate proper memory requirements.

4.10.6 IMS 90 Single Thread Considerations

4.10.6.1 Batch Transaction Processor Considerations

- Console operator communications to IMS 90 (i.e., Master terminal command) is not available when running the Batch Transaction Processor in offline mode.

4.10.6.2 Terminal Command

- The user cannot alternate the Master Terminal to the system console once it has been defined as a terminal. The System Console and a Teminal cannot both be the Master Terminal.

F 4.10.6.3 Basic IMS 90 (65K) Considerations

There are no considerations previous items noted have been lifted.

4.10.7 IMS 90 Multi-Thread Considerations

- Warm Restart and Quick Recovery for IRAM files are supported only if the IRAM files are created with the Data Management recovery option (RECV=YES of the DD Statement).

- There are times in IMS 90 Multi-thread when shutdown is invoked (i.e., ZZSHD command issued) at a point when terminals are in interactive mode. These terminals may be timed out without receiving the "TRANSACTION CANCELLED" message.

- The ZZBTH*, ALL will cause continous batch processing. This processing regardless of the total number of input streams (inline) or input data sets, will take place under one batch terminal. If the user intends to initiate more than one batch input file (Source file only), the ZZBTH* must be issued for each file that he wants to start.

4.10.8 IMS 90 Restrictions

4.10.8.1 IMS 90 General Restrictions

4.10.8.1.1 Configurator Restrictions

- The LANGUAGE section of the configurator is not implemented.

- Clean start with configuration changes is not implemented.

- Configuration update mode is not implemented.

- The minimum IMS configuration does not fit in 65K.

F o The Configuration of IMS 90 must include at lease one FILE
F Section entry. If there is no FILE section specified, IMS
F 90 will abnormally terminate at IMS 90 startup time.

4.10.8.1.2 UNIQUE Restrictions

- o Arithmetic expressions for LIST is not implemented.
- o The ditto mechanism is not implemented for the LIST command.
- o The LIST with SAM output feature is not implemented.
- o The ASSIGN function is not implemented.
- o UNIQUE LIST AT deferred-print-file is not implemented.

F ***Paragraph deleted***

4.10.8.1.3 Data Definition Proc & Defined Record Mgmt Restrictions

- o Item dependency is not available, i.e., the UPDATE, DUPLICATE, TOTAL, and COUNT statements in the data definition are not implemented.
- o There are certain types of user errors for which the data definition processor fails to generate diagnostic messages, but terminates instead with an abterm dump. These cases are:

  1. An FD-level entry is named in a FROM statement, instead of an 01-level entry.
  2. A required POINTER statement is omitted in a SUPPLEMENT definition.
  3. An ITEM statement begins before column 12.

- o If the Data Definition Processor terminates with the error message 'SEE CONSOL FOR DMXX' and no DMXX error is printed on the console, the user should assume that a DM34 (ISAM end of file) error has been encountered with the NAMEREC file.
- F o Defined Records may not contain more than 39 items. If a
  F Defined Record does contain more than 39 items, no
  F diagnostic is produced until an attempt is made to ADD or
  F CHANGE the record, at which time the UNIQUE transaction is
  F canceled and the message 'RECORD TOO BIG' is returned to the
  F terminal.

4.10.8.1.4 Terminal Command Restrictions

- Terminal command ZZLCT is not available.

4.11 IMS 90 UTS400 SUPPORT

Refer to Section 4.10 for Guidelines and Restrictions.

4.12 SORT MERGE

There are no Guidelines or Restrictions.

4.13 LINKAGE EDITOR

4.13.1 Restriction

- Do not use the optional linker parameter 'NOLIST' on the 'LINKOP' card. Any module containing 'ALIAS' names will result in these names not being defined. Also, this can affect the ICAM 'cold start' procedure. Please use the 'LIST' function. If this optional parameter is not specified, 'LIST' is the default.

4.14 LIBRARIAN

4.14.1 Guidelines

4.14.1.1 Librarian ESC Command

- The ESC command cannot be processed from an ESC file. An appropriate error message is posted.

4.14.2 Restrictions

4.14.2.1 Librarian BLK Statement

Use of the Librarian BLK statement to convert a load module to a block module is restricted if the load contains ANSI-74 COBOL modules which use the dynamic CALL or CANCEL verbs.

4.15 DUMP/RESTORE (DMPRST)

There are no Guidelines or Restrictions.

4.16 CATALOG MANIPULATION UTILITY (JC$CAT)

F 4.16.1 Guidelines

4.16.1.1 Catalog Password Modification

- If a catalog file is scratched or opened with INIT, password checking can be circumvented.

F 4.16.1.2 Catalog Password Checking

F - There is password checking on output catalog files on R6.0 so that a user cannot overwrite a password protected file without specifying its password. This may cause some compatibility problems for the R6.0 user. The password of the catalog file being overwritten must be known when using the R6.0 catalog Manipulation Utility.

4.17 DATA UTILITIES

F 4.17.1 Guidelines

F - The following items represent additional functional differences between the current Data Utilities (R6 or R5.2) and the R5 prior version:

  1. SAM Disk files created with the previous version of the product are actually NI files. They are processed as

F NI files in this version.

F 2. The H= parameter is now a GLOBAL INPUT1 count and
F includes any records skipped through use of the R=
F parameter.

F 3. Display format, page numbering and headings are no
F longer supported for compare errors.

F 4. The use of the K= parameter on a SEL/DEL statement is
F only supported for keyed DAM and NI files.

F 5. The ISAM block length must be correctly specified (i.e.
F must now include all overhead bytes).

F 6. Output disk default characteristics defaults to input
F disk characteristics (as obtained from the VTOC).

F 7. Field selection in keys (K,) now specifies the
F starting position of the field within the key. Data
F automatically adds in the key location to find the
F field in the record.

4.18 DISK PREP

There are no Guidelines or Restrictions.

4.19 LANGUAGES

4.19.1 Guidelines

4.19.1.1 ANSI-1974 COBOL (COBOL74) Compiler

- The SPERRY UNIVAC OS/3 1974 American National Standard COBOL compiler conforms to the specifications of the American National Standard COBOL X3.23-1974 and supports the high level Federal Standard COBOL as defined in the Federal Information Processing Standards Publication 21-1. In addition, the compiler contains extensions that enhance the capabilities of OS/3 COBOL beyond the requirement of the standard.

- The compiler provides the following facilities:

  1. Retrieval of source input from the job control stream or a disc source library;

  2. Generation of object modules that are stored in the object module file of the job (YRUN);

F 3. The compiler requires C800 bytes of main storage.

4.19.1.1.1 Equipment Configuration

- The compiler requires about 50K bytes of main storage. The following minimum OS/3 configuration is required for COBOL compilation:

  1 processor with 2K control storage code,

  1 direct access unit,

  1 job control stream device,

  1 high speed printer.

4.19.1.1.2 Compiler Input/Output and Execution

- The compiler provides a number of options that control the input and output of the compilation process. (See Appendix A, 1974 COBOL Programmer Reference, UP-8613.)

  If none of the compiler options are specified, the compiler default options as described below are effected:

  1. Retrieves source program from the job control stream;

  2. Accepts the highest level of standard language and the

OS/3 Univac extensions;

3. Produces a diagnostic listing using a page width of 120 characters;

4. Provides a source listing with copied text, if any;

5. Generates an object module that dynamically loads any called programs.

F o The following paragraphs briefly describe the compiler input
F and its related compiler options, the compiler output and
F its associated compiler options, and other compiler options
F that affect the compiler actions.

4.19.1.1.3 Compiler Input

o Card Input

A COBOL source program card deck may be included in the job stream as input data to the compiler. (compiler option IN parameter omitted.)

o Source Library Input

A COBOL source program that resides on the OS/3 source library may be an input to the Compilation process (compiler option IN=prog-name/file-name.)

o COPY Library Input

The COBOL library text to be copied during compilation is an optional input file to the compiler. COBOL library text must be placed in a COBOL library by the OS/3 System Librarian. (See OS/3 System Service Programs User Guide, UP-8062, current version).

If the source program being compiled contains COPY statements without a library-name, the file-name in the LIN parameter is used. (Compiler option LIN=filename.) If the LIN parameter is omitted, the system default name COPY$ is assumed. Note that the system default name may not be referenced in a COBOL COPY statement.

4.19.1.1.4 Compiler Output

o Object Program

1. The compiler produces an object module for each object program. (Compiler option OBJMOD=YES.)

2. The object module may be stored on a user specified

library file. (compiler option OBJ=file-name.)

3. The generation of linker control statements in the object module. (compiler option LNKCON=YES.)

4. A transfer address may be generated in the object module. (compiler option TRNADR=YES.)

5. An automatic printer page eject feature may be generated in the object program. (compiler option PAGOVF=YES.)

6. The object program data truncation and SIZE ERROR detection on binary items may be based on the decimal digits specified in the PICTURE character-string. (compiler option TRUNC=YES.)

4.19.1.1.5 Compilation Listings

- In the cross reference listing, the compiler does not generate references to data-items defined within a CD (i.e., SYMBOLIC SOURCE IS data-name). If a CD is followed by a 01 CD record description, the items described in the 01 will be cross referenced. Users wanting cross referencing should use this method.

- The compiler may optionally produce the following listings:

  1. A diagnostic message listing. (compiler option DIAG=YES.)

     The diagnostic message listing excluding level 0 warning diagnostics. (compiler option DIAGWN=NO.)

  2. A source listing of the COBOL program. (compiler option LIST=YES.)

     The source listing with operand definition line number references. (compiler option LSTREF=YES.)

     The source listing excluding the copied COBOL library text. (compiler option CPYTXT=NO.)

  3. An object code listing of the object program. (compiler option OBJLST=YES.)

  4. A locator/map listing of data and procedure divisions (compiler option MAP=YES.)

     The locator/map listing including verb line number cross references. (compiler option MXREF=YES.)

     The locator/map listing suppressing non-referenced

items and including cross references. (compiler option MXNON=YES.)

5. An alphabetically ordered cross reference listing. (compiler option AXREF=YES.)

   The alphabetically ordered cross reference listing suppressing non-referenced items. (compiler option AXNON=YES.)

6. All output listings inhibited unconditionally. (compiler option SPRLST=YES.)

7. A listing of procedure-names and verbs with associated source line numbers and object program relative addresses. (compiler option PROVER=YES.)

4.19.1.1.6 Other Compiler Options

1. Request compilation for syntax checking purposes only. (compiler option SYNCHK=YES.)

2. Define the FIPS processing level for the source program being compiled. (compiler option FIPS=n.)

3. Specify static CALL of subprograms referenced by the literal option of the CALL statements. (compile option CALLST=YES.)

4. Specify the module name of the COBOL communication Control System. (compiler option CMCS=name.)

5. Indicate that the CMCS module is bound with the object program. (compiler option CMCSST=YES.)

6. Specify the compilation of an IMS 90 action program. (compiler option IMSCOD=YES.)

7. Request the suppression of compiler output based on specified severity level of source errors. (compiler option SPROUT = n.)

8. Specify the width of compilation listings (compiler option LSTWTH=n.)

4.19.1.1.7 Compiler Execution

- The compiler operates under the control of the OS/3 operating system. There are two ways to invoke the COBL74 compiler. One way is to provide the required job control statements in the job stream. (See OS/3 Job Control User Guide, UP-8065, current version.) The other way is to use a

single job control procedure call statement (jproc call) provided by Sperry Univac. (See Appendix H, 1974 COBOL Programmer Reference, UP-8613.)

o The following examples illustrate two job control streams.

Example 1 shows the required job control statements to compile a source program from a card deck for syntax checking purposes only.

Example 1:

```
 1.  //  JOB  COMP01
 2.  / / DVC 20   // LFD PRNTR
 3.  //  WORK1
 4.  //  WORK2
 5.  //  WORK3
 6.  //  EXEC   COBL74
 7.  //  PARAM   SYNCHK=YES
 8.  /$
 9.          .
10.        Source program deck
11.          .
12.  /*
13.  /&
14.  // FIN
```

Line	Explanation
1	Job control statement indicating the jobname COMP01.
2	Logical unit number and LFD name for the printer.
3-5	Three work files required by the compiler.
6	Execution of the compiler. COBL74 is the name of the 1974 COBOL compiler.
7	The only parameter required for syntax checking purposes. A source listing and a diagnostic listing are automatically produced by the compiler.
8	Indicating start of data
9-11	The source program deck is included in the job stream
12	Indicating end of data

Example 2: Illustrates the required job control statements to compile a source program from the source library, link-edit the object module, and execute the object program.

Example 2:

```
 1.  //  JOB  RUN10
 2.  //  DVC 20    // LFD   PRNTR
 3.  //  DVC 50    //  VOL   OS3SRC
 4.  //  LBL COBSRC    // LFD  COBSRC
 5.  //  WORK1
 6.  //  WORK2
 7.  //  WORK3
 8.  //  EXEC  COBL74
 9.  //  PARAM  AXREF=YES, LSTREF=YES
10.  //  PARAM  MAP=YES, MXREF=YES,OBJLST=YES
11.  //  PARAM  IN=PAYROL/COBSRC
12.  //  DVC 50  //  VOL OS30ML
13.  //  LBL RESV    // LFD  OBJIN
14.  //  WORK1
15.  //  EXEC LNKEDT
16.  /$
17.        LOADM  PAYROL
18.  /*
19.  //  DVC 21   // LFD   SYSLST
20.  //  OPTION  JOBDUMP
21.  //  EXEC    PAYROL
22.  /&
23.  //  FIN
```

Line	Explanation
1	Indicating the jobname
2	Device assignment for the printer
3-4	Device assignment for the source library
5-7	Three work files for the compilation process
8	Execution of the COBL74 compiler
9-11	Compile-time parameters
12-13	Device assignment for the object module library
14	Work file for the Linkage Editor
15	Execution of Linkage Editor

16-18	Specifies program-name for the module
19	Device assignment for SYSLST used by the object program
20	Request for an edited dump
21	Execution of the object program
22-23	End of job stream indicators

4.19.1.1.8 COBOL Programming Considerations

- The following items are explained in the detailed rules of the 1974 COBOL Programmer Reference, UP-8613. These items are presented only as a quick reference to those who may have concerns about these items.

  1. The initial value of a data item in the WORKING-STORAGE SECTION is undefined (not initialized), if the VALUE clause is not specified.

  2. Index-names must be set (initialized) by the COBOL program.

  3. The SYNCHRONIZED clause may be specified on a group item.

  4. Nested execution of PERFORM statements must not share a common PERFORM EXIT.

- Although the compiler executes in C800 memory,
  16
  more memory may be required if the source program being compiled contains verbs requiring internal stacking of information. This situation is likely to occur with any of the following circumstances:

  1. Use of Copy Replacing

  2. Use of the corresponding option on MOVE, ADD or SUBTRACT verbs.

F - Keys

F No key verification is performed when a sequential REWRITE
F to an ISAM file is executed.

F 4.19.2 ANSI-1974 COBOL Restrictions

F 4.19.2.1 ANSI-1974 COBOL (COBOL74) Compiler

- o Sort

  If a sort output procedure is exited prior to receiving all sorted records, execution of another sort results in abnormal termination.

F ***item moved to 4.19.1.1.8***

- o Verbs

  On the INTO option of READ and RETURN statements, the input record is moved to the receiving data item as though a maximum length record were read.

4.19.2.2 ANSI-1974 Loader

- o Use of the Librarian BLK statement to convert a load module to a block module is restricted if the load module contains ANSI-1974 COBOL modules which use the dynamic CALL or CANCEL verbs.

F 4.19.3 ANSI-1968 COBOL (COBOL and COBOLB)

F 4.19.3.1 Guidelines

F - o The ANSI-1968 COBOL supports 8424 and 8425 disk devices but
F the implementor-names "DISC-8424" and "DISC-8425" may not be
F specified in the source program. The 8424 and 8425 devices
F may be accessed with the implementor-name "DISC" or any
F other disk implementor-name.

F 4.19.4 Fortran IV

F 4.19.4.1 Guidelines

F - o Incorrect buffer size errors could occur if a FORTRAN IV
F MIRAM file (FDEVICE=MIDISC) is modified with the //DD RCB=NO
F or VSED

F
F //.DD-RCB=NO or VSEC = (YES) < > (N)
F
F The original buffer size is calculated based upon the Record
F Control Byte being present and a sector size of 256 bytes. If
F the //DD statement modifies either of these features, the
F calculated buffer size will change (see UP-8474). Errors will
F occur if the new buffer size is greater than the original.
F Correct processing occurs if it is smaller.

The RCB=NO option must be used when processing ANSI-1974 COBOL sequentially organized files or RPG II IRAM files.

4.20 EMULATOR EM20

There are no Guidelines or Restrictions.

4.21 VERIFY SYSTEM BUILD (VSB's)

There are no Guidelines or Restrictions.

4.22 ON-LINE DIAGNOSTICS

4.22.1 On-Line Diagnostic (ONBPXR)

- The On-Line Basic Processor Exerciser program is designed to test all non-privileged instructions with the exception of the Set Program Mask (SPM) and Supervisor Call (SVC). On-line Error Log Edit (ONUERL)

4.22.2 On-Line Error Log Edit (ONUERL)

- It is recommended that this program be run on a daily basis in order to obtain full benefit from the current summary. It is vital that YELOG not be permitted to wrap without first running this program as this would cause potentially important data to be lost.

F 4.22.3 Restrictions

F 4.22.3.1 Ontape

F The On-Line Maintenance program ONTAPE will not display the BCW
F chain or the failing command code for multiplexer tape devices in
F the standard I/O error message. Other error information
F contained within the display is unaffected.

4.23 JOBLOG BEM TERMINAL USAGE SUMMARY

There are no Guidelines or Restrictions.

4.24 UTS 400 SCREEN MANAGEMENT SYSTEM (SMS 400)

There are no Guidelines or Restrictions.

F 4.25 System Utility (SU)

F 4.25.1 Guidelines

F o Functionality changes for System Utility (SU) are:

F If spooler is generated, print and punch output defaults to
F spooler unless 'N' is specified on the 'Function Required'
F transmission.

F The first function request and spooler option may be
F specified on the transmission which requests SU.

F When spooler is selected, the output writer is automatically
F loaded.

5.1 GENERAL INFORMATION

- Four configured supervisors are supplied with this release. Therefore, system generation is not a requirement. The user may select any one of the supervisors that meets his needs. General characteristics and hardware features supported by these supervisors are described in the following paragraphs.

  The four configured supervisors are available with the operating system. The supervisor names are:

  SY$BAS
  SY$MIN
  SY$STD
  SY$S25 (90/25 oriented supervisor)

  When running under a delivered supervisor, any 8418 low-density disk drives that were not online during IPL must be set to the correct subtype of X'02' with the following command:

  SET IO,pub-id,TYPE,2002

  where pub-id is the device address.

  If the command is not executed, the 8418 disk drive appears to the supervisor as an 8416 because, in low-density, their capacities and characteristics are identical, and the supervisor cannot differentiate between the two devices except through special code available only at IPL time.

- Starter Supervisors - of the 4 starter supervisors supplied on OS/3 release packs (SY$MIN, SY$BAS, SY$STD, and SY$S25), only SY$S25 supports IDA discs on device addresses 304 and 305. This is of special importance when booting an 8418 device on a 90/25 or 90/30B machine, since 8418 device addresses start at 304 on those machines.

- The delivered SYSRES volume contains a Correction Library CCOR. This library contains Optional Corrections which have not been applied to any release. Contact your local UNIVAC representative for any information on the use of this file.

F - The delivered SYSRES contains the 1K control storage
F (version 01-00-21) in the initial load area of the volume.
F The source modules, which are input to the disk prep
F routine, appear in the YSRC library as IL1K0000 and
F IL2K0000. The versions of these 1K and 2K control storage
F modules are 01-00-21 and 02-00-21, respectively. All
F generated SYSRES volumes have the desired control storage
F placed in the initial load area.

5.2 DEFAULT LCB AND VFB PROCESSING

All printers included in the starter supervisors are configured with a Load code buffer LCB of OWNLC1/OWNLC2, and a vertical format buffer (VFB) of OWNF1. The default value for the LCB and VFB is taken and a message is displayed at IPL time indicating the default values assigned.

The delivered SYSRES does not have OWNC1 and OWNVF1 set up. Because they are not set up, supervisor defaults to the following LCBs and VFBs and a message to that effect is displayed at IPL time:

Printer	Default LCB	Default VFB
773	48 - BUS	STAND1
770	48 - BUS	STAND1
768	63 - STD	STAND1
9300	--------	STAND1
776	48 - BUS	STAND1
778	48 - BUS	STAND1

If these LCB and VFB combinations are not desired, OWNLC1/OWNLC2 and OWNVF1 should be set up using the SG$PRB process as described in the system installation guide, UP-8074. This can be done prior to any printing and causes the OWNLC1 and OWNVF1 to be carried onto any generated SYSRES volumes.

5.3 DELIVERED SUPERVISORS

- Four configured OS/3 supervisors are included in this release. Supervisor generation options are divided into five broad categories. Each supervisor configuration is discussed in terms of the five categories listed below.

  1. Configuration of physical IOCS

  2. Level of timer support

  3. Transient management

  4. Optional resident modules

  5. Specific functional capabilities

     NOTE: All other features of the supervisor are standard and always available.

Minimum Supervisor (SY$MIN)

- SY$MIN provides minimum supervisor support. Main storage requirement is X'1FB0' bytes.

  1. Configuration of physical IOCS

     IPC - printer
     IPC - reader
     IPC - system console
     IDA - 2 - 8416 or 2 - 8418

     IPC - 1 - 8413 diskette

     No request validation or CCB checksums and no I/O clocking.

  2. Level of timer support

     No timer support of any type including no midnight time and date change.

  3. Transient Management

     One transient area, basic transient management.

  4. Optional resident modules

     None

  5. Specific function capabilities

     One job slot

One switching priority

No shared data management support

No file lock support

No rollout/rollin support

No spooling support

No online diagnostic support

No dynamic reallocation of main storage support

No error logging support

No SYSDUMP capability

No tape block number support

Basic Supervisor (SY$BAS)

- SY$BAS main storage requirement is X'3708' bytes. Included in this figure is the system dump.

1. Configuration of physical IOCS

   IPC - printer

   IPC - reader

   IPC - punch

   IPC - system console

   IPC - 2 - 8413 diskette

   IDA - 4 - 8416 or 4 - 8418

   One communications adapter with 12 lines

   Includes requests validation, CCB checksumming, and I/O clocking

2. Level of timer support

   Full timer support including midnight time and date change

3. Transient management

   One transient area, basic transient management.

4. Optional resident modules

None

5. Specific functional capabilities

Two switching priorities

Two job slots

Online maintenance

File lock

Dynamic reallocation of main storage

Floating point

SYSDUMP capability

No shared data management support

No rollout/rollin support

No tape block number support

No spooling support

Full supervisor (SY$STD)

o SY$STD main storage requirement is X'67B0' bytes. Included in this figure is the system dump.

1. Configuration of physical IOCS

IPC - printer

IPC - punch

IPC - reader

IPC - system console

IPC - 2 - 8413 diskette

IDA - 4 - 8416 or 4 - 8418

selector channel

3-8411

3-8414 or 3-8424/25

4-8430 or 4-8433

3 - UNISERVO 12C, or UNISERVO 16C, or UNISERVO 14C, or

UNISERVO 10C

3-UNISERVO 20C

MUX channel

0768-printer

0770-printer

0776-printer

0717-reader

0716-reader

9300-reader, printer, punch

0920-reader/punch

2703-reader

0604-punch

0605-punch

UNISERVO VI-C or UNISERVO 10C (MUX)

Communications adapter with 12 lines

2. Level of timer support

   Full timer support including midnight time and date change

3. Transient management

   Two transient areas

4. Optional resident modules

   Lock function

5. Specific functional capabilities

   Seven job slots

   Five switching priorities

   Error logging

   File lock

   Dynamic reallocation of main storage

Online maintenance

Floating point

SYSDUMP capability

No tape block number support

No rollout/rollin support

No shared data management support

No spooling support

90/25 Standard Supervisor (SY$S25)

o Standard Supervisor for 90/25 (SY$S25)

SY$S25 main storage requirement is X'30B8' bytes. Included in this figure is the SYSTEM DUMP.

1. Configuration of physical IOCS

   IPC - printer
   IPC - reader
   IPC - system console
   IPC - 2 - 8413 diskette
   IDA - 2-8415 and 2-8418

2. Level of timer support

   No timer support of any type including no midnight time and date change.

3. Transient Management

   One transient area, basic transient management.

4. Optional resident modules.

   NONE

5. Specific function capabilities

   One job slot
   One switching priority
   No shared data management
   No file Lock support
   No rollout/rollin support
   No spooling support
   No online diagnostic support
   No dynamic reallocation of main storage support.
   No error logging support
   Sysdump capability is provided

No communications support
No tape block number support
No Floating point support

6.1 GUIDELINES

F F F F
- The RESGEN jobstream, SG$PREP, should always be executed from the current release pack, so as to ensure that the appropriate IPL records are recorded on the generated SYSRES.

- The volume serial number specified for the output volume in the SYSOUT keyword parameter (RESGEN section) should not be of the form RELxx, where xxx is a decimal number.

- The OS/3 BAL assembler should not be converted from standard load module format to block format prior to execution. This element contains some inconsistencies with regard to block module concepts which preclude its successful operation in this context. If blocking is attempted, BAL executions abnormally terminate.

- When running the SYSGEN jobstream SG$TRANS, it is recommended that when the release volume is also the current system disc, the job should not be multi-programmed. Erroneous console messages could result, stating copy compare errors occurred. However, the copied transient file should still be valid.

360/20 Emulation Generation

- Four fields have been added to the system description form. UD1-1218. To utilize any of these features, emulators must be reassembled. These fields are:

  1. Card 3, column 73 permits specification of an 8418 disk for MFCM card image files. If the 8418 disk to be used is single density, the user should specify 8416 instead of 8418.

  2. Card 6, column 39 permits the user to indicate that a // MOUNT card will be included in the 360/20 JCL.

9200/9300 Emulation Generation

- Several new fields have been added to the system description form. UD1-1220, and one field has been redefined. To take advantage of any of these enhancements, the emulators must be reassembled. These new fields are:

  1. Card A, columns 27-29 permit the user to specify the numer of CCWs that will be chained. See also section 4.17.1.

  2. Card A, column 17 has been redefined. In earlier releases, column 17 was used to denote a transient NCOS

system on the 9300. Now, column 17 is used to indicate that throughput is to be increased by making critical emulator functions resident code. To make these functions resident, column 17 must be marked with an R.

3. Card A, columns 26, 39, and 40 permit the user to select double buffering for the emulated 0711 reader (cc 26), bar printer (cc 39), or 0603 punch (cc 40).

4. Card A, columns 32-34 are now used to indicate which 90/30 printer will be used to emulate the 9300 printer.

6.2 90/25 System Generation Considerations

Three 8415 removable disk volumes are required to deliver OS/3 release 6:

1. Primary volume (REL060) is an IPL volume and contains starter supervisor SY$S25

2. Secondary volumes (ALT060, OTH060) are SYSGEN data packs from which selected modules are copied to the user's generated SYSRES during RESGEN

This is the breakdown of components by volume:

REL060	ALT060	OTH060
SYSTEM	RPG	IMS
ASM	COBOL	OLM
SYSGEN	ICAM	VSB
LNKEDT	FORTRAN	MAC80
Starter Supervisor SY$S25	SYSGEN	PLM
		NTR
		EMULATION
		LIBRARY UTILITIES
		DMS
		UTS400
		OCL
		SYSTEM/3
		SYSGEN

To generate system components, boot the 8415 fixed disc and mount the corresponding release volume.

COMPONENT	RELEASE VOLUME
ICAM	ALT060
EMULATOR	OTH060
NTR	OTH060
COBOL Options	ALT060

To run the parameter processor, key in:

```
RV SG$PARM,,(ALT=YES )
            <        >
            ( OTH=YES)
```

The rest of the SYSTEM GENERATION proceeds just as with other types of release media.

6.3 RESTRICTIONS

NONE

6.4 USER GUIDELINES

Using the SYSRES preparation jobstream, COPYREL, the operands for the input parameters for Start and End, S and E, have been shortened. These are as follows:

Previous Designator	New Designator
SRC	S
OBJ	O
LOD	L
MAC	M
JCS	J
GEN	G
TRAN	T
TRANA	AT

When using the console keyins to run COPYREL, care must be exercised not to exceed the run processor limit of 44 characters in the length of the Keyin. Card input can be used if necessary if the limit would be exceeded.

Appendix A. MACRO/MODULE DESCRIPTION LISTING

A canned jobstream, MODLST, is available on the release disk to provide the OS/3 macro/module listing. This jobstream provides an alphanumerically ordered listing of the contents of each of the five system libraries including the description and size of each module. The job may be executed by entering the following console command:

```
RU MODLST,,VSN=XXXXXX
```

where xxxxx = the VSN of an optional work disk. If this parameter is omitted, the work space for the job is allocated on the disk containing the RUN library. Disk work space requirements for MODLST are as follows:

8415	not supported
8414	21 cylinders
8424/25	21 cylinders
8416/8418	30 cylinders
8430	10 cylinders
8433	10 cylinders

NOTE:

The use of non-sectorized disks (8414, 8424, 8425, 8430, 8433) for workfiles for MODLST is restricted. For this release an 8416 or 8418 disk must be used for these files.

The job stream executes in two steps. Program MODXTR is used to extract data from each module in the system libraries to an output file. This file is then submitted as input to the MODLST program which sorts it and then produces the macro/module listing.

Appendix B. CORRECTIONS (CORs) CROSS-REFERENCE LISTING

F

```
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
X                                     X
X  THIS SECTION IS ONLY ISSUED WITH   X
X  INTERIM RELEASES TO THE SOFTWARE.  X
X                                     X
X  IT IS NOT APPLICABLE FOR MAJOR     X
X  RELEASES.                          X
X                                     X
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

```
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
X                                      X
X   SOFTWARE USER REPORTS (SURs)       X
X   Inquiries to SURs Corrected by     X
X   this release of the software       X
X   should be directed to the Local    X
X   UNIVAC branch office.              X
X                                      X
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

D1. DESCRIPTION

This appendix is provided to enable you to estimate the main storage needs of a UNIVAC OS/3 System. Included are estimates as provided by OS/3 Software Development. Upgraded and more specific information will be added as it becomes available.

The main storage estimates of the OS/3 Operating System software are listed by categories as follows:

- Main storage
- Supervisor size
- Shared Data management code
- DTF sizes
- Job prologue
- Space for user programs
- Integrated communications access method (ICAM)
- Information Management System (IMS 90)
- Database Management System (DMS 90)
- Data Utilities
- Other system software
- Emulation
- OS/3 disk requirements

This provides a convenient checklist with which to construct a software system from the individual software components.

D2. REVISION 6.0

THIS REVISION OF THE OS/3 STORAGE ESTIMATOR CONTAINS APPLICABLE SIZE ESTIMATES FOR RELEASE 6.0.

D3. SIZES

D3.1 Main Storage

1. Supervisor size from D3.2 line 8. ----------

2. Add totals from D3.7, line 8 or line 9, and from D3.8, D3.9, D3.10, D3.11 and D3.12. ----------

   Program sizes from D3.6, lines 6a, 6b, 6c, 6d, 6e, 6f, and 6g;

   a. Program #1 ----------
   b. Program #2 ----------
   c. Program #3 ----------
   d. Program #4 ----------
   e. Program #5 ----------
   f. Program #6 ----------
   g. Program #7 ----------
   h. Concurrent symbionts (see D3.2, item 9) ----------
   i. Shared Data management (See D3.2, item 6) ----------

3. Estimated system memory requirements: ----------

4. Main storage size recommendation: ----------

   a. _ 65,536

   b. _ 98,304

   c. _ 131,072

   d. _ 163,840

   e. _ 196,608

   f. _ 262,144

   g. _ 327,680

   h. _ 393,216

   i. _ 458,752

   j. _ 524,288

   k. - 524,288 to 1,048.576 for the 90/40 systems.

D3.2 Supervisor Size

1. Miminum Supervisor 8192 _____

The Minimum Supervisor includes:

a. One job slot
b. One task switching priority
c. Multitasking
d. Interrupt handling
e. Storage protect
f. One transient area
g. Transient loader
h. Console control facilities
i. Support for integrated peripherals
   - Card reader
   - Printer
   - Two disk drives
   - One diskette drive
j. ECC (error correction code) for IDA
k. AVR
l. System Access Technique (SAT) required for disk data management and system software.

2. Supervisor options (can be added to Minimum Supervisor):

a. User file lock feature (80) _____

3. Supervisor functions (available thru transients) that can optionally be made resident:

a. Resident system lock feature (500) _____

b. Resident multitasking (ATTACH macro) (350) _____

c. Resident multitasking (AWAKE, TYIELD, CHAP, WAITM, and POST macros) (930) _____

d. Resident island code control (STXIT and EXIT macros with island activation) (570) _____

e. Resident information passing (GETCOM, PUTCOM, and GETINF macros) (670) _____

f. Resident DBS (200) _____

4. Sum of lines 1, 2, and 3 (rounded up to a multiple of 512 for systems less than 131K bytes, 1024 for systems 131K bytes to 262K bytes, 2048 for systems, 263K to 524K bytes, 4096 for systems, greater than 524K bytes. ---------

5. Basic Supervisor (11,735) ---------

This is the starting point for all other features. The Basic Supervisor includes:

a. One to seven job slots (refer to 6a)

b. Integrated communications access method (ICAM) interface.

c. One to sixty I/O and task switching priorities (refer to 6c)

d. Capability to add selector and multiplexer channel devices

e. Error logging interface

f. Minimum timer services for I/O clock (refer to 6h).

g. Items c thru l of line 1.

6. Additional Supervisor Options

a. Multijobbing (4 bytes X no. of job slots X no. of I/O data paths (N.B. The 0605 Punch with read feature =1 data path)) ---------

b. Printer/Punch/Reader/RBP/System Log/ Spooling (transfer from Table D1 Page 8) ---------

c. Multipriorities (4 bytes X no. of execution priorities) ---------

d. Job Accounting (350) ---------

e. Memory Consolidation (dynamic relocation) (50) ---------

f. SYSDUMP (1384) ---------

g. On-line Diagnostics (1400) ---------

h. Clock Support

GETTIME Macro Support	(150)	----------
SETTIME Macro Support	(200)	----------

i. Additional Transient Areas (1200 bytes each; no maximum. One is minimum - included in Basic Supervisor ----------

j. User File lock Feature (80) ----------

K. Console Logging

Console Log Dispatcher	(450)	----------
Console Log Spool Control Table	(228)	----------
Console Log Buffer:		
Minimum	(304)	--------
Normal	(560)	--------
Max	(1072)	--------

l. Shared Code Directory (16 bytes x no. of shared code directory slots) --------

m. shared code interface routine (64) --------

n. Add total of Supervisor Options line 3 --------

7. Physical Input/Output Control Options

Base addition for Selector Channel Support (856) ----------

I/O Error log i.e. SEL channel support (132) ----------

a. One Selector Channel: (80 bytes + 32 x no. of specified accesses from SELACC I/O keyword).

Tape Only	(720)	
Disk Only	(1520)*	----------
Tape and Disk	(2170)*	----------
		----------

b. Two Selector Channels: (80 bytes + 32 x no. of specified accesses from SELALL I/O keyword).

Tape Only	(890)	
Disk Only	(1700)*	----------

Tape and Disk	(2230)*	
		---
c. Two Selector Channels with co-channeling:		
Tape Only	(890)	
Disk Only	(1766)*	---
Tape and Disk	(2260)*	---

NOTE: *If 8430 disks used, add 1056 to this figure,

d. Multiplexer channel (capable of supporting 920 paper tape, 770 Printer, VIC and U10 tapes	(950)	

• Add for 768 and 776 printers	(396)	

• Add for 92/9300 support only	(1128)	

• Add for 604 Punch or 9300 and 604 Punch.	(2236)	
		---

e. Physical unit blocks (PUBs) six PUBs are included in the minimum or basic Supervisor, one per device (card reader, diskette, printer, console and two disks).

Additional devices:

- for printers, disk, diskettes and magnetic tape, 56 bytes/device.
- for 8415 Disks add 112 bytes/device.
- All other devices, 32 bytes/device.

f. For systems with no IDA, subtract 1150 bytes.	(-1150)	
		---
g. Tape block numbering	(1184)	---
h. For systems with 8415 disks	(155)	---

i. For systems without error logging, subtract 994. (-994) _____

j. For systems with additional error log buffers, add 80 bytes per buffer. _____

8. Sum of lines 5, 6 and 7 (round up to multiple of 512 for systems less than 131K bytes, 1024 for systems of 131K bytes to 262K, 2048 for systems greater of 262K to 524K bytes, or 4096 for systems greater than 524K bytes). _____

9. Control System Symbionts (see D3.1, item 2h) _____
The following Control System symbionts are temporarily loaded into main storage on behalf of user jobs. Sufficient main storage should be reserved so that these symbionts may be loaded as required. (These symbionts will relinquish their main storage following termination of their function.)

Symbiont	Storage Requirement	
	hex	decimal
Run Processor (RU,RV,RBP)		
Min	5500	21760
Max	9800	39680
File Processor	1F00	7936
Output Writer (Printer and Punch)	4624 + (SPOOLOWBUFR-2) X 256	
Input Reader		4200
System Utility		20000
Output Writer (Diskette)		6700
OCL Processor		
Min	6C00	27648
Max	B800	47872
Spool Min		20500
	Min 20,500 (spool)	

TABLE D1: Spooling Size Estimator

Component	options			
	Output Print/Punch	Input Read/ Print/Punch	RBP Print/ Punch/Read/ JCS	
Spooler	5800	5800	5800	5800
System Spool Control Tables (Single VOLUME)	728	728	728	728
Directories	72	96	168	

Virtual PUBS:

Reader	Default is 32 X No. of job slots or user-specified NO. X 32.	
Printer	Default is 64 X No. of job slots or user-specified NO. X 32	
Punch	Default is 32 X no. of job slots or user-specified NO. X 32	
Bit Map	Default is 256 bytes or user-specified size X 4 bytes	
	TOTAL	

D3.3 Data Management Code

This section applies to those data management routines that are included in any user program(s): Enter the results in the appropriate boxes in Section D3.6, line 2.

Note: Shared Data Management is only included once if shared code is specified.

1.	SAM (Sequential Access Method) low-speed devices		
a.	Card reader	(528)	----------
b.	Card punch	(922)	----------
c.	Additional for combined file	(1178)	----------
d.	Printer	(1220)	----------
e.	8413 Diskette (input)	(1220)	----------
f.	8413 Diskette (output)	(1706)	----------
g.	8413 Diskette (additional for combined file)	(1102)	----------
2.	SAM high-speed devices		
a.	Tape (input and output)	(2834)	----------
b.	Tape input	(2546)	----------
c.	Tape output	(2290)	----------
d.	Disk (input and output)	(2301)	----------
e.	Disk input	(1843)	----------
f.	Disk output	(1741)	----------
3.	DAM (Direct Access Method)		
a.	DAM disk	(1235)	----------
b.	SAM/DAM disk	(3712)	----------
4.	ISAM (indexed sequential access method)		
a.	Retrieve, random/sequential	(2554)	----------
b.	Add	(1938)	----------
c.	Add/retrieval	(3328)	----------
d.	Load	(1200)	----------
5.	IRAM		
a.	Indexed	(2660)	----------
b.	Non-Indexed	(1800)	----------
6.	MIRAM		
a.	Indexed	(6568)	----------
b.	Non-Indexed	(3044)	----------
7.	Total of lines 1 through 6		----------

D3.4 DTF Sizes

For each DTF included in the user program, multiply the number of bytes in the table by the number of DTF's. Enter the results in the appropriate boxes on the user program estimator, D3.6, line 3.

	Device	DTF element (bytes/file)	
1.	SAM - low-speed devices:		
a.	Card reader	(116)	_____
b.	Card punch	(120)	_____
c.	Punch with automatic retry	(812)	_____
d.	Printer	(92)	_____
2.	SAM - high-speed devices:		
a.	Tape	(242)	_____
b.	Disk	(242)	_____
3.	DAM - relative address	(242)	_____
4.	ISAM		
a.	Add/retrieve	(396)	_____
b.	Retrieve	(372)	_____
c.	Add	(396)	_____
d.	Load	(332)	_____
5.	IRAM		
a.	Indexed	(387)	_____
b.	Non-Indexed	(240)	_____
6.	MIRAM	(388)	_____
7.	Total of lines 1 through 6		_____

D3.5 Job Prologue

The job prologue size must be determined for each job in the system.

If the job does not involve shared data management, multijobbing, multitasking, spool tables or requires many extents, the prologue size will be as follows:

```
 512 for systems less than 131K
1024 for systems of 131K to 262K
2048 for systems greater than 262K
4096 for systems greater than 524
```

Otherwise, the prologue size can be estimated below.

1. Job preamble (256) _____

2. TCBs (task control blocks)
   One for each task - a minimum of one is required, (200 if Floating point is configured, otherwise 168.) _____

3. Job accounting table
   56+(4Xnumber of unique devices used by the user job) _____

4. Open file table _____

   4+(20 X number of possible active files)

5. Extents _____

   56 + (8 X number of logical extents X number of possible active files)

6. Phase load Table (136) _____
   included in jobs with:
   // OPTION JOBDUMP or
   // OPTION SYSDUMP

7. Spool Tables (136) _____

6. Spool Tables
   - Job Log Spool Control Table (228) _____

   - Spool Device Buffers (1104) _____
     (size of buffers is preset to 1104 bytes; this value can be modified by the user via SYSGEN or JCL).

     Spool Device Buffers=16+n[32+m(256)]
     where: n=2 if RUN Processor detects spooler reader, printer or punch. Otherwise, n=1.
     m is defined at SYSGEN (default=2)

     n and m can be overriden by values in positional parameter 9 of the // JOB card.

   - Spool CONTROL TABLE _____
     228 X number of active unit record devices

Spool Control Table=228X(number of spooled readers)
+228x(number of spooled punches)
+(2p+230 for each spooled printer)
where: p=number of skip codes for this printer(from the // SPL or // VFB card. Default=7).

- Line Control Table 2X Number of skip codes (default=8 codes) X number of printer files. // SPL statement may be used to modify number of skip codes for a print file. (16) ----------

- Optional Dedicated Buffers Each spool file in a job may request dedicated buffers. This is only advisable for very heavily printbound jobs. ----------

Optional Dedicated Buffers=16+n[32+m(256)]
where: n=the n specified in the // SPL statement.
m= the m specified in the // SPL statement.

8. Program EXTRN Table for Shared Data Management (2 bytes X number of points used in program) ----------

9. Shared Code Interface Routine (48) ----------

10. SAT Interface Routine (28) ----------

11. Prologue size rounded to a multiple of 256 for systems without storage protect (for systems with storage protect, the following applies: 512 for systems less than 131K bytes, 1024 for systems of 131K to 262K bytes, 2048 for systems of 263K to 524K bytes, and 4096 for systems greater than 524K bytes.) ----------

D3.6 User Programs

(Use for batch or real-time programs)

Job Number	1	2	3	4	5	6	7
1. Job prologue (D3.5)	----	----	----	----	----	----	----
	----------						
2. Logical IOCS (see D3.3 for sizes)	----	----	----	----	----	----	----
3. Elements of DTFs (see DTF sizes, D3.4)	----	----	----	----	----	----	----
4. I/O buffers	----	----	----	----	----	----	----
5. User-coded logic	----	----	----	----	----	----	----
6. Estimated user program sizes (round line 6 up to a multiple of 512 bytes* - minimum job size is 8,192 bytes).	---- a.	---- b.	---- c.	---- d.	---- e.	---- f.	---- g.

*1024 for systems of 131K bytes to 262K bytes;
2048 for systems of 263K bytes to 524K bytes.
4096 for systems greater than 524K bytes.

D3.7 Integrated Communications Access Method (ICAM)

User interfaces are of five different levels, CPI, DDI, TCI, RBP, and STDMCP. Storage estimates for an ICAM generation are shown below:

1. Job Prologue:

Preamble	(256)	----------
TCBs		
a. Primary TCB for all configurations	(200)	----------
b. ICAM overlays (all configurations except CPI)	(200)	----------
c. TCB for each DISCFIL Macro	(200)	----------
d. TCB for each JRNFILE Macro	(200)	----------
e. TCB for RBP interface	(200)	----------

2. Code present for all configurations

Activity Control	(3000)	----------

Communications CPIOCS	(4100)	_____
General Information Table	See Table D2	

3. Code Present for all non-CPI configuration _____

Buffer Pool Control	(600)	_____
Message Control Interface	(1100)	_____
Overlay Control & total overlay area size	(2800)	_____
Communications Control Area	See Table D3	
Remote Device Handlers:		
-2780/BSC		
-DCT 2000		
-DCT 500/TTY		
-UNISCOPE/DCT 1000		
-9200/9300/1004		
-NTR		

NOTE: For Remote Device Handler values, refer to the ICAM User Guide (UP-8194),Appendix A, Section A-3.

4. Code Optional for all configurations _____

Operator Communications	(800)	_____
Trace Table	(16,400 max)	_____

5. Code Optional for only STDMCP or TCI configurations,

MPPS Processing	(4800 max)	_____
History Journaling and Checkpoint	(2500)	_____

6. User Interface Code

Global Networking (GUST)	(18000)	_____
Cobol Message Control System (CMCS), add to user program	(3200)	_____
Add to ICAM ip Initial CD selected	(1000)	_____
CPI	(2300)	_____
STDMCP	(3700)	_____
TCI	(5000)	_____
DDI	(900)	_____
RBP Refer to UP-8194 Rev. 2 Section 10	N/A	

7. Code Required for STDMCP or TCI configurations _____

(MUST processing	(3800)	_____
(Core queuing	(1600)	_____
CHOICE<		
(Core AND/OR DISK queuing	(5186)	_____
(Communication Network Control (CNC)	(2466)	_____

8. For Total ICAM Symbiont size add all applicable items from lines 1 thru 7 _____

9. The only interface supported thru transient ICAM is TCI and its total size including prologue is (9616) _____

PSA

Refer to UP-8194 Appendix A for more detailed module sizes. This does require; however, some knowledge of the total ICAM structure.

TABLE D2: General Information Table Sizing

SIZE=512+20*(Total number of configured users)+56X(#PORTS)

TABLE D3: Communications Control Area

MACRO	Average Size (BYTES)
CCA*	200
Buffers (ARP)	24 + 40 times number of arps
Buffers (NETWORK)**	24+Buffer size times number of buffers
LINE	400
TERM	100
QUEUE**	CORE=60 DISK=90
PRCS**	44 + SIZE of each QUEUE
DISCFILE**	TCI=500 DISK QUEUING=700
JRNFILE**	450 + number of buffers times buffer size
MPPS	8 per macro + ERRMSG sizes
Translate tables	384 * Number of DEVICE TYPES

*NOTE 1: Size of communications control area is 0 for a CPI user

**NOTE 2: DDI interface does not require these tables.

D3.8 INFORMATION MANAGEMENT SYSTEM (IMS 90)

The main storage requirements for both single-thread and multi-thread IMS 90 can be found in Appendix B of the OS/3 IMS 90 System Support Function User Guide UP-8364 Rev. 4.

D3.9 DMS 90 Main Storage Requirements (Single Thread OS/3 Configuration)

The DMS 90 system is a set of stand-alone components that run as

system programs under OS/3, and a set of object modules, collectively known as the data base management system (DBMS), that are linked to user COBOL programs that contain data manipulation language statements. The space requirements for system programs are as follows and are subject to change.

- System Program Space Requirements

Program	Space (Bytes-Decimal) Load Module	Tables	Buffers (Options)
Schema Compiler	109,664[1]	0	System Buffers[2]
Sub-schema Compiler	97,768[1]	0	System Buffers[2]
DML Pre-processor	89,640[1]	0	System Buffers[2]
Data Base Initializer Utility	10,228[1]	0	2*BUFF1[3]
Schema Initializer Utility	83,740[1]	0	System Buffers[2]
Data Base Page Dump and Alter Utility	21,284[1]	6000	2*BUFF1[3]
Data Base Security Dump Utility	26,332[1]	0	2*BUFF1[3] (TOTAL)
Data Base Security Restore Utility	13,260[1]	0	2*BUFF1[3] (TOTAL) 2*BUFF1 (RANGE)
Data Base Backward Recovery Utility	24,724[1]	9000	2*BUFF1+8[3]
Data Base Forward Recovery Utility	25,524[1]	9000	2*BUFF1 +8[3]

NOTES:

1. The load module space requirement includes OS/3 data management system object modules. The job region space requirement is:

   Job Region Space= (Load module + supervisor prologue + task control block + open file table and extent area + tables + buffers)

   NOTE: Prologue and file tables are variable depending upon the job control stream but are typically 192 and 32 bytes, respectively.

2. System buffers are described under item 4 of application program space requirements.

3. BUFF1=journal tape page size = data base page size + 44.

4. It should be noted that the schema compiler, DML preprocessor, subschema compiler, and schema initializer utility function as ordinary DMS 90 application programs. The program space requirements shown for these components include the run-time data base management system routines (DBMS). The space required for system buffers is a function of the number of buffers and page size specified when the data base initializer utility is executed. System buffer space is dynamically requested within the job region by the DBMS when the schema compiler, subschema compiler, DML preprocessor, schema initializer utility, or user COBOL (DML) application programs are executed.

- Application Program Space Requirements

1. User-written COBOL (DML) Application Program Object Module. Includes control record areas allocated as the result of record descriptions inserted into working storage by the DML preprocessor.

   Space requirements for the control record areas are:

   197

   + 16 x number of records

   + 16 x number of sets

+ 16 x number of areas

and user record areas used to hold data records moved between the user's COBOL program and system buffers. The space required is the sum of the total number of bytes contained in each record included in the subschema invoked by the application program.

2. Subschema object Module. The space requirement is a function of the areas, records, and sets included in the subschema invoked by the application program:

   560

   + 68 x number of area descriptions

   + 100 x number of record descriptions
     (not including system record type SR1 and SR6)

   + 72 X number of set descriptions

   + 72 x (A+B)
     where A=number of owner/member relationships declared in member sentences
     where B=number of records with LOCATION MODE IS CALC

   + 52 x (A+B)
     where A=number of ASCENDING/DESCENDING KEY data items
     where B=number of records with LOCATION MODE IS CALC

3. Run time data base management system object modules (DBMS): 32,080 (excluding CALC module overhead: XR7CALC=584 additional bytes; of XR7CALC1=216 additional bytes.

4. System buffers. A minimum of four buffers is required. For optimum performance, six to eight buffers are recommended. The number of buffers required is specified to the data base initializer utility. Two additional buffers are always requested by the DBMS. A buffer is equal in size to the DMS 90 data base page size plus 44 bytes. The total buffers space requirement is (number of buffers requested + 2) x (page size + 44).

5. The total space requirement for an application program is the sum of items 1 through 4.

D3.10 System Software Sizes minimum

1. Language processors:

a.	Assembler	(20,480)*	------
F b.	RPG II	(23,030)*	------
c.	COBOL		
	• Basic (ANSI-1968)	(22,528)*	------
	• Extended (ANSI-1968)	(45,056)*	------
	• ANSI-1974	(51,200)	------
d.	FORTRAN		
	• Basic	(23,552)*	------
	• FORTRAN IV Small	(67,584)*	------
	Large	(102,400)*	------
e.	PL/M	(143,000)*	------
f.	MAC80	(102,400)*	------

*Size listed is exclusive of Job Prologue size.

2. Linkage editor (14,842)* ------

3. Librarian (23,330)* ------

   a. librarian; if using the librarian Escape (ESC) operation, use the following memory allocations:

• SAM tape	28,018	------
• SAM diskette	26,482	------
• SAM disk	27,250	------
• LIBRARIAN disk	25,250	------

4. File utility
   See specific figures in D3.1.1 ------

5. Sort/Merge

F a. SORT/MERGE subroutine logical code (added to user processor code) (12,400) ------

   Sort Function:

   If record size greater than 100, add 5x record size to total.

F b. Independent SORT/MERGE (16,784)* ------

   Merge Function:

   For merge functions add 2x block size for each additional file beyond first file.

c. SORT3 (16,384)* ------

6. JOBLOG Report Program (20,256)* ------

7. Nine Thousand Remote (NTR)

o The load module size of a basic NTR system supporting console, 1-reader, 1-punch and 1-printer is approximately 24K - X'6000' which is composed of the following modules (all sizes in hex).

Module		Size in Hex
NT$NTR	(required-includes console support)	4D30
NTRNAME	(required)	268
Card Reader	(optional 1A8/reader)	1A8
Printer	(optional 648/printer)	648
Punch	(optional 180/punch)	180
ST$1110	(Data management - 1 module included if any of reader printer or punch is used)	635
		X'5F3D'

If, for example, a user would configure an additional printer (2 printers total) then add an additional X'648'.

o Any NTR load module created includes 2K of buffer space which, basically, is enough to service the console and internal communication between NTR and the 1100. Roughly, 1K - X'400' should be added for each additional device supported.

In the example above:

X'6000' + 3*X'400' = X'6C00'

So that, X'6C00' should be specified on the // JOB card for the memory size to run the basic NTR. Additional memory beyond the actual load module size (up to 32K additional) is always utilized by NTR for buffer space, and can improve the thru-put. (For example, X'7000' may have slightly better thru-put in the above example.)

D3.11 Data Utilities

D3.11.1 Old Data Utility Version 5.0 (known as "OLD DATA UTILITIES")

The following table, which shows sizes in decimal notation, should be used to compute the minimum specifications on Job cards for data utility programs. The memory size requirement is based upon the type of output file or, in the case of a compare operation, the INPUT2 file.

Output File type (or INPUT2)	Memory Size
Printer	22,496
Punch	22,784
Tape	23,552
SAM Disk	22,784
ISAM Disk	22,784
DAM Disk	24,832
NI Disk	24,832
IRAM Disk	24,832

NOTE: For indexed IRAM Processing, the Index Buffer sizes must be added to the formula.

To compute the minimum specifications:

M=T+(2XI)+(2XO)

where:

M=Minimum partition size
T=Appropriate value from table above
I=Input block length
O=Output block length

D3.11.2 New Data Utility Version 6.0 (known as "NEW DATA UTILITIES")

Most Data Utility executions will run in 32K bytes of memory. If a more accurate size is required (larger or smaller), the following formula may be used:

M = Maximum of (21100,B)

where:

M is the minimum amount of memory required to run this job.

B is the total size of the required functional routines, DTF's, IOCS modules, and Data Management buffers. B can be determined by using the following formula:

B=(16100+FT+IOT+C+C+E+F+G+H+I+J)

where:

FT is the total size of the functional routines required by this job. The sizes of the functional routines are specified in the functional routine size table, (TABLE 1), along with the parameters that specify the function.

IOT is the size of all DTF's and IOCS modules for all files used in this job. Printer file DTF's and IOCS modules are included in the printer routine size in the functional routine size table, (TABLE 1), so printer files are not included in this value. If non-Shared Data Management is used, then the non-shared I/O routine size table, (TABLE 2), should be used. If Shared Data Management is used, then the Shared I/O Routine size table, (TABLE 3), is used.

F C is the maximum INPUT1 record size for ISAM or
F NI files as specified in the INPUT1 VTOC
F entry.

D is the INPUT1 block/buffer size as specified in the second entry of the A=( ) parameter. If the INPUT1 file is a disk file (other than IRAM/MIRAM) then the block size is taken from the disk file format labels.

F E is the maximum record size for the ISAM
F OUTPUT1 or NI OUTPUT1/INPUT2 file. For NI
F INPUT2 files this value is taken from the
F file format labels.

F is the OUTPUT1/INPUT2 block/buffer size as specified in the second entry of the B=( ) parameter. If this is a compare (K2), then the INPUT2 block size is taken from the INPUT2 file format labels for disk files other than IRAM/MIRAM.

G this variable is for ISAM INPUT1 files only. It is the disk file key length and is taken from the disk file format labels.

H this variable is for ISAM OUTPUT1/INPUT2 files only. It is the record key length as specified in the V=( ) parameter. If this is a compare (K2), then the key length is taken from the disk file format labels.

I this variable is for IRAM and MIRAM INPUT1

disk files only. It is the index buffer size and is taken from the disk file format labels.

J this variable is for IRAM and MIRAM OUTPUT1/INPUT2 files only. It represents the disk file index buffer size and it is calculated by multiplying the second entry in the OR=(I,n) or the OM=(I,n) parameter by 256 decimal. If this is a compare (K2) then this value will be taken from the disk file format labels.

TABLE 1: (Table of Functional Routine Sizes)

FUNCTION	INVOKING PARAMETER	SIZE (DECIMAL)
Correction	COR Statement	4200 Note 1
Select/Delete	SEL/DEL Statement	1000
Field Selection	FS Statement*	3000 Note 2
Sequence Checking	X=( ) Parameter	900
Compare	K2 Parameter	2700
Print Routine	UCP,UTP,UDP, or DP	4300

* - This routine is also invoked for operations involving variable DAM files and/or variable NI files with keys, and whenever the output record length is greater than the input record length.

NOTE 1: Add the maximum INPUT1 file record size to this figure.

NOTE 2: Add the maximum OUTPUT1/INPUT2 file record size to this figure.

TABLE 2: (I/O Routine Size Table for Non-Shared DM)

TYPE	INPUT1	INPUT2	OUTPUT1	OUTPUT2
8413/CARD	1350	1350	2000	2000
TAPE	3350	3350	3250	
SAM Disk	2150	2150	2200	
ISAM Disk	2800	2800	1750	
DAM Disk	1500	1500	1750	
NI Disk	2700	2700	4100	
IRAM Disk	2850	2850	3050	
MIRAM Disk	6800	6800	7000	
DCON4 Tape	2850			

TABLE 3: (I/O Routine Size Table for Shared DM)

TYPE	INPUT1	INPUT2	OUTPUT1	OUTPUT2
8413/CARD	120	120	300	300
TAPE	260	260	440	
SAM Disk	260	260	440	
ISAM Disk	390	390	520	
DAM Disk	260	260	500	
NI Disk	790	790	980	
IRAM Disk	410	410	590	
MIRAM Disk	500	500	710	
DCON4 Tape	260			

D3.12 Emulation

1. 360-20

   Original main storage size (4K, 8K, 16K,24K, or 32K) + any of the following options:

   a. Basic unit record handler (4000) _____
   b. Basic disk I/O handler (4000) _____
   c. Tape I/O handler (2500) _____
   d. Expanded MFCM handler (1000-3400)* _____

   * Plus the 4K for basic unit record handler

2. 9200/9300

   Original main storage size (8K, 12K, 16K, 24K, or 32K) + basic unit record handler (3000-5000) or tape handler (2500) or 8411 disk handler (4000), 8410 Disk Handler 4000, Emulator Program Island Code 4000 _____

3. Emulator total _____

   NOTE 1: Emulation on 90/30 is run as a job under the OS/3 Supervisor.

   NOTE 2: Emulation uses tasking for tape and disk. Thus, 200 bytes for the TCB for each handler must be added to the Emulation Job Prologue. (Refer to D3.5.)

D3.13 OS/3 Disk Requirements

This section is provided in an attempt to let the sales representative have an accurate appraisal of the disk space requirements for OS/3 software on a customer generated SYSRES volume. A definition of the OS/3 SYSRES files is provided with sizes and SYSGEN information as to how to control the presence or absence of the files.

Three of the files may vary considerably for combinations of the components requested to be deleted. Consequently, detailed definitions for each of these files are provided in a similar fashion.

OS/3 also requires disk space for Run Libraries for each Job and Scratch files for some of its components during execution. The amount of space used for those temporary files is much more difficult to estimate.

D3.13.1 OS/3 SYSRES FILE DEFINITIONS

The name and the usage or content of each of the OS/3 SYSRES files are defined in this section.

IPL/COS

This area of disk contains the OS/3 software which Initially Program Loads the desired Supervisor or utility program. It also contains the control storage which may be Initially Loaded from the disk.

VTOC

This area of disk contains the Volume Table of Contents which OS/3 uses to allocate/deallocate space on the SYSRES volume.

YELOG

This is a storage area which the Supervisor uses to record the I/O error history.

YTRAN

This file holds the OS/3 transient modules and the canned messages for console and printed display.

YTRANA

This file holds exactly what YTRAN holds. When the Supervisor has an error accessing YTRAN, it will recover by trying to access YTRANA.

YDUMP

This is a storage area used by SYSDUMP processing. An image of main memory is written into this file and then read during the dump analysis processing.

YSRC

This Librarian file contains the source and copy modules provided.

YMAC

This Librarian file holds the interface procedures and macros for the components which may be referenced from assembled code.

YOBJ

This Librarian file contains the object module subroutines for data management and each compiler's runtime library. These object modules are included by the Linkage Editor for subsequent program execution.

YJCS

This Librarian file houses stored job control streams and job control procedures.

YCAT

This file is used by job control to record the catalogued files made by the customer.

YLOD

This Librarian file holds the load modules for the system.

YSHR

This file is used to hold information pertaining to which files are currently OPEN in the system and their ability to be shared.

D3.13.2 INDIVIDUAL FILE REQUIREMENTS

The disk space requirements for each file are shown in Table D4. All values are shown in decimal. The first column is the item or file. The second column is the number of 256-byte blocks of disk space which the item requires. The next five columns are the block size converted into cylinders for each type of SYSRES volume. The last column is the system generation parameter which calculates the appropriate sizes for the Library.

Five of the files, YOBJ, YMAC, YSRC, YJCS, and YLOD require more detailed explanations which are in subsequent sections.

All tables are based on the following:

Type	Blocks/Cylinder
8411	110
8414,8424,8425	400
8415F	120
8415R	80
8416,8418	280
8430,8433	627

where a block is a 256-byte record or sector.

TABLE D4: OS/3 Disk File Requirements (1 of 2)

ITEM	No. of Blocks	Cylinders						SYSGEN Command
		8411	8414 8424 8425	8415F	8415R	8416/ 8418	8430 8433	
IPL/COS	N/A	1	1	2	2	1	1	None
VTOC	N/A	1	1	1	1	1	1	None
YELOG	0	0	0	0	0	0	0	ERRLOG=NO
	1200	11	3	10	15	5	2	ERRLOG=YES
YTRAN	2520	23	7	21	32	9	5	None
YTRANA	0	0	0	0	0	0	0	ATRANS=NO
	2520	23	7	21	32	9	5	ATRANS=YES
YDUMP	0	0	0	0	0	0	0	SYSDUMP=NO
	Amt of of main stor- age ÷ by 256							SYSDUMP=YES Larger for over 262K systems
YSHR	N							FILELOCK=n
YSRC	2310	21	6	20	29	9	4	None
								INCLUDE=XXX DELETE=XXXX (NOTE 1)
YMAC	1	1	1	1	1	1	1	DELETE=ASM
	10756	98	27	90	135	39	16	
								INCLUDE=XXX DELETE=XXX (NOTE 2)

TABLE D4: OS/3 Disk File Requirements (2 of 2)

Item	No. of Blocks	Cylinders						SYSGEN Command
		8411	8414 8424 8425	8415F	8415R	8416/ 8418	8430 8433	
YOBJ	1	1	1	1	1	1	1	DELETE=LINKER
	3908	36	10	33	49	14	7	INCLUDE=XXX DELETE=XXX (NOTE 3)
YJCS	2608	24	7	22	33	10	5	INCLUDE=XXX DELETE=XXX (NOTE 4)
YCAT	N/A	1	1	1	1	1	1	None
YLOD	28081	256	71	234	351	101	45	INCLUDE=XXX DELETE=XXX (NOTE 5)
YSYSTEM TABLES	40	1	1	1	1	1	1	

NOTE 1: Refer to TABLE D8, Variable YSRC Disk Requirements.

NOTE 2: Refer to TABLE D5, Variable YMAC Disk Requirements.

NOTE 3: Refer to TABLE D6, Variable YOBJ Disk Requirements.

NOTE 4: Refer to TABLE D9, Variable YJCS Disk Requirements.

NOTE 5: Refer to TABLE D7, Variable YLOD Disk Requirements.

Variable OS/3 Disk File Sizes

The size of the variable system Files is controlled by the user. The RESGEN Keyword parameter INCLUDE is available to select those components that are desired by the user. The RESGEN Keyword parameter DELETE is also available to select only those components which are not desired by the user. Note that those keywords are mutually exclusive.

The variable files contain standard modules, plus the following optional modules:

Assembler; DMS 90;COBOL; FORTRAN; ICAM; IMS 90; IMS 90 Generation; LINKAGE EDITOR; MAC80 compiler; on line maintenance; PLM; RPG II, Verify System Build modules. Tables D5,D6,D7,D8 and D9 give the actual sizes per component.

TABLE D5: Variable YMAC Disk Requirements*

Item	No. of Blocks	Cylinders						RESGEN Include/Delete OPERAND
		8411	8414 8424 8425	8415F	8415R	8416/ 8418	8430 8433	
Directory	78	.8	.2	.65	.98	.28	.13	(None)
Standard Modules	5888	53.6	14.72	49.07	73.6	21.03	9.4	(None)
FORTRAN	539	4.9	1.35	4.5	6.74	1.93	.86	FORTRAN FORTIV
ICAM	2293	21	5.73	19.1	28.67	8.19	3.7	ICAM
IMS 90	75	.68	.19	.63	.93	.27	.12	IMS 90
DMS 90	32	.29	.08	.27	.4	.11	.05	DMS

*Note that this file can be reduced to one cylinder if the Assembler is deleted.

TABLE D6: Variable YOBJ Disk Requirements*

Item	No. of Blocks	Cylinders						RESGEN Include/Delete OPERAND
		8411	8414 8424 8425	8415F	8415R	8416/ 8418	8430 8433	
Directory	260	2.37	.65	2.17	3.25	.93	.52	(None)
Standard Modules	1063	9.67	2.66	8.86	13.29	3.8	1.7	(NONE)
RPG II	118	1.07	.29	.9	1.47	.42	.19	RPGII
COBOL	128	1.16	.32	1.06	1.8	.45	.20	COBOL EXTCOBOL
** ANSI-1974	XX	XX	XX	XX	XX	XX	XX	
FORTRAN	359	3.26	.89	2.99	4.48	1.28	.57	FORTRAN FORTIV
IMS 90 Gener- ation	789	7.17	1.97	6.57	9.86	2.81	1.25	IMSGEN
DMS	221	2.01	.56	1.85	2.77	.79	.36	DMS
VSB	326	2.97	.82	2.72	4.08	1.17	.52	VSB

*Note that this file can be reduced to one cylinder if the Linkage Editor is deleted.

**To be supplied.

TABLE D7: Variable YLOD Disk Requirements (1 of 2)

Item	No. of Blocks	Cylinders						RESGEN Include/Delete OPERAND
		8411	8414 8424 8425	8415F	8415R	8416/ 8418	8430 8433	
Directory	304	2.77	.77	2.54	3.8	1.09	.49	(None)
Standard Modules	6884	62.59	17.21	57.37	86.05	24.59	10.98	(None)
Linkage Editor	315	2.86	.78	2.68	3.93	1.12	.6	LINKER
Assembler	548	4.98	1.37	4.56	6.85	1.95	.87	ASM
RPG II	832	7.57	2.08	6.94	10.4	2.98	1.33	RPGII
Extended COBOL	931	8.4	2.32	7.7	11.6	3.32	1.48	EXTCOBOL
** ANSI-1974	XX	XX	XX	XX	XX	XX	XX	
Basic COBOL	798	7.25	1.99	6.65	9.97	2.9	1.27	COBOL
ICAM	550	5	1.37	4.58	6.87	1.96	.87	ICAM
VSB	1357	12.33	3.39	11.30	16.96	9.89	3.1	VSB

Table D7: Variable YLOD Disk Requirements (2 of 2)

Item	No. of Blocks	Cylinders						RESGEN Include/Delete OPERAND
		8411	8414 8424 8425	8415F	8415R	8416/ 8418	8430 8433	
FORTRAN BASIC	226	2.05	.56	1.8	2.82	.80	.36	FORTRAN
IMS 90	831	7.55	2.07	6.9	10.38	2.96	1.32	IMS 90
OLM	8208	74.61	20.52	68. 4	102.6	29.31	13.09	OLM
DMS 90	2346	21.32	5.87	19.55	29.32	8.38	3.75	DMS
FORTRAN IV	2188	19.9	5.47	18.23	27.35	7.81	3.5	FORTIV
MAC80	402	3.65	1.00	3.35	5.02	1.43	.64	MAC80
PL/M	1204	10.95	3.01	10.04	15.05	4.3	1.93	PL/M
IMS 90 GENERA- TION	831	7.6	2.2	6.92	10.38	2.96	1.33	IMSGEN

**To be supplied

Table D8: Variable YSRC Disk Requirements

Item	No. of Blocks	Cylinders						RESGEN Include/Delete OPERAND
		8411	8414 8424 8425	8415F	8415R	8416/ 8418	8430 8433	
Directory	81	.74	.21	.68	1.02	.29	.13	(None)
Standard Modules	357	3.25	.9	2.98	4.47	1.28	.1	
DMS 90	8	.07	.02	.06	.1	.02	.01	DMS 90
IMS 90	20	.18	.05	.16	.25	.07	.03	IMS 90
MAC80	643	5.85	1.61	5.36	8.04	2.30	1.03	MAC80
VSB	39	.36	.1	.33	.49	.14	.07	VSB

Table D9: Variable YJCS Disk Requirements

Item	No. of Blocks	Cylinders						RESGEN Include/Delete OPERAND
		8411	8414 8424 8425	8415F	8415R	8416/ 8418	8430 8433	
Directory	44	.4	.11	.37	.55	.16	.08	
Standard Modules	1340	12.19	3.35	11.17	16.75	4.79	2.14	
IMS 90	170	1.55	.42	1.42	2.13	.82	.27	IMS 90
OLM	22	.2	.05	.18	.27	.07	.03	OLM
VSB	456	4.15	1.14	3.8	5.7	1.63	.73	VSB

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