

The IBM logo, consisting of the letters "IBM" in a bold, sans-serif font, is positioned on the left side of the page. It is set against a solid black rectangular background.**Systems Reference Library****Catalog of Programs for IBM System/360****August 1967**

This Catalog contains a complete listing of all programs available for the IBM System/360. It obsoletes the previous edition of this Catalog, Form No. C20-1619-2, and its Supplement, Form No. N20-0030-13.

Instructions for ordering magnetic tape programs are contained in the section of the Introduction entitled, "How to Order Programs".

This Catalog contains the following sections:

1. Introduction and instructions on how to use the catalogs and how to order the programs.
2. A list of corrections and revisions to announced programs (if applicable).
3. A Keyword-in-Context (KWIC) Index.
4. Abstracts of all available programs.
5. A list of deletions (if applicable).

All programs listed in this Catalog should be ordered through your local IBM Branch Office.



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INTRODUCTION

The Catalogs for the systems listed below, with their form numbers, are currently available from IBM Branch Offices. Individually updated supplemental issues of all Catalogs will be published under the form numbers indicated and can be obtained from IBM Branch Offices as they are published.

<u>Title</u>	<u>Catalog Form No.</u>	<u>Supplement Form No.</u>
Catalog of Programs for IBM 1240, 1401, 1420, 1440, and 1460 Data Processing Systems	C20-1601	N20-0013
Catalog of Programs for IBM 705, 1410, 7010, 7070, 7072, 7074, 7080, 7740 and 7750 Data Processing Systems	C20-1602	N20-0014
Catalog of Programs for IBM 1620 and 1710 Data Processing Systems	C20-1603	N20-0015
Catalog of Programs for IBM 704, 709, 7040, 7044, 7090 and 7094 Data Processing Systems	C20-1604	N20-0016
Catalog of Programs for IBM System/360	C20-1619	N20-0030
Catalog of Programs for IBM 1130 Computer System and IBM 1800 Data Acquisition and Control System	C20-1630	N20-0031

This Catalog and its supplements contain a complete listing of all programs available for System/360.

To assist you in using this Catalog, the abstracts are listed by file number in numeric and alphabetical sequence.

TYPES OF PROGRAMS

Type I

Programming Systems are conceived and developed by IBM as integral parts of the data processing system for which they are written.

Type II

Application Programs are carefully selected solutions by IBM of data processing problems. They are supported by well-planned documentation and tested procedures.

Both types of programs are maintained by IBM. Modifications are distributed to registered users of specific programs by the Program Information Department. Abstracts for Type I and Type II programs are contained in the "IBM Programs" Section of this Catalog.

Type III

IBM-Contributed Programs are contributed voluntarily by IBM employees to aid the programming and system community.

Type IV

Customer-Contributed Programs are valuable aids to the programming and systems community supplied by members of user organizations and individual users of

IBM serves solely as the distribution agent for Type III and Type IV programs. Abstracts for Type III and Type IV programs are contained in the "Contributed Programs" Section of this Catalog.

USER ORGANIZATIONS

The major user organizations are COMMON, GUIDE, and SHARE. Members of these organizations all have IBM systems installed, on order, or are major users. Members participate in the exchange of systems and programming information. They also provide information to IBM on desired product features and matters of general interest.

COMMON is an organization of users of IBM 1620, 1710, 1130, 1800 and System/360 Data Processing Systems.

GUIDE is an organization of users of the IBM 705, 1410, 7010, 7070, 7072, 7074 and 7080 Data Processing Systems and certain models of System/360.

SHARE is an organization of users of IBM 704, 709, 7040, 7044, 7090 and 7094 Data Processing Systems and certain models of System/360.

STANDARDS FOR TYPE IV (CUSTOMER-CONTRIBUTED) PROGRAMS

Programs written by customer personnel for submission to the Program Library must conform to established standards and procedures. These criteria differ according to the machine system for which the program is written. Copies of standards and procedures for Type IV (Customer-Contributed) Programs are available from the Program Information Department.

HOW TO ORDER PROGRAMS

Domestic Customers

All programs listed in this Catalog should be ordered through your local IBM Branch Office.

Distribution media information for each program can be found in the abstract. Programs are distributed in card form unless otherwise stated. If the abstract states a program is available in card form or on a 9-track or a 7-track Distribution Tape Reel (DTR), one of three media should be indicated on the order. If no specification is noted, 9-track DTR will be supplied. It is not necessary to submit reels of tape for programs indicated as available on DTR's. The DTR's will be supplied by IBM.

When the abstract states distribution of the program is on a 2400 foot reel of magnetic tape or a disk pack, the designated magnetic volume should be submitted with the program order. A reel of magnetic tape may be ordered through the local IBM Branch Office. All orders to be filled on magnetic tape reels should specify clearly the track and recording density requirements along with the installation name and location and program order number. Orders without the track and recording density requirements specified will be filled on 9-track tape at 800 bytes per inch.

The Program Information Department's objective is to complete the in-house processing of a program request within ten (10) working days of its receipt by the department.

IBM World Trade Users

World Trade users should order programs by contacting their IBM representative.

KEYWORD-IN-CONTEXT INDEX (Illustrated next page)

The Keyword-in-Context (KWIC) Index lists available programs by their search words, for Contributed Programs, and by keywords, for IBM Programs. Search words are significant words that describe the program but do not necessarily appear in the title. Keywords are significant words which appear in the program title.

Each search word and each keyword is listed alphabetically in a column. Their respective context words are printed on either side. There is an index entry for each search word and keyword. Certain words are not accepted as indexing words (See section titled "Words Prevented From Indexing"). These words and words which the program author chooses to exclude from indexing will be printed with search words and keywords. The example shown illustrates the operation.

Note that the # sign always precedes the first word of the search word group or title. Each print line in the KWIC index contains 59 spaces. A search word group or title that is longer than 59 spaces will show only the characters that fall on either side of the search word or keyword being highlighted, up to the limits of one line. The # placed two spaces in front of the first word indicates that the entry is the second part of a two-line search word group or title. The complete search word group or title may be found in the section containing abstracts.

PROGRAM CLASSIFICATION CODES

Included below is a complete listing of classification codes for all types of programs included in this catalog.

In addition to assisting you in locating the abstract of each program, this list should prove useful in classifying programs written by IBM or customer personnel and contributed to the Program Libraries.

The System/360 four-digit identification code includes an alphabetic character which designates:

360A:	Type II Application Programs
360B:	Basic Operating System
360C:	Miscellaneous (Conversion)
360D:	Type III and IV Programs
360F:	Model 44

TITLE	SYSTEM FILE NO.	PAGE
#MODEL 44 BPS ABSOLUTE PROGRAM LOADER	360F UT-600	025
#SYSTEM/360 ABSOLUTE PROGRAM LOADER	360P UT-017	036
#OS/360 DIRECT ACCESS ACCOUNT ROUTINE	360D 03.8.006	068
#REMOTE ACCESS COMPILE EXECUTE TIME-SHARE MONITO	360D 05.1.001	069
#REMOTE ACCESS COMPUTING SYSTEM /RAX/	360A CX-17X	005
TRANSMIT-RECEIVE ACCESS METHOD FOR DOS/360 #SYNCHRONO	360A SE-32X	013
TRANSMIT-RECEIVE ACCESS METHOD FOR OS/360 #SYNCHRONO	360A SE-33X	013
AM #DIRECT ACCESS STORAGE DEVICE INITIALIZATION PRO	360P UT-213	042
360 DIRECT ACCESS ACCOUNT ROUTINE #0	360D 03.8.006	068
#DEMAND DEPOSIT ACCOUNTING	360A FB-15X	006
NK DEMAND DEPOSIT ACCOUNTING #DOS SINGLE, MULTI-	360D 19.7.003	080
SYSTEM/ #ACCOUNTING /ROUTINE/ /FOR/ 360 OPERATING	360D 01.4.003	062
ALLING #SAVINGS ACCOUNTING PACKAGE TO ASSIST USERS IN IN	360D 19.7.001	080
TELEPHONE REVENUE ACCOUNTING SYSTEM #MODEL 2	360A SU-11X	013
HE COMMUNICATIONS ADAPTER #INPUT OUTPUT CONTROL SYSTEM FOR	360T CQ-003	048
NTIAL MACROS LOAD ADD RETRIEVE #DOS COBOL DISK INDEX SEQ	360D 03.4.013	065
# HOSPITAL ADMINISTRATION	360D 15.5.002	078
ME FOR UNIVERSITY ADMINISTRATORS #MANAGEMENT DECISION	360D 15.1.001	077
ITS, ROCKETS #AEROSPACE VEHICLE DESIGN TRAJECTORIES, O	360D 16.1.001	079
COBOL CONVERSION AID PROGRAM /ACCAP/ #1400 AUTOCODER	360A SE-19X	010
DING/ THE AUDIBLE ALARM #A SYSTEM/360 MACRO FOR /SO	360D 03.7.011	067

OG:	Model 67-Time Sharing System (TSS)	<u>Programming Application Type II</u>
OM:	Tape Operating System	Industry-Oriented Programs
ON:	Disk Operating System	
OP:	Basic Programming Support	Distribution
OS:	Operating System	/DP/ Publishing
OT:	Model 20 Card	/DR/ Retail
OU:	Model 20 Tape Program Support	/DW/ Wholesale
OW:	Model 20 Disk Program Support	/DX/ Other

rogramming Systems Type I

		Finance
L/	ALGOL Compiler	/FB/ Banking
S/	Assembler	/FF/ Finance Companies
B/	COBOL Compiler	/FI/ Brokerage and Investment
Q/	Communications Input/Output	/FX/ Other
L/	Control Program	Federal Government
V/	Conversion	/GF/ Government, Federal
C/	Documentor	
M/	Data Management	Insurance
N/	Diagnostic	/IB/ Blue Cross and Blue Shield
D/	Editor	/IF/ Fire and Casualty
U/	Emulator Program	/IL/ Life
O/	FORTPAN	/IX/ Other
O/	Input/Output	
M/	Library Material	Manufacturing
D/	Loader	/MA/ Aerospace
I/	Miscellaneous	/MD/ Drug, Food, Chemical Products
S/	Operating System	/ME/ Electrical and Machinery
L/	Programming Language/I Compiler	/MF/ Fabrication and Primary Metals
T/	Program Test	/MP/ Petroleum and Industrial Chemicals
C/	Remote Computing	/MR/ Transportation Equipment
G/	Report Generator and Report Program Generator	/MT/ Textiles and Paper
		/MX/ Other
I/	Simulator	
M/	Sort/Merge	Service
V/	Supervisor	/SC/ Communication
T/	Utility	/ST/ Transportation
		/SU/ Utilities
		/SX/ Other

Universities and Government
 /UC/ Colleges and Universities
 /UG/ Government, State and Local
 /UH/ Hospital and Medical
 /US/ Secondary Schools
 /UX/ Other

2 Compilers
 3 Interpretive Systems
 4 Input/Output Control
 5 Report Generators
 6 Preprocessing and Editing
 7 Macros and Macro Generators
 8 Functions and Subroutines

Industry-Independent Programs

Cross Industry Group
 /CA/ Statistical Applications
 /CC/ Process Control
 /CM/ Mathematical Applications
 /CN/ Numerical Control Applications
 /CO/ Operations Research
 /CP/ Critical Path Scheduling
 /CR/ Information Retrieval
 /CS/ Simulators
 /CX/ Other

Testing and Debugging 04.
 0 Unclassified
 1 Dumping
 2 Tracing
 3 Test Data Preparation
 4 Testing Systems
 5 Break Point Printing
 6 Memory Verification and Searching

Engineering
 /EC/ Civil Engineering
 /EE/ Electrical Engineering
 /EH/ Chemical Engineering
 /EM/ Mechanical Engineering
 /EN/ Nuclear Codes
 /EO/ Optics
 /EX/ Other

Executive Routines 05.
 0 Unclassified
 1 Monitor
 2 Supervisor
 3 Disassembly and Derelativizing
 4 Relativizing
 5 Relocation

Exploratory
 /XP/ Mathematics and Applications

Data Handling 06.
 0 Unclassified
 1 Sorting
 2 Merging
 3 Data Transmission
 4 Table Operations
 5 Conversion and/or Scaling
 6 Character and Symbol Manipulation
 7 Information Classification, Storage, and Retrieval
 8 List Processing

SMTD
 /SE/ System Marketing Techniques

Type III and IV Programs

Utility (External) Programs 00.
 0 Unclassified
 1 Multiple Utility
 2 Flowcharting
 3 Tape Handling
 4 Disk Handling
 5 Drum and Direct Data Devices
 6 Graphic Display Devices

Input 07.
 0 Unclassified
 1 Binary
 2 Octal
 3 Decimal
 4 BCD
 5 Hexadecimal
 6 Composite

Utility (Internal) Programs 01.
 0 Unclassified
 1 Loading
 2 Clear/Reset Memory
 3 Check Sum Accumulative and Correction
 4 Internal Housekeeping
 5 Dump to Reload/Restore Operations
 6 File Organization
 7 Self Checking Digit
 8 Packed Data Handlers

Output 08.
 0 Unclassified
 1 Binary
 2 Octal
 3 Decimal
 4 BCD
 5 Hexadecimal
 6 Plotting
 7 Display
 8 Composite

Diagnostics 02.
 0 Unclassified
 5 Status Recorders

Systems Analysis 10.
 0 Unclassified
 1 Network Design
 2 File and Core Requirement
 3 Systems Design
 4 Configurator

Programming Systems 03.
 0 Unclassified
 1 Assemblers

Simulation of Computers and Components	11.	Financial	19.
0 Unclassified		0 Unclassified	
1 Computers		1 Investing and Borrowing	
2 Peripheral Equipment		2 Capital Stock	
3 System Component or Feature		3 Taxes	
4 Pseudo-Computer		4 Cash Custody and Forecasting	
Conversion of Programs and Data	12.	5 General Accounting	
0 Unclassified		6 Auditing	
1 Data Conversion		7 Banking Operations	
2 Computer Language Translators		Cost Accounting	20.
Statistical	13.	0 Unclassified	
0 Unclassified		1 Material Only	
1 Descriptive		2 Labor Only	
2 Univariate and Multivariate Parametric		3 Work in Progress	
3 Non-Parametric		Payroll and Benefits	21.
4 Time Series and Auto Correlation		0 Unclassified	
5 Probability Distribution Sampling, and Random Number Generators		1 Payroll	
6 Correlation and Regression Analysis		2 Employee Benefits	
7 Analysis of Variance and Covariance		3 Profit Sharing	
8 Sequential Analysis		4 Retirement	
9 Discriminant Analysis		5 Insurance	
Management Science/Operations Research	15.	6 Credit Union	
0 Unclassified		Personnel	22.
1 Simulations		0 Unclassified	
2 Linear Programming		1 Recruiting and Hiring	
3 Non-Linear Programming		2 Inventorying Employees	
4 Scheduling/Critical Path/Pert/Less		3 Training	
5 Games, Game Like Models and Game Theory		4 Performance Review	
6 General Problem Solvers		5 Administering Wages and Salary	
7 Inventory Control		Manufacturing	23.
Engineering	16.	0 Unclassified	
0 Unclassified		1 Scheduling/Loading	
1 Aeronautical		2 Job Reporting	
2 Civil		3 Bill of Materials Processors	
3 Chemical		4 Numerical Control	
4 Electrical		5 Control Systems	
5 Mechanical and Hydraulic		Quality Assurance/Reliability	24.
6 Petroleum		0 Unclassified	
7 Nuclear		1 Testing	
8 General		2 Performance Analysis	
Sciences	17.	Inventory	25.
0 Unclassified		0 Unclassified	
1 General		1 Stocking and Issuing	
2 Nuclear Physics		2 Inventory Analysis	
3 Chemistry		3 Equipment and Tool Inventory and Maintenance	
4 Geology, Oceanography, and Geophysics		Purchasing	26.
5 Biology		0 Unclassified	
6 Social and Behavioral		1 Preparing Purchase Orders	
7 Astronomy and Celestial Navigation		2 Matching Invoices	
Nuclear Codes	18.	3 Accounts Payable	
0 Unclassified		4 Purchase Analysis	
		Marketing	27.
		0 Unclassified	
		1 Sales and Billings Forecasting	
		2 Promotion and Advertising	
		3 Bid or Request Analysis	
		4 Distributor or Territory Analysis	

Sales Entered and Billed	28.	3 Numerical Solutions of Partial Differential Equations	
0 Unclassified		4 Numerical Differentiation	
1 Order Entry and Scheduling		Interpolation and Approximations	44.
2 Invoicing		0 Unclassified	
3 Accounts Receivable		1 Table Look-Up and Interpolation	
4 Sales and Billing Analysis		2 Curve Fitting	
5 Backlog Reporting		3 Smoothing	
General Business Services	29.	Operations on Matrices, Vectors and Simultaneous Linear Equations	45.
0 Unclassified		0 Unclassified	
1 Records Retention		1 Matrix Operations	
2 Forms Management		2 Eigenvalues and Eigenvectors	
3 Transportation		3 Determinants	
4 Printing and Reproduction		4 Simultaneous Linear Equations	
Demonstrations	30.	5 Vector Analysis	
0 Unclassified		Unclassified	99.
1 Display		0 Miscellaneous	
2 Participation		USING THE CATALOG	
Arithmetic Routines	40.	To locate a program begin by thinking of the significant words describing the desired program. Then look in the KWIC, Keyword-in-Context, Index for the key- word entry. The page number adjacent to the order number will then direct you to the corresponding program abstract. The reference code is set up as follows:	
0 Unclassified			
1 Real Numbers			
2 Complex Numbers			
3 Decimal			
4 Floating Point			
Elementary Functions	41.		
0 Unclassified			
1 Trigonometric			
2 Hyperbolic			
3 Exponential and Logarithmic			
4 Roots and Powers			
5 Geometry			
6 Logical and Rounded			
Polynomials and Special Functions	42.		
0 Unclassified			
1 Evaluation of Polynomials			
2 Roots of Polynomials			
3 Evaluation of Special Functions			
4 Simultaneous Non-Linear Algebraic Equations			
5 Simultaneous Transcendental Equations			
Operations on Functions and Solutions of Differential Equations	43.		
0 Unclassified			
1 Numerical Integration			
2 Numerical Solutions of Ordinary Differential Equations			

<u>System</u>	<u>Order No.</u>
360P	UT-098
360D	04.4.001

The number of the IBM system for which the program is written and the alphabetic character designation.

The IBM Library code for filing and ordering a program.

Now refer back to the illustration in the section entitled, "Keyword-in-Context Index".

The page number listed at the end of the KWIC entry line will direct you to the program abstract. Each abstract describes the relevant program in enough detail to help you determine if the program will meet your requirements.

360D-03.3.000 TRANSLATES COBOL-E
/CCMPILER/ /OUTPUT/ FROM EBCDIC TO /STANDARD/ BRAILLE OS/360
AVAILABLE 2ND QUARTER 1967
SPECIFY FILE NUMBER 360D-03.3.000

AUTHOR...J. MORE, G. PATERSON

DIRECT INQUIRIES TO..

MR. J. MORTON, MORE & PATERSON INC., CORP. SYSTEMS
DEVELOPMENT, 1241 FREEMAN DR., DOULTON, MASS. 45013

TITLE...IBM S/360 COBOL BRAILLE TRANSLATOR
***N XXXX 0001A CO.0 06.5 08.0 ***

THE S/360 COBOL BRAILLE PROGRAM IS DESIGNED TO TRANSLATE COBOL
CCMPILER OUTPUT FROM EBCDIC TO STANDARD BRAILLE PRINTOUT FOR
USE BY BLIND PROGRAMMERS. THE PROGRAM ITSELF IS WRITTEN IN
COBOL /E/ - AND IS BEING TESTED USING

CONTRIBUTED PROGRAM ABSTRACTS

The example above illustrates the format in which the Contributed Program Abstracts appear. Explanations are included where the information is not self-explanatory.

Program Order Number followed by first line of Search Word Group.

Second line of Search Word Group if applicable.

Program Title.

Additional Author Information and Secondary Classification codes. From left to right in the above example:

N-User Organization Affiliation Code

C-Common S-Share

G-Guide N-Non-affiliated

XXXX-User Organization Installation Code will appear here if applicable, otherwise will be blank

0001A-Submitter's own Program Identification if applicable

00.0 06.5 08.0-Secondary Classification Codes (up to a maximum of four).

First line of Program Abstract.

LIST OF NEW PROGRAMS

This section consists of a list of new programs added since the last edition of the Catalog or its Supplement.

PROGRAM CORRECTIONS AND REVISIONS

There are two kinds of revisions to programs listed in this Catalog:

1. Changes in the program abstract.
2. Functional changes in the program documentation and/or changes in the card decks and tapes.

Abstract changes for all Types of programs are noted in this Catalog and in the Supplement. The following codes appear at the extreme right end of the title line for each abstract that is new or has been revised in this edition:

- *N - This symbol indicates a new program
- *M - This symbol indicates that the title of the program has been modified when it appears only at the extreme right end of the title line
- *M - This symbol indicates that the text of the abstract has been modified when an additional *M or * alone appears at the extreme right end of each line of the abstract that has been modified
- *R - This symbol indicates that the entire text of the abstract has been revised

Functional changes in program documentation and/or decks or tapes for

Type III (IBM-Contributed) and Type IV (Customer-Contributed) programs are listed in a special table preceding the KWIC Index. This data is listed under three headings: order number; machine system area; and the date the correction was effective. If a user has received the program data prior to the date indicated and would like to receive the correction, he must reorder the program. See the section entitled "How to Order Programs".

Information concerning functional changes in program documentation and/or decks or tapes for Type I (Programming Systems) and Type II (Application Programs) can be obtained through your IBM Branch Office.

DELETED PROGRAMS

The last section of this catalog contains a list of programs that have been removed. These programs are listed in sequence by machine systems and order number.

Included in the listing is an alphabetical heading, "Reason for Removal". This letter refers to a key that indicates the specific reasons for removing the program from the Catalog.

Alphabetical Key to Reason for Removal

- A This program has been deleted because of low usage.
- B This program has been withdrawn at user organization direction.
- C This program has been deleted because of limited usefulness.
- D This program is obsoleted and replaced by file number -----.
- F This program has been withdrawn by the author.

Programs deleted by the letter "D" are followed by a program order number. This is the order number of the program that replaces the deleted program.

An abstract for the replacement program may be found in the "Abstracts of Available Programs" Sections in this Catalog.

LIST OF PROGRAM CORRECTIONS + REVISIONS

ORDER NUMBER	MACHINE AREA	DATE
00.0.001	360D	12-13-66
01.6.002	360D	05-10-67
03.2.001	360D	01-24-67
03.4.007	360D	03-28-67
05.1.003	360D	01-31-67
05.1.005	360D	03-13-67
05.3.001	360D	07-03-67
11.1.005	360D	05-27-67
15.1.002	360D	05-19-67
16.2.001	360D	07-03-67
16.4.001	360D	01-12-67
16.6.001	360D	05-01-67
19.1.002	360D	06-06-67
19.0.001	360D	01-16-67

List of New Programs

FILE NUMBER	TITLE	PAGE
360A NEW ENTRIES		
360A-CX-16X	CONTINUOUS SYSTEM MODELING PROGRAM /CSMP/	4
360A-CX-17X	REMOTE ACCESS COMPUTING SYSTEM /RAX/	5
360A-ME-07X	PRODUCT STRUCTURE RETRIEVAL	8
360A-SE-19X	1400 AUTOCODER TO COBOL CONVERSION AID PROGRAM /ACCAP/	10
360A-SE-32X	SYNCHRONOUS TRANSMIT-RECEIVE ACCESS METHOD FOR DOS/360	13
360A-SE-33X	SYNCHRONOUS TRANSMIT-RECEIVE ACCESS METHOD FOR OS/360	13
360C NEW ENTRIES		
03.8.004	DCS RPG DEBUGGING	67
05.1.007	CS/360 DEVICES OPERATION	70
06.1.003	1401 SORT-2 OR /SORT-7/ CONTROL /CARDS/ TO BPS /SORT/MERGE/ /CONTROL/ /CARDS/	71
06.7.002	CREATE MAINTAIN LIBRARY OF SOURCE PROGRAMS	72
06.7.003	CATALOGING A PROGRAM LIBRARY ON /TAPE/	72
08.6.002	PLOTTING CALCOMP PL/I INTERFACE	73
11.1.009	SIMULATE RCA-301 UNDER DOS	74
13.1.001	TALLY TWO-DIGIT NUMERIC FIELDS AND PRINT FREQUENCY DISTRIBUTION	77
13.1.002	TALLY 1 OR 2 THREE-DIGIT FIELDS AND PRINT FREQUENCY DISTRIBUTION	77
13.1.003	CALCULATES MEANS, STANDARD DEVIATIONS UP TO /EIGHTY/ NUMERIC FIELDS	77
16.1.001	AERCSpace VEHICLE DESIGN TRAJECTORIES, ORBITS, ROCKETS	79
19.4.001	TRANSIT DISTRIBUTION FOR INDUSTRY, BANKING	80
19.7.003	DCS SINGLE, MULTI-BANK DEMAND DEPOSIT ACCOUNTING	80
19.7.004	RPG DEMAND DEPOSIT SERVICE CHARGE CALCULATING	80
25.2.002	WHOLESALE IMPACT LIBRARY /MODIFICATIONS/	81

WORDS PREVENTED FROM INDEXING

For the purpose of this index the following words are considered to be too general to be useful for retrieval purposes and are therefore prevented from indexing. This list may be modified

as needed to make the index more useful. Note that hyphenated words are treated as one index word, with only the first word being significant.

A	BELOW	F	LIKELY	REQUIRING	USED
ABOUT	BEST	FAR	LONG	RESULTING	USEFUL
ABOVE	BETTER	FAST	LOOK	RESULTS	USEFULNESS
ACCOMPANYING	BETWEEN	FEW	LOW	ROUTINE	USER
ACCORDING	BEYOND	FEWER	LOWER	S	USERS
ACHIEVED	BIG	FIFTH	LTD	SCHEME	USES
ACHIEVEMENTS	BOTH	FINAL	M	SCHEMES	USING
ACHIEVES	BRIEF	FIRST	MADE	SEC	UTILIZATION
ACQUIRED	BRIEFLY	FIVE	MAKE	SECONDARY	UTILIZE
ACROSS	BRING	FOR	MAKES	SEE	UTILIZING
ADAPTATION	BUT	FOUR	MAKING	SEEMS	V
ADDITIONAL	BY	FOURTEEN	MANY	SEEN	VARIOUS
ADVANTAGE	C	FOURTH	MEANS	SELF	VARYING
ADVANTAGES	CALLED	FROM	MET	SEVEN	VERSUS
AFFECT	CAN	FT	METHOD	SEVENTH	VERY
AFFECTED	CAPABILITIES	FULL	METHODS	SEVERAL	VI
AFFECTING	CAPABILITY	FULLY	MORE	SHORT	VIA
AFFORDING	CAPABLE	FUNDAMENTALS	MOST	SHORTER	VII
AFTER	CAUSE	FURTHER	MPH	SIGNIFICANCE	VIII
AGAIN	CAUSED	G	MULTIPLE	SIGNIFICANT	VS
AGAINST	CAUSES	GAVE	MY	SIMILAR	W
AIMED	CAUSING	GENERAL	N	SIMPLE	WAS
ALL	CERTAIN	GENERALLY	NEAR	SIMPLER	WHAT
ALLEGED	CHALLENGE	GIVE	NEARLY	SIMPLY	WHEN
ALLOW	CHIEF	GIVEN	NECESSARY	SINCE	WHERE
ALLOWED	CO	GIVES	NEED	SINGLE	WHEREBY
ALLOWING	COME	GIVING	NEEDED	SIX	WHICH
ALLOWS	COMING	GOOD	NEEDS	SIXTH	WHILE
ALONGST	COMPANIES	GREATER	NEW	SLOW	WHO
ALONE	COMPANY	GREATLY	NEWER	SLOWLY	WHOSE
ALONG	COMPLETE	GUIDE	NEWLY	SMALL	WHY
ALSO	COMPLETED	H	NEXT	SMALLER	WILL
AMONG	COMPLETELY	HAD	NINE	SMALLEST	WITH
AN	COMPRISING	HAS	NO	SO	WITHOUT
ANALYSES	CONCERNED	HAVE	NOT	SOME	WITHOUT
ANALYSIS	CONCERNING	HAVING	NOW	SPECIAL	WOULD
ANALYZING	CONSIDERATION	HE	O	SUBROUTINE	X
AND	CONSIDERATIONS	HIGH	OBSERVED	SUCH	XI
AND/OR	CONSIDERED	HIGHER	OBTAINABLE	SUGGESTED	XII
ANOTHER	CONSIDERING	HIGHLY	OBTAINED	SUGGESTIONS	XIII
ANY	CONSISTING	HIS	OBTAINING	SUITABLE	Y
APART	CONVENIENT	HOW	OCCURRING	SUMMARY	YET
APPARENT	CORP	I	OF	SURVEY	YOUR
APPARENTLY	CORPORATION	IBM	OFF	SYSTEM	Z
APPEAR	COULD	IF	ON	SYSTEMS	2K
APPEARING	CPS	II	ONE	T	4K
APPLICABILITY	D	III	ONLY	TAKE	8K
APPLICABLE	DATA	IMPLICATIONS	ONTO	TAKEN	10K
APPLICATION	DE	IMPORTANCE	OR	TAKING	12K
APPLICATIONS	DEG	IMPORTANT	OTHER	TECHNIQUE	14K
APPLIED	DEPARTMENT	IMPROVED	OUR	TECHNIQUES	16K
APPLY	DEPARTMENTS	IMPROVEMENT	OUT	TEM	0
APPLYING	DEPENDING	IMPROVEMENTS	OVER	THAN	1
APPRECIABLE	DEPT	IMPROVING	P	THAT	1130
APPROACH	DETERMINATION	IN	PARTICULAR	THE	1240
APPROACHES	DETERMINE	INC	PER	THEIR	1401
APPROACHING	DETERMINED	INCLUDE	POOR	THEM	1410
ARE	DETERMINING	INCLUDED	POSSIBILITY	THEORETICAL	1420
ARISE	DI	INCLUDING	POSSIBLE	THERE	1440
ARISING	DID	INCORPORATING	PRACTICAL	THEREFROM	1460
AROUND	DISCUSSION	INCREASE	PRELIMINARY	THEREON	1620
AS	DO	INCREASED	PRESENCE	THESE	1710
ASCERTAIN	DOES	INCREASES	PRESENT	THEY	1800
ASPECT	DOING	INCREASING	PRIMARY	THIRD	2
ASPECTS	DONE	INFLUENCE	PRINCIPLE	THIS	3
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ATTAIN	DOUBLY	INFLUENCING	PROCEDURE	THOUGHTS	5
ATTAINED	DOWN	INNER	PROCEDURES	THREE	6
ATTEMPT	DR	INSIDE	PROGRAM	THROUGH	7
ATTEMPTED	DUE	INSTEAD	PROGRAMMING	THRU	704
ATTEMPTS	DURING	INTERESTING	PROGRAMS	TO	705
AVAILABILITY	E	INTO	PUT	TOGETHER	709
AVAILABLE	EACH	INVOLVING	Q	TOTAL	7010
AVOIDING	EARLIER	IS	R	TOTALLY	7040
AWAY	EARLY	IT	RECENT	TOWARDS	7044
B	EASE	ITS	REGARDING	TOWARDS	7070
BAD	EASILY	ITSELF	RELATED	TRI	7072
BASED	EASY	IV	RELATING	TWO	7074
BASIC	EIGHT	J	RELATION	U	7080
BE	EITHER	K	RELATIONSHIP	UNDER	7090
BECAUSE	ENG	KEPT	RELATIONSHIPS	UNTIL	7094
BEE	ET	L	RELATIVE	UP	7740
BEEEN	ETC	LARGE	REQUIRE	UPON	7750
BEFORE	EXPLANATION	LARGER	REQUIRED	USAGE	8
BEING	EXTREMELY	LIKE	REQUIRES	USE	9

TITLE	SYSTEM FILE NO.	PAGE	TITLE	SYSTEM FILE NO.	PAGE	
DEL 20 PUNCHED CARD UTILITY PROGRAMS I	#S/360 MO	360T UT-100	049	BM #S/360 MODEL 20 INPUT/OUTPUT CONTROL SYSTEM FOR THE I	360T 10-029	049
DEL 20 PUNCHED CARD UTILITY PROGRAMS II /COLLATE, #S/360 MO		360T UT-101	050	#S/360 MODEL 20 INPUT/OUTPUT CONTROL SYSTEM	360T 10-002	048
#REQUIRES MO #UTILITY TO EXTRACT COUNTS FROM IS LABELS		360D 01.6.004	063	#S/360 MODEL 20 PUNCHED CARD UTILITY PROGRAMS I	360T UT-100	049
MODEL 20 CARD CODE VALIDITY CHECK CONVERSION		360D 12.0.001	075	LATE, #S/360 MODEL 20 PUNCHED CARD UTILITY PROGRAMS II /COL	360T UT-101	050
#RPG PRINT VARIABLE LENGTH CONSOLE MESSAGES SUBROUT		360D 03.8.001	067	#S/360 MODEL 20 REPORT PROGRAM GENERATOR	360T RG-010	049
# VARIABLE LENGTH UNBLOCKED RECORDS		360D 03.4.014	065	ENTATION #MODEL 20 RPG PRELIST EDIT CARD TAPE DISK DGCUM	360D 03.6.002	065
LOCKED FIXED-LENGTH VARIABLE-LENGTH TAPE #CREATE BLOCKED UNB		360D 00.3.004	060	-SORT #MODEL 20 SORT-TIME ESTIMATING PROGRAM FOR DISK	360T ST-109	049
KEYS #AEROSPACE VEHICLE DESIGN TRAJECTORIES- ORBITS, RDC		360D 16.1.001	079	#MODEL 20 SUPPRESS ZEROS SUBROUTINE	360D 06.0.002	071
AL #SDP/360 VEHICULAR TRAFFIC CONTROL - TRAFFIC SIGN		360D 16.0.001	079	#MODEL 20 TELEPHONE REVENUE ACCOUNTING SYSTEM	360A SU-11X	013
#PROGRAM TO COPY OR VERIFY UNDERFINED TAPE RECORDS		360D 00.3.008	061	LER LANGUAGE MACROS 2250 DISPLAY #OS/360 ASSEMB	360D 00.6.004	062
ROGRAM TO SOLVE THE WAREHOUSE-DISTRIBUTOR PROBLEM	#P	360D 15.2.002	078	CONTROL INTERRUPTS 2250 DISPLAY #BPS	360D 00.6.005	062
#WHOLESALE IMPACT LIBRARY /MODIFICATIONS/		360D 25.2.002	081	#OS/360 2250 DISPLAY ON-LINE DEBUGGING	360D 04.4.005	069
#IBM SYSTEM/360 WHOLESALE IMPACT PROGRAM LIBRARY		360A DW-05X	081	#BPS FORTRAN 2250 DISPLAY SUBROUTINES INITIALIZATION	360D 08.7.001	073
#FEDERAL WITHHOLDING TAX ROUTINE		360D 21.1.001	005	ING IMAGE #OS 2250 DISPLAY SUBROUTINES ATTENTION HANDL	360D 08.7.002	073
CRO CHANNEL COMMAND WORD #DOS ASSEMBLER LANGUAGE MA		360D 03.7.006	066	ATE SHAPES #2250 DRAFTING SCHEMATIC GENERATE MANIPUL	360D 06.6.003	062
WRITE-VOLUME-LABELS WRITE-HEAD #DOS/360 INITIALIZE TAPE		360D 00.3.003	060	INITION ARRAYS #2250 GENERATION TRANSFORMATION IMAGE DEF	360D 03.4.002	064
TDS INITIALIZE TAPE WRITE-VOLUME-LABELS WRITE-HEAD #DOS/		360D 00.3.003	060	GE ON MODEL 40 WITH 2311 DRIVES#EMULATION OF 1405 DISK STORA	360D 11.3.011	075
360 OBJECT PROGRAMS WRITTEN FOR #PROGRAM TO PROCESS ON A		360D 11.1.008	074	OR 1301-EMULATED ON 2314 #1410-7010 EMULAT	360D 11.3.013	075
ESS OBJECT PROGRAMS WRITTEN FOR A BURROUGHS #PROGRAM TO PROC		360D 11.1.003	074	ABILITY S/360 MODEL 30 # COMPAT	360D 11.3.006	074
#DIRECT SEARCH ZERO-ONE INTEGER		360D 15.2.001	077	ER EDIT PRINT MODEL 30 #DIAGNOSTICS STATUS RECORD	360D 02.5.001	063
#MODEL 20 SUPPRESS ZEROS SUBROUTINE		360D 06.0.002	071	T PROGRAMS ON MODEL 30 #A 1401 PROGRAM TO RUN 1440 OBJEC	360D 11.1.010	074
PS/360 INPUT OUTPUT 1231-NI PROGRAM	#B	360P 10-060	033	HE SYSTEM/360 MODEL 30 #TAPE OVERLAP EMULATOR PROGRAM FOR T	360C EU-097	017
#1410-7010 EMULATOR 1301-EMULATED ON 2314		360D 11.3.013	075	H OPERATES ON MODEL 30 TO ALLOW TWO 1401 #PROGRAM WHIC	360D 05.2.003	070
DISPLAY UPON PRINTER 1400 #MON-CONSOLE SENSE SWITCH O		360D 11.3.006	074	DELAY RPO ON MODEL 30#PROGRAM TO HANDLE 1401 STACKER SELECT	360D 11.3.012	075
PROGRAM /ACCAP/ #1400 AUTOCODER TO COBOL CONVERSION AID P		360A SE-19X	010	LINE TELLER PROGRAM 32K CAPABILITY #DN	360A F8-16X	006
P BPS/BOS INTERFACE 1400 COMPATIBILITY	#CS	360D 05.1.003	069	AGNOSTIC TRACE FOR 360 #D	360D 02.0.001	063
#BOS/DOS/360 1400 COMPATIBILITY SUPERVISE MONITOR		360D 05.1.005	069	RAM TO PROCESS ON A 360 OBJECT PROGRAMS WRITTEN FOR #PROG	360D 11.1.008	074
#IBM 1400 RPG TO SYSTEM/360 TRANSLATOR		1401 RG-700	020	ING /ROUTINE/ /FOR/ 360 OPERATING /SYSTEM/ #ACCOUNT	360D 01.4.003	062
# 1400 TAPE RECORDS		360D 06.1.001	071	NE FOR FORTRAN IV-E 360/DOS #OBJECT/TIME/FORMATING /SUBROUTI	360D 03.4.010	065
SIZE OPERATORS WITH 1401/1460 EMULATOR #PROGRAM TO FAMILIA		360D 12.0.002	076	NE FOR FORTRAN IV-E 360/DOS #OBJECT/TIME/FORMATING /SUBROUTI	360D 03.4.007	064
# 1401/1460 EMULATOR PROGRAM		360C EU-074	016	# ON MODEL 40	360D 12.0.002	076
N RUNNING ON #1401/1460 SENSE SWITCH PROGRAM FOR USE I		360D 11.3.001	074	ER EDIT PRINT MODEL 40 #DIAGNOSTICS STATUS RECORD	360D 02.5.002	064
# TRACK 1405 /OPERATIONS/		360D 11.3.009	075	SK STORAGE ON MODEL 40 WITH 2311 DRIVES#EMULATION OF 1405 DI	360D 11.3.011	075
DRIVES#EMULATION OF 1405 DISK STORAGE ON MODEL 40 WITH 2311		360D 11.3.011	075	ENVIRONMENT #MODEL 40 1401 EMULATOR AND DOS IN STACKED JOB	360D 05.1.009	070
#1410-7010 EMULATOR 1301-EMULATED ON 2314		360D 11.3.013	075	#S/360 MOD 40 1410/7010 EMULATOR PROGRAM	360C EU-728	019
#S/360 MOD 40 1410/7010 EMULATOR PROGRAM		360C EU-728	019	#MODEL 44 BPS ABSOLUTE PROGRAM LOADER	360F UT-600	025
#MODEL 50 1410/7010 EMULATOR PROGRAM		360C EU-726	018	#MODEL 44 BPS BASIC ASSEMBLER PROGRAM	360F AS-603	025
#IBM SYSTEM/360 1410/7010 SIMULATOR PROGRAM		360C SI-754	022	#MODEL 44 BPS DUMP ROUTINE	360F UT-601	025
60 BPS INPUT/OUTPUT 1412/1419 #IBM SYSTEM/3		360P 10-058	032	#MODEL 44 BPS FORTRAN IV /TAPE/ COMPILER	360F FO-804	025
INPUT/OUTPUT CONTROL 1412/1419 READER/SORTERS #BOS I		360D 03.4.001	064	#MODEL 44 BPS INPUT/OUTPUT ROUTINES	360F IO-602	025
#INPUT/OUTPUT 1418/1428 PROGRAM		360P 10-059	033	#MODEL 44 BPS RELOCATING PROGRAM LOADER	360F UT-605	025
# 1419 MAGNETIC CHARACTER READER		360T 10-029	049	#MODEL 44 DISK STORE RETRIEVE DATA LOAD EXECUTE	360D 00.4.007	061
FOR SIMULATING THE 1419/360 FOR TESTING #SUBROUTINE		360D 11.3.010	075	#SYSTEM/360 MODEL 44 PROGRAMMING SYSTEM	360F	023
# FOR MODEL 20		360T CQ-003	048	ER EDIT PRINT MODEL 50 #DIAGNOSTICS STATUS RECORD	360D 02.5.003	064
#S/360 MODEL 20 BASIC ASSEMBLER LANGUAGE		360T AS-001	048	#MODEL 50 1410/7010 EMULATOR PROGRAM	360C EU-726	018
#S/360 MODEL 20 BASIC TRACE /12K/		360T UT-107	050	# AN RCA 501	360D 11.1.008	074
#S/360 MODEL 20 BASIC TRACE /16K/		360T UT-105	050	#MODEL 65 EMULATOR PROGRAM FOR 709/7090/7094	360C EU-729	019
#S/360 MODEL 20 BASIC TRACE /4K/		360T UT-103	050	#7040/7044 EMULATOR PROGRAM	360C EU-733	020
#S/360 MODEL 20 BASIC TRACE /8K/		360T UT-104	050	#7040/90/94 EMULATOR-TO-DISK UTILITY	360D 00.4.004	061
#S/360 MODEL 20 BASIC UTILITY PROGRAMS /EXCEPT TRACE/		360T UT-102	050	#7070/7074 SIMULATOR PROGRAM	360C SI-753	022
#MODEL 20 BOS RPG TESTING ASSEMBLE DIAGNOSTICS		360D 04.4.002	068	MULATOR PROGRAM FOR 709/7090/7094 #MODEL 65 E	360C EU-729	019
#MODEL 20 CARD CODE VALIDITY CHECK CONVERSION		360D 12.0.001	075	#7090/7094 SIMULATOR PROGRAM	360C SI-750	021
OR SYSTEM/360 MODEL 20 CARD SYSTEM#LINEAR PROGRAMMING CODE F		360D 15.2.003	078	# 7090/94	360D 00.1.001	059

CONTINUED FROM PRIOR COLUMN--

A-CM-03X CORRELATION REGRESSION TESTS
 TISTICS ANALYSIS MATRICES POLYNOMIALS INTERGRATION FUNCTIONS ROOTS
 ORDER THROUGH LOCAL IBM BRANCH OFFICE
 SPECIFY FILE NUMBER 360A-CM-03X

TITLE -- SCIENTIFIC SUBROUTINE PACKAGE

SCIENTIFIC SUBROUTINE PACKAGE CONSISTS OF A COLLECTION OF FORTRAN SUBROUTINES, INPUT-OUTPUT Routines WHICH CAN BE COMBINED WITH A USERS INPUT, OUTPUT OR COMPUTATIONAL ROUTINES TO MEET HIS INDIVIDUAL REQUIREMENTS. THE PRIMARY PURPOSE OF THIS PACKAGE IS TO MAKE AVAILABLE A BASIC MATHEMATICAL AND STATISTICAL SUBROUTINE LIBRARY TO AID THE USER IN THE DEVELOPMENT OF HIS OWN FORTRAN SUBROUTINE LIBRARY. THE USER MAY SUPPLEMENT OR MODIFY THE COLLECTION TO MEET HIS NEEDS. THE LIBRARY INCLUDES A WIDE VARIETY OF SUBROUTINES TO PERFORM THE FUNCTIONS LISTED BELOW. THERE IS NO INTENT TO IMPLY THAT THESE SUBROUTINES REPRESENT THE CURRENT STATE OF THE ART, IN STATISTICS OR NUMERICAL ANALYSIS. HOWEVER, THEY SHOULD BE USEFUL IN SOLVING THE MORE COMMONLY ENCOUNTERED PROBLEMS IN ENGINEERING AND SCIENCE. MOST OF THE NEW SUBROUTINES ARE AVAILABLE IN BOTH SINGLE AND DOUBLE PRECISION.

INDIVIDUAL SUBROUTINES, OR COMBINATIONS OF THEM, CAN BE USED TO CARRY OUT--

STATISTICS -- ANALYSIS OF VARIANCE /FACTORIAL DESIGN/...
 CORRELATION ANALYSIS... MULTIPLE LINEAR REGRESSION...
 POLYNOMIAL REGRESSION... CANONICAL CORRELATION... FACTOR
 ANALYSIS /FUNCTIONAL COMPONENTS, VARIMAX/... DISCRIMINANT
 ANALYSIS /MULTI GROUPS/... TIME SERIES ANALYSIS... DATA SCREENING
 AND ANALYSIS... NONPARAMETRIC TESTS... RANDOM NUMBER GENERATION
 /UNIFORM, NORMAL/.
 MATHEMATICS -- INVERSION... EIGENVALUES AND VECTORS /REAL
 SYMMETRIC CASE/... SIMULTANEOUS LINEAR ALGEBRAIC EQUATIONS...
 TRANSPOSITIONS... MATRIX ARITHMETIC /ADDITION, PRODUCT, ETC./...
 MATRIX PARTITIONING... MATRIX TABULATION AND SORTING OF ROWS
 OR COLUMNS... OPERATIONS ON ROWS OR COLUMNS OF
 MATRICES... MATRIX FACTORIZATION... INTEGRATION OF GIVEN OR
 TABULATED FUNCTIONS... SOLUTION OF SYSTEMS OF FIRST-ORDER
 DIFFERENTIAL EQUATIONS... FOURIER ANALYSIS OF GIVEN OR
 TABULATED FUNCTIONS... BESSEL AND MODIFIED BESSEL FUNCTION
 EVALUATION... GAMMA FUNCTION EVALUATION... JACOBIAN ELLIPTIC
 FUNCTIONS... ELLIPTIC, EXPONENTIAL, SINE COSINE, FRESNEL
 INTEGRALS... FINDING REAL ROOTS OF A GIVEN FUNCTION...
 FINDING REAL AND COMPLEX ROOTS OF A REAL POLYNOMIAL...
 POLYNOMIAL ARITHMETIC /ADDITION, DIVISION, ETC./...
 POLYNOMIAL EVALUATION, INTEGRATION, DIFFERENTIATION...
 CHEBYSHEV, HERMITE, LAGUERRE, LEGENDRE POLYNOMIALS...
 MINIMUM OF A FUNCTION... APPROXIMATION, INTERPOLATION
 AND TABLE CONSTRUCTION.

FEATURES-- ALL SUBROUTINES ARE FREE OF INPUT/OUTPUT STATEMENTS...
 SUBROUTINES DO NOT CONTAIN PERMANENT MAXIMUM DIMENSIONS FOR
 THE DATA ARRAYS NAMED IN THEIR CALLING SEQUENCE... ALL
 SUBROUTINES ARE WRITTEN IN FORTRAN... ALL SUBROUTINES ARE
 DOCUMENTED UNIFORMLY.

PROGRAMMING SYSTEMS-- THE SCIENTIFIC SUBROUTINE PACKAGE HAS
 BEEN DEVELOPED USING SYSTEM/360 BASIC PROGRAMMING SUPPORT
 FORTRAN COMPILER /TAPE/. HOWEVER, THE SUBROUTINES OF SSPP/360
 SHOULD COMPILE AND EXECUTE WITH ANY SYSTEM/360 FORTRAN
 COMPILER CAPABLE OF ACCEPTING BASIC PROGRAMMING SUPPORT
 FORTRAN STATEMENTS.

BASIC MACHINE CONFIGURATION-- A SYSTEM/360 CONFIGURATION
 SUITABLE FOR THE FORTRAN COMPILER CHOSEN. THE MACHINE
 CONFIGURATION REQUIRED FOR ANY GIVEN PROBLEM DEPENDS ON
 THE NUMBER OF SUBROUTINES USED, THE SIZE OF THE COMPILED
 SUBROUTINE, THE SIZE OF THE COMPILED MAIN PROGRAM, THE SIZE OF
 THE CONTROL PROGRAM, AND THE DATA STORAGE REQUIREMENTS.

BASIC PROGRAM MATERIAL --
 DOCUMENTATION -- APPLICATION DIRECTORY... PROGRAMMERS
 MANUAL, H20-0205.
 MACHINE READABLE -- SOURCE DECKS AND SAMPLE PROBLEM SOURCE
 DECKS WITH DATA ON ONE 9-TRACK OR 7-TRACK /DATA
 CONVERSION FEATURE REQUIRED/ 2400 FOOT REEL OF
 MAGNETIC TAPE OR ONE 1316 DISK PACK.

NOTES-- THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM
 REPRESENTATIVE OR SUPPLIED.
 THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.
 IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE
 FORWARDED.

-CM-10X APT NUMERICAL CONTROL
 ESSOR
 ORDER THROUGH LOCAL IBM BRANCH OFFICE
 SPECIFY FILE NUMBER 360A-CM-10X

THE APT PROCESSOR HAS THE CAPABILITY OF PERFORMING A
 VARIETY OF FORTRAN-LIKE MATHEMATICAL CALCULATIONS, DEFINING
 THE EQUATIONS OF COMPLEX GEOMETRICAL SURFACES FROM SEVERAL
 FORMS OF INPUT, CONTROLLING THE CUTTER PATHS REQUIRED TO
 REMOVE THE MATERIAL ACCORDING TO THE USERS SPECIFICATION,
 AND LINKING TO USER-WRITTEN POST-PROCESSORS TO PREPARE THE
 INPUT FOR A PARTICULAR MACHINE TOOL AND CONTROL SYSTEM
 COMBINATION. THE APT PROCESSOR ENABLES THE USER TO USE AN
 ENGLISH-LIKE PROBLEM ORIENTED LANGUAGE TO CONVERT THE INFORMATION
 FROM AN ENGINEERING DRAWING TO THE FORMAT REQUIRED FOR
 NUMERICALLY CONTROLLED MACHINE TOOLS. THE PART PROGRAM IS A
 SEQUENCE OF STATEMENTS WHICH DEFINES THE PART GEOMETRY,
 MACHINE OPERATIONS, AND AUXILIARY MACHINE FUNCTIONS. THIS
 PART PROGRAM, IN PUNCHED CARD FORM, BECOMES THE INPUT TO THE
 APT PROCESSOR. THE APT PROCESSOR IS CAPABLE OF HANDLING
 TWO-DIMENSIONAL, THREE-DIMENSIONAL, AND COMPLEX FIVE-AXIS
 PARTS.

USER RESPONSIBILITIES-- THE USER MUST PROVIDE THE POST-PROCESSOR
 PROGRAMS THAT ARE REQUIRED. THESE PROGRAMS CONVERT THE RESULTS
 OF THE APT PROCESSOR INTO THAT FORMAT REQUIRED BY A PARTICULAR
 MACHINE TOOL AND CONTROL SYSTEM COMBINATION. INSTRUCTIONS
 REGARDING THE INTEGRATION OF THESE POST PROCESSORS INTO THE
 APT SYSTEM IS PROVIDED IN THE SYSTEM MANUAL /Y20-0080/.

PROGRAMMING SYSTEMS-- THE APT PROCESSOR IS WRITTEN IN FORTRAN IV
 LEVEL-M AND IN ASSEMBLER LANGUAGE. IT OPERATES UNDER THE
 CONTROL OF OPERATING SYSTEM/360 AND REQUIRES, IN ADDITION
 TO THE ASSEMBLER, LEVEL-H COMPILER, AND THEIR ASSOCIATED
 LIBRARIES, THE LEVEL-E LINKAGE EDITOR AND THE IEBUGDAT UTILITY.

*R

MINIMUM SYSTEM REQUIREMENTS-- SYSTEM/360, 2040 MODEL H
 WITH FLOATING-POINT ARITHMETIC... SELECTOR CHANNEL...
 DISK STORAGE DEVICES /FOR INSTALLATION REQUIREMENTS SHOULD
 BE CONSIDERED/... SIX LOGICAL SEQUENTIAL I/O DEVICES /MAGNETIC
 TAPE DRIVES OR EQUIVALENT/... CARD READER, CARD PUNCH, AND
 PRINTER OR TAPE DRIVES FOR PERIPHERAL I/O. MINIMUM REQUIREMENTS
 OF OPERATING SYSTEM/360 FOR DISK STORAGE DEVICES MUST BE
 CONSIDERED IN ADDITION TO THESE REQUIREMENTS. TAPE PUNCHING
 FACILITIES EITHER ON-LINE OR OFF-LINE ARE USUALLY REQUIRED
 FOR PREPARATION OF NUMERICAL CONTROL MACHINE TOOL INPUT MEDIA.
 THE COLUMN BINARY FEATURE MAY BE REQUIRED FOR USE WITH
 CUSTOMER-WRITTEN POST-PROCESSOR PROGRAMS.

BASIC PROGRAM MATERIAL
 DOCUMENTATION -- APPLICATION DIRECTORY... PART PROGRAMMERS
 MANUAL, H20-0309... OPERATORS MANUAL, H20-0331.
 MACHINE READABLE -- ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
 FEATURE REQUIRED/ REELS OF MAGNETIC TAPE CONTAINING
 LOAD MODULES, SOURCE MODULES, OVERLAP STRUCTURE AND
 SAMPLE PROBLEMS IN DISK RESTORE MODE.

OPTIONAL PROGRAM MATERIAL -- PROGRAM FLOWCHARTS ON ONE 9-TRACK
 OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF
 MAGNETIC TAPE.

NOTES-- THE TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM
 REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400
 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED
 9-TRACK WILL BE FORWARDED.
 OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-CO-14X MATHEMATICAL PROGRAMMING
 SYSTEM -- LINEAR PROGRAMMING CAPABILITY
 ORDER THROUGH LOCAL IBM BRANCH OFFICE
 SPECIFY FILE NUMBER 360A-CO-14X

MPS COMBINES THE BEST FEATURES OF CURRENT IBM LINEAR
 PROGRAMMING SYSTEMS AND SIGNIFICANT NEW CAPABILITIES SUCH AS--
 - A DYNAMIC STORAGE ALLOCATION ALGORITHM TO UTILIZE THE
 SYSTEM/360 MEMORY AND INPUT/OUTPUT DEVICES MOST EFFICIENTLY
 DURING PROBLEM SOLUTION.
 - AN IMPROVED INVERSION TECHNIQUE WHICH IMPROVES ACCURACY
 AND REDUCES SOLUTION TIME.
 - A MAXIMUM PROBLEM SIZE OF 4,095 ROWS.

LINEAR PROGRAMMING IS A MATHEMATICAL PROGRAMMING TECHNIQUE
 FOR DETERMINING THE OPTIMUM SOLUTION TO A SYSTEM OF LINEAR
 INEQUALITIES. THIS SOLUTION MAY BE AN OPTIMUM ALLOCATION OF
 RESOURCES /CAPITAL, RAW MATERIALS, MANPOWER, ETC./ TO SPECIFIED
 ACTIVITIES /INVESTMENTS, PRODUCTS, JOBS/ TO OBTAIN A PARTICULAR
 OBJECTIVE /MINIMUM EXPENSE, MAXIMUM PROFIT/ WHEN THERE ARE
 ALTERNATE USES FOR THESE RESOURCES. LINEAR PROGRAMMING PLAYS
 AN IMPORTANT ROLE IN SUCH AREAS AS MATERIALS ALLOCATION,
 INGREDIENT BLENDING, /FEE, FLOUR, GASOLINE, ETC./, PRODUCTION
 SCHEDULING, DISTRIBUTION, AND SHIPPING. THIS PROGRAMMING
 SYSTEM OPERATES UNDER CONTROL OF THE IBM OPERATING SYSTEM/360.
 IT CONSISTS OF A NUMBER OF ROUTINES CALLED PROCEDURES,
 STORED ON THE PROGRAM LIBRARY RESIDENCE DEVICE OF OPERATING
 SYSTEM/360. ONE OF THOSE PROCEDURES CURRENTLY BEING EXECUTED
 ARE BROUGHT INTO MEMORY STORAGE. THE PARTICULAR PROCEDURES
 TO BE EXECUTED ARE UNDER THE SUPERVISION OF A CONTROL PROGRAM
 PREPARED BY THE USER. THIS CONTROL PROGRAM IS COMPOSED OF
 STATEMENTS WHICH SPECIFY TO THE SYSTEM THE DESIRED PROCEDURES
 TO BE EXECUTED. THE SEQUENCE OF THESE STATEMENTS DEFINES A
 SOLUTION STRATEGY FOR SOLVING A PARTICULAR LINEAR PROGRAMMING
 PROBLEM.

FEATURES--
 - THE SYSTEM UTILIZES THE REVISED SIMPLEX METHOD /PRODUCT
 FORM OF INVERSE/ WITH BOUNDED VARIABLES AND RANGE CONSTRAINTS.
 - A HIGHLY EFFICIENT INVERSION TECHNIQUE USING A
 TRIANGULARIZATION METHOD PERMITS INVERSIONS TO BE MADE
 FREQUENTLY, THUS INCREASING THE SPEED OF SUCCEEDING
 ITERATIONS AND MAINTAINING A HIGH DEGREE OF ACCURACY.
 - A MULTIPLE PRICING METHOD, ADJUSTED FOR PROBLEM SIZE AND
 AMOUNT OF AVAILABLE STORAGE, REDUCES THE AMOUNT OF FILE
 PROCESSING AND INCREASES SOLUTION SPEED.
 - DYNAMIC STORAGE ALLOCATION PROVIDES FOR MAXIMUM UTILIZATION
 OF AVAILABLE SYSTEM/360 COMPONENTS.
 - MAXIMUM PROBLEM SIZE IS 4,095 ROWS.
 - CONDITIONAL CONTROL STATEMENTS PERMIT ALTERNATE SOLUTION
 STRATEGIES TO BE IMPLEMENTED DEPENDING UPON THE CONDITIONS
 WHICH ARISE DURING SOLUTION.
 - INTERRUPT FACILITIES PROVIDE THE MEANS FOR PRE-PLANNING
 ALTERNATE STRATEGIES IN THE EVENT OF OFF-NORMAL CONDITIONS.
 - SIMULTANEOUS PARAMETRIC PROGRAMMING ON BOTH THE RIGHTHAND
 SIDE AND OBJECTIVE FUNCTION MAY BE UTILIZED.
 - PARAMETRIC PROGRAMMING FOR MPS/360 MATRIX ROWS OR COLUMNS.
 - MODULAR DESIGN MAKES IT EASY TO ADD, MODIFY, REPLACE OR
 DELETE FUNCTIONS AS NEW REQUIREMENTS DEVELOP.
 - PROVISION FOR CONVERTING INPUT DATA FROM THE 7040/44,
 1620 - 1311, AND 1400 - 1311 LINEAR PROGRAMMING SYSTEMS IS
 PROVIDED.

PROGRAMMING SYSTEMS-- OS/360, RELEASE 7. MPS/360 IS WRITTEN IN
 THE OS/360 ASSEMBLER LANGUAGE. IT USES THE BSAM AND EXCP
 DATA ACCESS METHODS OF OS/360.

MACHINE CONFIGURATION-- MPS/360 REQUIRES A S/360 WITH AT
 LEAST 65,536 BYTES, THE STANDARD AND DECIMAL INSTRUCTION SETS,
 THE FLOATING POINT OPTION, AND, IF THE SYSTEM OUTPUT IS A
 PRINTER, IT MUST HAVE 132 PRINT POSITIONS /A MINIMUM OF 44K
 BYTES MUST BE AVAILABLE FOR MPS/360 PROGRAM AND DATA STORAGE/.
 THIS VERSION OF MPS/360 SUPPORTS THE 2400 SERIES MAGNETIC TAPE
 UNITS MODELS 1, 2, AND 3 AND THE 2311 DISK STORAGE DRIVE.
 THE PROBLEM SIZE /NUMBER OF ROWS/ WHICH MPS/360 SOLVES IS
 DIRECTLY DEPENDENT UPON THE SIZE OF MEMORY AVAILABLE FOR DATA.
 THE TOTAL AMOUNT OF CORE STORAGE USED BY MPS/360 IS DIVIDED
 INTO TWO PARTS: PROGRAM STORAGE AND DATA STORAGE. THE SIZE
 OF THE MPS/360 PROGRAM IS APPROXIMATELY 29,800 BYTES WITH A
 SLIGHT VARIATION BECAUSE OF THE NUMBER AND TYPE OF I/O
 DEVICES USED TO SOLVE A GIVEN PROBLEM. THE AMOUNT OF STORAGE
 AVAILABLE FOR DATA VARIES DEPENDING ON THE FOLLOWING FACTORS--
 - S/360 CPU SIZE.
 - SIZE OF RESIDENT OS/360.
 - IN A MULTI-TASK OPERATING SYSTEM, THE SIZE OF CODE
 CURRENTLY BEING USED BY OTHER TASKS.
 - THE USER-SPECIFIED AMOUNT OF DATA CORE AVAILABLE TO
 MPS/360 FOR THE CURRENT RUN.

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THE DESIGN OF MPS/360 ALLOWS THE USER TO SOLVE PROBLEMS MUCH LARGER THAN THE DESIGNED NORM /TO BE DEFINED LATER/, BUT WITH A REDUCTION OF EFFICIENCY. THIS CONSCIOUS DESIGN GOAL OF THE SYSTEM ALLOWS THE USER TO SOLVE, IN HOUSE, THOSE FEW PROBLEMS WHICH EXCEED HIS NORMAL REQUIREMENTS. HOWEVER, IT IS RECOMMENDED THAT THE SYSTEM/360 CPU SIZE BE SELECTED USING THE DESIGNED NORM PROBLEM SIZE RATHER THAN THE MAXIMUM PROBLEM SIZE. THE NUMBER OF DATA STORAGE BYTES AVAILABLE TO MPS/360 MAY BE OBTAINED BY SUBTRACTING FROM THE S/360 CPU SIZE--

- SIZE OF RESIDENT OS/360.
- AMOUNT OF CORE, IF ANY, BEING CURRENTLY USED BY OTHER TASKS.
- 29,800 /APPROXIMATE PROGRAM SIZE OF MPS/360/.

FIGURE 1 REPRESENTS THE MAXIMUM AND THE DESIGNED NORM PROBLEM SIZE WHICH MAY BE SOLVED WITH THE INDICATED NUMBER OF DATA BYTES. THE APPLICATION DESCRIPTION MANUAL /H20-0136/ PROVIDES THE EQUATIONS NECESSARY TO EVALUATE THE MAXIMUM PROBLEM FOR A GIVEN NUMBER OF DATA BYTES. MPS/360 REQUIRES A MINIMUM NUMBER OF UTILITY FILES FOR THE PERMANENT AND TEMPORARY STORAGE OF DATA. HOWEVER, IF AVAILABLE AND SPECIFIED BY THE USER, THE SYSTEM WILL UTILIZE A SET OF OPTIONAL FILES TO PROVIDE ADDITIONAL FLEXIBILITY OR MORE EFFICIENT PROBLEM SOLUTION. A FILE IS A COLLECTION OF RELATED DATA STORED AND RETRIEVED IN A SEQUENTIAL FASHION. A FILE MAY BE STORED ON A PART OF A DIRECT ACCESS DEVICE /2311/ OR A SINGLE REEL OF TAPE. FIGURE 2 CONTAINS THE FILES REQUIRED BY MPS/360. NOTE THE SYSTEM INPUT, OUTPUT, PUNCH AND SYSTEM RESIDENCE FILE HAVE BEEN EXCLUDED FROM THIS TABLE. FIGURE 3 CONTAINS THE OPTIONAL FILES WHICH IF PRESENT WILL BE UTILIZED BY MPS/360.

FIGURE 1

```

*****
*ROWS/BYTES*17,300      *82,500*213,000*475,000*992,000  *
*****
*MAXIMUM   * 305        *2,120 * 4,095 * 4,095 * 4,095  *
*****
*DESIGNED  *LESS THAN OR*200- * 700- *1600- *LESS THAN OR *
* NORM     *EQUAL TO 200*700 * 1600 *3500 *EQUAL TO 4,095* *
*****
*,DESIGNED NORM., IS THE PROBLEM SIZE MPS/360 WAS DESIGNED TO
SOLVE NORMALLY ON THE SPECIFIED NUMBER OF DATA BYTES.
    
```

FIGURE 2

```

*****
*FILE NAME * DESCRIPTION
*****
*SYMLCP /1/ *CONTAINS MACH. LANG. CONTROL PRODUCED BY COMPILER.*
*****
*MATRIX1 /3/ *CONTAINS, IN INTERNAL FORM, THE LP MATRIX.
*****
*ETA1 /2/ *CONTAINS, IN INTERNAL FORM, PRODUCT FORM OF INVERSE.*
*****
*SCRATCH1 /3/ *USED FOR TEMPORARY DATA STORAGE.
*****
*SCRATCH2 /3/ *USED FOR TEMPORARY DATA STORAGE.
*****
*PROBFILE /2/ *CONTAINS A MACH. INDEPENDENT REP. OF LP MODEL.
*****
    
```

FIGURE 3

```

*****
*FILE NAME * DESCRIPTION
*****
*OLDFILE /2/ *CONTAINS A MACHINE INDEPENDENT REPRESENTATION OF *
* PROBLEM WHICH IS TO BE REVISED OR COPIED.
*****
*MATRIX2-4 /3/*UP TO 4 DEVICES MAY BE SPECIFIED FOR STORAGE OF *
* *THE LP MODEL /THEY SHOULD BE ON SEP. CHANNELS/.
*****
*ETA 2-4 /2/ *UP TO 4 DEVICES MAY BE SPEC. FOR STORAGE OF PROD.*
* *FORM OF THE INVERSE /SHOULD BE ON SEP. CHANNELS/.
*****
*MPSCRAT /1/ *USED BY THE POST-OPTIMAL PROCEDURES WHEN ONLY 4 *
* *WORK REGIONS /MINIMUM/ ARE GIVEN SET UP.
*****
*SYSABS *A HIGH-SPEED PRINTER WHICH MAY BE USED TO MONITOR*
* *THE LP SOLUTION.
*****
/1/ MUST BE A DIRECT ACCESS DEVICE.
/2/ IF 2400 SERIES TAPE UNIT, IT MUST BE 9-TRACK.
/3/ IF 2400 SERIES TAPE UNIT AND 7-TRACK, IT MUST HAVE THE DATA
CONVERSION FEATURE.
    
```

BASIC PROGRAM MATERIAL - APPLICATION DIRECTORY-USERS MANUAL, H20-0290... LP USERS MANUAL, H20-0291. MACHINE READABLE - RELOCATABLE LOAD MODULES, MESSAGE DESCRIPTIONS AND SAMPLE PROBLEM DECK ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE OR ON ONE 1316 DISK PACK. EACH OF THESE VOLUMES WILL ALSO CONTAIN THE OPTIONAL SOURCE CARD IMAGES.

OPTIONAL PROGRAM MATERIAL - PROGRAM FLOWCHARTS ON ONE 9-TRACK TAPE AND FLOWCHART PRINT PROGRAM ON ONE 9-TRACK DTR.

WHEN ORDERING THE BASIC MATERIAL 9-TRACK OR 7-TRACK MUST BE INDICATED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400 FEET IN LENGTH. DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT-NO TAPE SUBMITTAL IS REQUIRED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-CP-04X PROJECT MANAGEMENT SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CP-04X

MPS/360 IS A BATTERY OF COMPUTER PROGRAM MODULES THAT CAN BE COMBINED TO FURNISH THE DATA PROCESSING ELEMENTS OF VARIOUS MANAGEMENT SYSTEMS APPLICATIONS FOR COST AND SCHEDULE PLANNING AND CONTROL. THESE MODULES SUPPORT CRITICAL PATH ANALYSIS, PROJECT COST AND PROGRESS CONTROL, AND FLEXIBLE REPORT PREPARATION. BRIEF DESCRIPTIONS OF THESE APPLICATION TECHNIQUES AND THEIR SALIENT FEATURES ARE DESCRIBED BELOW.

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MPS/360-NETWORK PROCESSOR- THIS PROCESSOR IS THE KEY PROGRAM MODULE FOR EXECUTING THE PROGRAM EVALUATION AND REVIEW TECHNIQUE /PERT/, AND OTHER CRITICAL PATH ANALYSES. PERT HAS EVOLVED INTO A VERSATILE MANAGEMENT SYSTEM. ITS RECOMMENDED IMPLEMENTATION INCLUDES A WORK-SEQUENCING OPERATION THAT TREATS A PROJECT AS A SERIES OF INTERRELATED ACTIVITIES. SOME CAN BE DONE IN PARALLEL, OTHERS MUST BE DONE SERIALLY. A PROJECTS WORK WHEN DISPLAYED IN THIS FASHION FORMS A NETWORK. THE LONGEST TIME PATH THROUGH THIS NETWORK DETERMINES THE TIME REQUIRED TO COMPLETE THE PROJECT. THIS PATH IS CALLED THE CRITICAL PATH. ALL OTHER PATHS THROUGH THE NETWORK HAVE SOME SLACK WITH RESPECT TO THIS CRITICAL PATH. THE JOB OF PROJECT MANAGEMENT THEN BECOMES ONE OF SO SCHEDULING BOTH CRITICAL AND NON-CRITICAL WORK THAT IT TAKES BEST ADVANTAGE OF AVAILABLE RESOURCES WHILE MAKING THE CRITICAL PATH AS SHORT AS FEASIBLE. MPS/360 IS AN EXTREMELY VERSATILE COMPUTER PROGRAM FOR IMPLEMENTING PERT-TYPE TECHNIQUE. ITS FEATURES INCLUDE VARIABLE SIZE DATA FIELDS... VARIABLE ORDERING OF INPUT ELEMENTS ON DATA CARDS... FLEXIBLE CALENDAR CAPABLE OF SPECIFYING HOLIDAYS AND VACATION PERIODS... ACTIVITIES CAN BE TAGGED FOR WORK ON HOLIDAYS... OPTIONAL USE OF MASTER FILES... NETWORKS MAY CONTAIN UP TO 254 SUBNET SIZE RANGES FROM 2,000 TO 32,000 ACTIVITIES, DEPENDING ON CORE MEMORY, DISK MEMORY, THE SIZE OF OTHER DATA ELEMENTS, OPERATING SYSTEMS, ETC... ABILITY TO PROCESS EITHER THE NETWORK OR THE SUBNET APPROACH TO PERT... ABILITY TO ACCEPT ACTIVITY TIME DURATIONS IN HOURS, DAYS, WEEKS, ETC... NINE LEVELS OF MILESTONE SUMMARIZATION... TWO METHODS OF MILESTONE SUMMARIZATION... ONE LEVEL OF ACTIVITY SUMMARIZATION THAT ALLOWS THE SUMMARY ACTIVITIES TO BE SPECIFIED EXPLICITLY... A DESCRIPTION OF UP TO 99 CHARACTERS FOR ACTIVITIES AND MILESTONE EVENTS THAT MAY BE SUBDIVIDED AND OPERATED UPON IN THE MPS/360 REPORT PROCESSOR... OUTPUT THROUGH THE MPS/360 REPORT PROCESSOR CAN BE FORMATTED AND TAILORED TO INDIVIDUAL NEEDS... USER CONTROL OF PROGRAM LOGIC THROUGH MODULAR DESIGN... PROGRAMMED FOR EASY MODIFICATION.

MPS/360 - COST PROCESSOR- THIS PROGRAM MODULE IS A COLLECTION OF PROJECT-ORIENTED MANPOWER, MATERIAL AND COST PLANNING AND CONTROL SUBROUTINES. IT CAN BE USED IN CONJUNCTION WITH PERT, OR IN COMPLETE SEPARATE, COMPANION, APPLICATION. WHEN USED WITH THE OTHER MAJOR MODULES OF MPS/360 TO IMPLEMENT THE DOD/NASA PERT COST TECHNIQUE, IT CAN PRODUCE THE REPORTS REQUIRED FOR INTERNAL CONTROL AND THE TOTAL MANAGEMENT CYCLE. ITS FEATURES INCLUDE AN ACCOUNTING CALENDAR FOR VARIABLE COST PERIOD REPORTING... RATE TABLES FOR BUDGETS, ACTUALS, ESTIMATES, COMMITMENTS AND OBLIGATIONS... CHARGE NUMBER RATES, TABLES FOR APPLICATION OF FACTORS SUCH AS GENERAL AND ADMINISTRATIVE EXPENSES AND DUAL FEES... NINE-LEVEL WORK BREAKDOWN STRUCTURE FOR PRODUCT-ORIENTED COST REPORTING... NINE-LEVEL ORGANIZATION BREAKDOWN STRUCTURE FOR FUNCTION-ORIENTED COST REPORTING... OPTIONAL USE OF MASTER FILE... APPROXIMATELY 32,000 CHARGE NUMBERS AND ORGANIZATION CODES PERMITTED AT EACH LEVEL OF BOTH THE WORK BREAKDOWN STRUCTURE AND THE ORGANIZATION BREAKDOWN STRUCTURE... GROUPING FACTORS FOR SUMMARY RESOURCE REPORTING... VARIABLE CARD FORMAT... VARIABLE FIELD SIZE FOR MANY DATA ELEMENTS... DESCRIPTION FIELD FOR USE AS A USER OPTION... USER CONTROL OF PROGRAM LOGIC THROUGH THE MODULAR DESIGN... PROGRAMMED FOR EASY MODIFICATION... ADDITIONAL, CUSTOMIZED, REPORTS POSSIBLE THROUGH THE MPS/360 REPORT PROCESSOR.

MPS/360 - REPORT PROCESSOR- THE REPORT PROCESSOR IS DESIGNED FOR USE IN OUTPUT REPORT PREPARATION FOR THE OTHER MPS/360 MODULES, OR AS AN INDEPENDENT MODULE WITHIN THE FRAMEWORK OF MPS. ITS FEATURES INCLUDE A SET OF PERT REPORTS /SIMILAR TO THOSE PRODUCED BY IBM PERT COST II, 7090-CP-02X/... DOD/NASA PERT COST REPORTS... PROCEDURES THAT ALLOW A USER TO DEFINE HIS OWN REPORTS WITHOUT THE AID OF A PROGRAMMER... ABILITY TO READ A WIDE RANGE OF INPUT TAPES OTHER THAN THOSE PREPARED BY THE OTHER MPS/360 MODULES... PROGRAMMED FOR EASY MODIFICATION... ARITHMETIC AND LOGICAL PROGRAMS PERMIT ANALYSIS OF DATA TO BE REPORTED... SELECTIVITY OF DATA FOR PROCESSING.

USER RESPONSIBILITY- THE USER MUST BE FAMILIAR WITH THE FUNDAMENTALS OF CRITICAL PATH, PERT, AND PERT-COST TECHNIQUES. HELPFUL REFERENCES ARE GIVEN IN THE MPS/360 APPLICATION DESCRIPTION MANUAL /H20-0290/. IN ADDITION, USERS MUST HAVE ACCESS TO PERSONNEL FAMILIAR WITH THE OS/360 JOB CONTROL LANGUAGE TO INSTALL THE SYSTEM IN THEIR ORGANIZATION. THOROUGH READING OF THE MPS/360 USERS MANUAL /H20-0344/ IS ALSO NECESSARY BEFORE ATTEMPTING IMPLEMENTATION.

PROGRAMMING LANGUAGE- WRITTEN IN OS/360 ASSEMBLER LANGUAGE. IT OPERATES UNDER THE CONTROL OF OS/360 AND USES THE QSAM DATA ACCESS METHOD.

SYSTEM CONFIGURATION- MPS/360 WILL REQUIRE A MINIMUM OF 44K DATA BYTES OF CORE STORAGE OVER AND ABOVE THE REQUIREMENTS OF OS/360. IF LARGE CORE SIZE IS AVAILABLE, INCREASED DATA CAPACITY /NETWORK SIZES, ETC./ CAN BE HANDLED. THE STANDARD INSTRUCTION SET AND THE DECIMAL FEATURE INSTRUCTION SET ARE USED. IF THE SYSTEMS OUTPUT DEVICE IS A PRINTER IT MUST HAVE 132 PRINT POSITIONS. PERIPHERAL DEVICES SUPPORTED BY MPS/360 INCLUDE 2400 SERIES MAGNETIC TAPE UNITS AND 2311 DISK STORAGE DRIVES.

MINIMUM CONFIGURATION FOR THE OPERATING OF MPS/360 CONSISTS OF A SYSTEM/360 MODEL 30, 2311 DISK STORAGE DRIVE, AND FOUR 2400 SERIES TAPE UNITS. IN ADDITION TO OS/360 REQUIREMENTS FOR SYSTEM INPUT, SYSTEM OUTPUT AND SYSTEM LIBRARY RESIDENCE. IN LIEU OF THE TAPE UNITS, THREE ADDITIONAL 2311 DISK STORAGE DRIVES MAY BE SUBSTITUTED, MAKING THE MINIMUM ALL-DISK CONFIGURATION FOUR 2311 DISK STORAGE DRIVES OVER AND ABOVE THE OS/360 REQUIREMENTS.

BASIC PROGRAM MATERIAL - APPLICATION DIRECTORY... USERS MANUAL, H20-0344. MACHINE READABLE - LOAD MODULES, SAMPLE PROBLEM, REPORT PROCESSOR MACRO AND SOURCE PROGRAM ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE.

OPTIONAL PROGRAM MATERIAL - ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE CONTAINING FLOWCHARTS.

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OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

NOTES-- THE TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED, 9-TRACK WILL BE FORWARDED.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-CS-19X GENERAL PURPOSE SIMULATION SYSTEM FOR OPERATION UNDER OS/360
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CS-19X

S-17X GENERAL PURPOSE SIMULATION FOR OPERATION UNDER OS/360
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CS-17X

GPSS/360 IS A BROAD RANGE GENERAL PURPOSE TOOL FOR MODELING AND EXAMINING THE BEHAVIOR OF SYSTEMS IN THE ENGINEERING AND MANAGEMENT SCIENCE AREAS. MANY APPLICATIONS OF A COMPLEX LOGICAL AND PROCEDURE ORIENTED NATURE WHICH ORDINARILY DEFY MATHEMATICAL DESCRIPTION CAN BE EASILY DESCRIBED AND STUDIED USING GPSS. VARYING ENVIRONMENTS MAY BE SIMPLY INTRODUCED TO ENABLE THE USER TO EXPLORE ALTERNATIVES, AND IDENTIFY CAPACITY LIMITATIONS. BOTH ENVIRONMENT AND ACTIVITIES MAY HAVE RANDOM VARIATIONS. PROPOSED CHANGES TO EXISTING POLICIES, METHODS, AND OPERATIONS CAN BE SUBJECTED TO CRITICAL PERFORMANCE CRITERIA AND EVALUATED. THE USER MAY ALSO INVESTIGATE AND JUDGE THE VALUE OF NEW PROPOSALS WITHOUT COSTLY CAPITAL INVESTMENTS AND WITHOUT DISTURBING EXISTING OPERATIONS.

THE APPLICATION AREAS IN WHICH GPSS TYPE SIMULATIONS HAVE BEEN PROFITABLE ARE MANY AND VARIED -- INFORMATION SYSTEM DESIGN, COMMUNICATION TRAFFIC FLOW AND CAPACITY STUDIES, QUALITY CONTROL PROCEDURE SPECIFICATION, ADVANCED MANAGEMENT PLANNING, ANALYSIS OF CONSUMER BEHAVIOR, INVENTORY SYSTEM DESIGN, JOB SHOP PROCESSING, STUDIES OF EQUIPMENT AVAILABILITY, PERFORMANCE AND RELIABILITY, TRANSPORTATION, LOADING AND SCHEDULING, COMPUTER CONFIGURATION EVALUATION, CAPITAL INVESTMENT AND RISK STUDIES, ANALYSIS OF ALTERNATIVE MILITARY STRATEGIES, ANALYSIS OF PLANS FOR CORPORATE GROWTH AND MERGER, AMONG OTHERS.

FEATURES-- GPSS/360 PROVIDES THE USER WITH ALL OF THE CAPABILITIES OF 7040/7044 AND 7090/7094 GPSS III. SOME OF THE FEATURES WHICH GIVE THE PROGRAM NEW AND EXTENDED CAPABILITIES AND VERSATILITY ARE GPSS/360 OUTPUT EDITOR WHICH PROVIDES A MEANS OF EDITING AND SPECIFYING THE CONTENT, FORMAT AND TITLES OF SIMULATION OUTPUT... GRAPHICAL /PRINTER-PLOTTED/ OUTPUT OF SYSTEM NUMERICAL ATTRIBUTES, PROVIDED FOR ALL ATTRIBUTES EXCEPT FUNCTIONS, VARIABLES AND MATRIX SAVEVALUES.. OUTPUT MAY BE PRINTED IN BAR-CHART OR CONTINUOUS FORM... FULL- AND HALF-WORD SAVEVALUES WHICH ARE AVAILABLE AND MAY BE SPECIFIED IN A MATRIX FORMAT... A NEW ENTITY, GROUP, PROVIDED AS A MEANS OF COMMUNICATING WITH AND REFERENCING TRANSACTIONS OR OTHER ENTITIES WHICH HAVE COMMON CHARACTERISTICS.. THIS FEATURE GREATLY ENHANCES THE SET MANIPULATING ABILITY OF GPSS... BOOLEAN STATEMENTS... EIGHT INDEPENDENT RANDOM NUMBER GENERATORS SO THAT EXACT REPETITION OF PARTICULAR SEQUENCES ARE POSSIBLE FROM RUN TO RUN... THE GPSS/360 ASSEMBLY PROGRAM WHICH PROVIDES SYMBOLIC ADDRESSING OF ENTITIES.. A CROSS REFERENCE DICTIONARY LISTS THE BLOCKS IN WHICH THESE SYMBOLS ARE REFERENCED.. A MACRO FACILITY IS ALSO AVAILABLE... AN UPDATE FEATURE WHICH PERMITS MAINTENANCE AND MODIFICATION OF SYMBOLIC MODELS ON DISK OR TAPE, THEREBY MAKING UNNECESSARY THE MAINTENANCE OF LARGE CARD DECKS... USER CHAIN STATISTICS LISTING THE MAXIMUM NUMBER OF TRANSACTIONS TO APPEAR ON THE USER CHAIN, AVERAGE NUMBER OF TRANSACTIONS TO APPEAR ON THE USER CHAIN, TOTAL NUMBER OF TRANSACTIONS WHICH WERE PLACED ON THE USER CHAIN AND THE AVERAGE TIME A TRANSACTION WAS ON THE USER CHAIN... ADDITIONAL STATISTICAL SYSTEM NUMERICAL ATTRIBUTES /SNAS/. AVAILABLE TO THE USER... TRANSACTIONS WHICH ARE ALLOWED TO PREEMPT FACILITIES BASED ON THE PRIORITY OF THE TRANSACTION, AND THE PREEMPTED TRANSACTION WHICH IS AVAILABLE FOR PROCESSING... THE NUMBER AND TYPE OF PARAMETERS ASSOCIATED WITH A TRANSACTION WHICH ARE DYNAMICALLY VARIABLE.. PARAMETERS MAY BE SIGNED.. PARAMETERS MAY BE SPECIFIED WITH A MAXIMUM MAGNITUDE OF PLUS MINUS 2 TO THE THIRTY FIRST -1.

PROGRAMMING EXPERIENCE IS GENERALLY UNNECESSARY FOR USERS OF GPSS/360. THE USER NEED ONLY KNOW THE RULES BY WHICH SYSTEM MODELS ARE CONSTRUCTED. THE LOGICAL STRUCTURE AND STATISTICAL PARAMETERS OF THE SYSTEM ARE FIRST MODELED IN TERMS OF A GPSS/360 BLOCK DIAGRAM. INFORMATION FROM EACH BLOCK OF THE DIAGRAM IS KEYPUNCHED INTO CARDS, CONTROL CARDS ARE ADDED, AND THE INPUT IS THEN LOADED FOR ASSEMBLY AND EXECUTION. NO OPERATOR INTERVENTION IS REQUIRED.. ERROR MESSAGES ARE PRINTED AUTOMATICALLY AS REQUIRED. THE OPERATING SYSTEM USED PROVIDES GPSS/360 WITH INPUT-OUTPUT SERVICES.

USER RESPONSIBILITIES-- A THOROUGH UNDERSTANDING OF THE PRINCIPLES OF SYSTEM MODELING... COMPLETE DEFINITION OF SYSTEM TO BE MODELED, INCLUDING CONFIGURATION AND ALL DECISION LOGIC... COLLECTION OF DATA TO BE USED AS INPUT TO THE MODEL... MODEL VALIDATION TO ASSURE THAT OUTPUT IS MEANINGFUL.

PROGRAMMING SYSTEMS-- GPSS/360 IS WRITTEN IN ASSEMBLER LANGUAGE AND OPERATES UNDER THE CONTROL OF EITHER OPERATING SYSTEM/360 OR DISK OPERATING SYSTEM/360.

MINIMUM SYSTEM REQUIREMENTS-- A 2030 MODEL F WITH UNIVERSAL INSTRUCTION SET.. 2501, 2520, OR 2540 CARD READER PUNCH.. 1403, 1404, 1443 OR 1445 PRINTER.. AND TWO 2311 DISK STORAGE DRIVES. ADDITIONAL CORE STORAGE WILL PERMIT THE CONSTRUCTION OF LARGER, MORE COMPLEX MODELS.

BASIC PROGRAM MATERIAL -- DOCUMENTATION -- APPLICATION DIRECTORY... INTRODUCTORY USERS MANUAL, H20-0304... USERS MANUAL, H20-0326... OPERATORS MANUAL, H20-0311.
MACHINE READABLE -- OBJECT DECKS AND SAMPLE PROBLEM DECK IN CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL -- TWO 9-TRACK MAGNETIC TAPES-- ONE CONTAINING LISTINGS AND SOURCE DECKS, ONE CONTAINING FLOWCHARTS.

NOTES-- WHEN ORDERING THE BASIC PROGRAM MATERIAL EITHER 9-TRACK OR 7-TRACK MUST BE INDICATED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE PROVIDED BY PID -- NO TAPE SUBMITTAL IS REQUIRED. THE TAPES REQUIRED FOR THE OPTIONAL MATERIAL MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400 FEET IN LENGTH.

GPSS/360 IS A BROAD RANGE GENERAL PURPOSE TOOL FOR MODELING AND EXAMINING THE BEHAVIOR OF SYSTEMS IN THE ENGINEERING AND MANAGEMENT SCIENCE AREAS. MANY APPLICATIONS OF A COMPLEX LOGICAL AND PROCEDURE ORIENTED NATURE WHICH ORDINARILY DEFY MATHEMATICAL DESCRIPTION CAN BE EASILY DESCRIBED AND STUDIED USING GPSS. VARYING ENVIRONMENTS MAY BE SIMPLY INTRODUCED TO ENABLE THE USER TO EXPLORE ALTERNATIVE, AND IDENTIFY CAPACITY LIMITATIONS. BOTH ENVIRONMENT AND ACTIVITIES MAY HAVE RANDOM VARIATIONS. PROPOSED CHANGES TO EXISTING POLICIES, METHODS, AND OPERATIONS CAN BE SUBJECTED TO CRITICAL PERFORMANCE CRITERIA AND EVALUATED. THE USER MAY ALSO INVESTIGATE AND JUDGE THE VALUE OF NEW PROPOSALS WITHOUT COSTLY CAPITAL INVESTMENTS AND WITHOUT DISTURBING EXISTING OPERATIONS.

THE APPLICATION AREAS IN WHICH GPSS TYPE SIMULATIONS HAVE BEEN PROFITABLE ARE MANY AND VARIED -- INFORMATION SYSTEM DESIGN, COMMUNICATION TRAFFIC FLOW AND CAPACITY STUDIES, QUALITY CONTROL PROCEDURE SPECIFICATION, ADVANCED MANAGEMENT PLANNING, ANALYSIS OF CONSUMER BEHAVIOR, INVENTORY SYSTEM DESIGN, JOB SHOP PROCESSING, STUDIES OF EQUIPMENT AVAILABILITY, PERFORMANCE AND RELIABILITY, TRANSPORTATION LOADING AND SCHEDULING, COMPUTER CONFIGURATION EVALUATION, CAPITAL INVESTMENT AND RISK STUDIES, ANALYSIS OF ALTERNATIVE MILITARY STRATEGIES, ANALYSIS OF PLANS FOR CORPORATE GROWTH AND MERGER, AMONG OTHERS.

FEATURES-- GPSS/360 PROVIDES THE USER WITH ALL OF THE CAPABILITIES OF 7040/7044 AND 7090/7094 GPSS III. SOME OF THE FEATURES WHICH GIVE THE PROGRAM NEW AND EXTENDED CAPABILITIES AND VERSATILITY ARE GPSS/360 OUTPUT EDITOR WHICH PROVIDES A MEANS OF EDITING AND SPECIFYING THE CONTENT, FORMAT AND TITLES OF SIMULATION OUTPUT... GRAPHICAL /PRINTER-PLOTTED/ OUTPUT OF SYSTEM NUMERICAL ATTRIBUTES, PROVIDED FOR ALL ATTRIBUTES EXCEPT FUNCTIONS, VARIABLES AND MATRIX SAVEVALUES.. OUTPUT MAY BE PRINTED IN BAR-CHART OR CONTINUOUS FORM... FULL- AND HALF-WORD SAVEVALUES WHICH ARE AVAILABLE AND MAY BE SPECIFIED IN A MATRIX FORMAT... A NEW ENTITY, GROUP, PROVIDED AS A MEANS OF COMMUNICATING WITH AND REFERENCING TRANSACTIONS OR OTHER ENTITIES WHICH HAVE COMMON CHARACTERISTICS.. THIS FEATURE GREATLY ENHANCES THE SET MANIPULATING ABILITY OF GPSS... BOOLEAN STATEMENTS... EIGHT INDEPENDENT RANDOM NUMBER GENERATORS SO THAT EXACT REPETITION OF PARTICULAR SEQUENCES ARE POSSIBLE FROM RUN TO RUN... THE GPSS/360 ASSEMBLY PROGRAM WHICH PROVIDES SYMBOLIC ADDRESSING OF ENTITIES.. A CROSS REFERENCE DICTIONARY LISTS THE BLOCKS IN WHICH THESE SYMBOLS ARE REFERENCED.. A MACRO FACILITY IS ALSO AVAILABLE... AN UPDATE FEATURE WHICH PERMITS MAINTENANCE AND MODIFICATION OF SYMBOLIC MODELS ON DISK OR TAPE, THEREBY MAKING UNNECESSARY THE MAINTENANCE OF LARGE CARD DECKS... USER CHAIN STATISTICS LISTING THE MAXIMUM NUMBER OF TRANSACTIONS TO APPEAR ON THE USER CHAIN, AVERAGE NUMBER OF TRANSACTIONS TO APPEAR ON THE USER CHAIN, TOTAL NUMBER OF TRANSACTIONS WHICH WERE PLACED ON THE USER CHAIN AND THE AVERAGE TIME A TRANSACTION WAS ON THE USER CHAIN... ADDITIONAL STATISTICAL SYSTEM NUMERICAL ATTRIBUTES /SNAS/. AVAILABLE TO THE USER... TRANSACTIONS WHICH ARE ALLOWED TO PREEMPT FACILITIES BASED ON THE PRIORITY OF THE TRANSACTION, AND THE PREEMPTED TRANSACTION WHICH IS AVAILABLE FOR PROCESSING... THE NUMBER AND TYPE OF PARAMETERS ASSOCIATED WITH A TRANSACTION WHICH ARE DYNAMICALLY VARIABLE.. PARAMETERS MAY BE SIGNED.. PARAMETERS MAY BE SPECIFIED WITH A MAXIMUM MAGNITUDE OF PLUS OR MINUS 2 TO THE THIRTY FIRST -1.

PROGRAMMING EXPERIENCE IS GENERALLY UNNECESSARY FOR USERS OF GPSS/360. THE USER NEED ONLY KNOW THE RULES BY WHICH SYSTEM MODELS ARE CONSTRUCTED. THE LOGICAL STRUCTURE AND STATISTICAL PARAMETERS OF THE SYSTEM ARE FIRST MODELED IN TERMS OF A GPSS/360 BLOCK DIAGRAM. INFORMATION FROM EACH BLOCK OF THE DIAGRAM IS KEYPUNCHED INTO CARDS, CONTROL CARDS ARE ADDED, AND THE INPUT IS THEN LOADED FOR ASSEMBLY AND EXECUTION. NO OPERATOR INTERVENTION IS REQUIRED.. ERROR MESSAGES ARE PRINTED AUTOMATICALLY AS REQUIRED. THE OPERATING SYSTEM USED PROVIDES GPSS/360 WITH INPUT-OUTPUT SERVICES.

USER RESPONSIBILITIES-- A THOROUGH UNDERSTANDING OF THE PRINCIPLES OF SYSTEM MODELING... COMPLETE DEFINITION OF SYSTEM TO BE MODELED, INCLUDING CONFIGURATION AND ALL DECISION LOGIC... COLLECTION OF DATA TO BE USED AS INPUT TO THE MODEL... MODEL VALIDATION TO ASSURE THAT OUTPUT IS MEANINGFUL.

PROGRAMMING SYSTEMS-- GPSS/360 IS WRITTEN IN ASSEMBLER LANGUAGE AND OPERATES UNDER THE CONTROL OF EITHER OPERATING SYSTEM/360 OR DISK OPERATING SYSTEM/360.

MINIMUM SYSTEM REQUIREMENTS-- A 2030 MODEL F WITH UNIVERSAL INSTRUCTION SET.. 1442, 2501, 2520, OR 2540 CARD READER PUNCH.. 1403, 1404, 1443 OR 1445 PRINTER.. AND EITHER TWO 2311 DISK STORAGE DRIVES OR ONE 2311 AND FOUR 2400 SERIES MAGNETIC TAPE UNITS. ADDITIONAL CORE STORAGE WILL PERMIT THE CONSTRUCTION OF LARGER, MORE COMPLEX MODELS.

BASIC PROGRAM MATERIAL -- DOCUMENTATION -- APPLICATION DIRECTORY... INTRODUCTORY USERS MANUAL, H20-0304... USERS MANUAL, H20-0326... OPERATORS MANUAL, H20-0327.
MACHINE READABLE -- OBJECT DECKS AND SAMPLE PROBLEM DECK IN CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL -- TWO 9-TRACK MAGNETIC TAPES-- ONE CONTAINING LISTINGS AND SOURCE DECKS, ONE CONTAINING FLOWCHARTS.

NOTES-- WHEN ORDERING BASIC PROGRAM MATERIAL EITHER 9-TRACK OR 7-TRACK MUST BE INDICATED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE PROVIDED BY PID -- NO TAPE SUBMITTAL IS REQUIRED. THE TAPES REQUIRED FOR THE OPTIONAL MATERIAL MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400 FEET IN LENGTH.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-CX-15X ATTACHED SUPPORT PROCESSOR SYSTEM /ASP/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CX-15X

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ATTACHED SUPPORT PROCESSOR-- PROVIDES A MULTIPROCESSOR OPERATING SYSTEM AS AN EXTENSION OF IBM SYSTEM/360 OPERATING SYSTEM /OS/360/. THROUGH A REDUCTION IN REQUIRED OPERATOR INTERVENTION, ASP PROVIDES AN IMPROVED OPERATIONAL ENVIRONMENT, ENHANCING SYSTEM WORK-LOAD CAPACITY AND REDUCING TURNAROUND TIME. THE CONFIGURATION CONSISTS OF TWO IBM SYSTEM/360 COMPUTERS CONNECTED VIA THE CHANNEL-TO-CHANNEL ADAPTER. THE SUPPORT PROCESSOR /MODEL 40 OR LARGER/ PROVIDES THE SUPPORT FUNCTIONS /INCLUDING CARD READING, PUNCHING, AND PRINTING/ UNDER COMPUTER CONTROL, WHILE A HIGH-SPEED MAIN PROCESSOR /MODEL 50, 65, OR 75/ PERFORMS THE APPLICATION WORKLOAD. ASP ALSO PERMITS INTERMIXING OF OS/360 AND 7090/94 EMULATOR JOBS IN THE INPUT STREAM. SUPPORTS REMOTE JOB PROCESSING FROM STR TERMINALS /DEFERRED FEATURE/, AND PERMITS OTHER BACKGROUND JOBS TO SHARE SUPPORT PROCESSOR CPU TIME WITH THE PRIMARY SUPPORT FUNCTIONS.

THE ASP SUPERVISOR OPERATES AS A TASK IN THE SUPPORT PROCESSOR UNDER CONTROL OF THE OS/360 PRIMARY CONTROL PROGRAM /PCP/ WITH THE SEQUENTIAL SCHEDULER. THE ASP SUPERVISOR SCHEDULES AND INITIATES VARIOUS SUPPORT AND BACKGROUND FUNCTIONS, INCLUDING INPUT OF JOBS TO THE MAIN PROCESSOR, ON A PRIORITY BASIS. SINCE IT IS PREPLANNED TO PROVIDE MULTIPROGRAMMING IN THE SUPPORT PROCESSOR IN A WELL-DEFINED, LIMITED FRAMEWORK, THE ASP SUPERVISOR OPERATES AS A MULTIPROGRAM MONITOR TO ALLOCATE CPU AND CHANNEL TIME, CORE STORAGE, AND DEVICES AMONG THE VARIOUS FUNCTIONS, WITH MINIMAL OVERHEAD. THE MAIN PROCESSOR OPERATES UNDER OS/360. THE SYSTEM INPUT AND OUTPUT DEVICES FOR THE MAIN PROCESSOR ARE REPLACED BY THE CHANNEL-TO-CHANNEL CONNECTION WITH THE SUPPORT PROCESSOR. DIRECT ACCESS STORAGE DEVICES FOR SYSTEMS RESIDENCE AND PROGRAM LIBRARY ARE ATTACHED TO THE MAIN PROCESSOR, AS ARE ANY INPUT/OUTPUT DEVICES ACCESSED DURING EXECUTION BY THE PROGRAMS. THE OPERATING SYSTEM IN THE MAIN PROCESSOR PROVIDES AN ENVIRONMENT FOR THE PROGRAM IDENTICAL TO A STAND-ALONE SYSTEM WITH THE EXCEPTION OF THE USE OF THE OS/360 CATALOG. THE USE OF THE OS/360 CATALOG FOR GENERATION DATA GROUPS WILL CAUSE OPERATIONAL PROBLEMS AND SHOULD BE AVOIDED. THE PERFORMANCE OF THE SYSTEM IS DIRECTLY RELATED TO THE THROUGHPUT CAPABILITY OF OS/360 ON THE MAIN PROCESSOR.

MODIFICATIONS INCORPORATED INTO OS/360 PERMIT 7090/94 EMULATOR AND OS/360 JOBS TO BE INTERMIXED IN THE INPUT STREAM. THE OPERATING SYSTEM/360 USED IN THE MAIN PROCESSOR IS MODIFIED TO OVERLAY ITSELF WITH THE EMULATOR PROGRAM UPON A SIGNAL FROM THE SUPPORT PROCESSOR. THE 7090/94 EMULATOR PROGRAM IS SIMILARLY MODIFIED TO OVERLAY ITSELF WITH OS/360 AT THE END OF AN EMULATION JOB OR A GROUP OF CONSECUTIVE EMULATION JOBS. THE EMULATOR PROGRAM IS ALSO MODIFIED TO RECOGNIZE THE CHANNEL-TO-CHANNEL ADAPTER AS ITS SYSTEM INPUT AND OUTPUT DEVICES. THUS, THE SYSTEM INPUT AND OUTPUT STREAMS FOR EMULATOR JOBS ARE HANDLED BY THE SUPPORT PROCESSOR IN THE SAME MANNER AS ARE THOSE FOR OS/360 JOBS. THE SUPPORT PROCESSOR WILL ACCEPT JOB STREAMS FROM REMOTE COMPUTER TERMINALS OVER STR TRANSMISSION LINES /DEFERRED FEATURE/. THE ASP SYSTEM WILL SUPPORT TWO INPUT/OUTPUT DATA FORMATS FOR THIS REMOTE JOB PROCESSING. ONE IS COMPATIBLE WITH THE IBM 1974 OR THE IBM 1978 TERMINALS /RPO DEVICES/, THE OTHER IS ORIENTED TOWARD IBM SYSTEM/360 COMPUTERS /MODEL 20/ AND OTHER SYSTEM/360 PROCESSORS EQUIPPED WITH PROPER STR FEATURES ON A 2701 DATA ADAPTER UNIT/. THE DATA FORMAT IS SUITABLE FOR ANY COMPUTER WHICH HAS AN EIGHT-BIT BYTE DATA FORMAT AND WHICH CAN ACCEPT STR TRANSMISSION. NOTE THAT THE ASP SYSTEM DOES NOT INCLUDE THE USER PROGRAMMING THAT IS NECESSARY IN THE REMOTE TERMINALS.

FEATURES-- INCREASED SYSTEM WORKLOAD CAPACITY... REDUCTION OF TURNAROUND TIME... IMPROVED OPERATING EFFICIENCY... INTERMIXED OS/360 AND 7090/94 EMULATOR JOBS IN THE INPUT STREAM /FOR A MODEL 65 MAIN PROCESSOR EQUIPPED WITH THE 709X EMULATOR FEATURE/. THESE FEATURES ARE MADE POSSIBLE BY COMPUTER-CONTROLLED EXECUTION OF SUPPORT FUNCTIONS IN A MULTIPROGRAMMED MODE ON A LOWER COST SUPPORT PROCESSOR, WHICH PERMITS--

- PRIORITY JOB SCHEDULING.
- AUTOMATIC PROCESSING OF SYSTEM INPUT AND OUTPUT DATA SETS.
- AUTOMATIC SWITCHING BETWEEN OS/360 AND 7090/94 EMULATOR JOBS.
- CONCURRENT PROCESSING OF PERIPHERAL AND OTHER USER PROGRAMS, SUCH AS CARD-TO-TAPE... TAPE-TO-TAPE... TAPE-TO-PRINTER... TAPE-TO-CARD... CARD-TO-PRINTER... CARD-TO-PUNCH...
- 7090/94 DIRECT COUPLE OPERATING SYSTEM /DCS/ TAPE FORMAT DEBLOCKING OVER-WRITTEN BACKGROUND PROGRAMS.
- REDUCTION OF RESOURCE INTERFERENCE ON MAIN PROCESSOR IN TERMS OF--
- CORE STORAGE. CORE BUFFERING OF MAIN PROCESSOR INPUT AND OUTPUT DATA SETS IN THE SUPPORT PROCESSOR.
- CPU TIME. MULTIPLEXER CHANNEL INTERFERENCE AND INTERRUPT SERVICE FOR PERIPHERAL INPUT/OUTPUT DEVICES ELIMINATED IN MAIN PROCESSOR.
- DATA CHANNELS. SELECTOR CHANNEL DATA FLOW TIME FOR SYSTEM INPUT AND OUTPUT ON MAIN PROCESSOR REDUCED.
- INPUT/OUTPUT DEVICES. ALGORITHM PROVIDED FOR EFFICIENT MANAGEMENT OF DIRECT ACCESS STORAGE DEVICES FOR SYSTEM INPUT AND OUTPUT DATA SETS.
- PRE-EXECUTION SETUP OF REMOVABLE INPUT/OUTPUT DEVICES ON MAIN PROCESSOR.
- SUPPORT OF MULTIPLE OPERATOR CONSOLES FOR DIVERSIFICATION OF SYSTEM OPERATION.
- CONCURRENT SPOOLING OF INPUT/OUTPUT BACKGROUND PROCESSING ON SUPPORT PROCESSOR DURING EMULATION ON MAIN PROCESSOR.
- REMOTE JOB PROCESSING VIA STR /DEFERRED FEATURE/.

OPERATIONAL CONTROL OF THE ASP SYSTEM IS EXERCISED BY THE OPERATOR FROM THE CONSOLE TYPEWRITER OR AN ALTERNATE OPERATOR CONSOLE ON THE SUPPORT PROCESSOR. A COMMAND LANGUAGE IS PROVIDED TO START ASP, TO DELETE AND RESTART JOBS, TO INITIATE BACKGROUND PROCESSING, TO CHANGE PRIORITY OF JOBS, AND TO DETERMINE THE BACKLOG OF JOBS IN THE QUEUE. ASP PROVIDES A STANDARD SEQUENCE OF FUNCTIONS FOR EACH JOB IN THE SUPPORT PROCESSOR-- INPUT SERVICE, MAIN PROCESSOR SERVICE, PRINT SERVICE, PUNCH SERVICE, AND JOB PURGE. THIS STANDARD SEQUENCE MAY BE REPLACED TO ADAPT TO THE PARTICULAR NEEDS OF AN INSTALLATION. SPECIAL CONTROL CARDS ARE NOT REQUIRED FOR JOBS USING THE STANDARD SEQUENCE. THE ASP CONTROL CARDS PROVIDE A SIMPLE MEANS OF ALTERING THIS SEQUENCE FOR A PARTICULAR JOB. THE ASP PROGRAM IN THE SUPPORT PROCESSOR REQUIRES AN OS/360 JOB CARD WITH SEVERAL ADDITIONAL FIELDS FOR EACH JOB RUN UNDER THE SYSTEM. THESE FIELDS ARE USED TO CONVEY ACCOUNTING AND PRIORITY INFORMATION TO THE ASP SUPERVISOR. THEY ARE IGNORED BY OS/360 WHEN IT READS THE JOB CARD IN THE MAIN PROCESSOR. FOR JOBS TO BE EXECUTED UNDER THE CONTROL OF THE 7090/94 EMULATOR, THE PROGRAMMER MUST USE AN ASP JOB CARD AND 7090/94 EMULATOR CONTROL CARDS IN ADDITION TO THE CONTROL CARDS REQUIRED BY THE 7090/94 PROGRAMMING SYSTEM BEING USED. THE ASP SYSTEM SEPARATES THE ASP CONTROL CARDS AND 7090/94

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EMULATOR CONTROL CARDS FROM THE JOB STREAM, PRESENTING THE 7090/94 PROGRAMMING SYSTEM WITH ITS SYSTEM INPUT JOB STREAM ONLY. THE SUPPORT PROCESSOR MAY ASSUME THE FUNCTIONS OF THE ONLINE UNIT RECORD DEVICES FOR THE 7090/94 EMULATOR PROVIDED THE OPERATOR IS NOT REQUIRED /THROUGH PROGRAM LOGIC/ TO ATTEND TO OR EXAMINE THESE DEVICES DURING PROGRAM EXECUTION.

PROGRAMMING SYSTEMS-- THE ASP SYSTEMS PROGRAMS ARE WRITTEN IN OS/360 MACRO ASSEMBLER LANGUAGE. PROGRAMS TO PROVIDE ADDITIONAL FUNCTIONS, KNOWN AS DYNAMIC SUPPORT PROGRAMS /DSP/S/, CAN BE INCORPORATED INTO THE SUPPORT PROCESSOR BY THE CUSTOMER AT HIS INSTALLATION. THESE PROGRAMS ALSO MUST BE WRITTEN IN OS/360 MACRO ASSEMBLER LANGUAGE. ASP USERS MUST ORDER SEPARATELY OS/360 AND THE 709X EMULATOR PROGRAM /360C-EU-729/, IF USED.

MINIMUM SYSTEM REQUIREMENTS-- THE CONFIGURATION REQUIREMENTS FOR THE MAIN PROCESSOR ARE IDENTICAL WITH THOSE OF A STAND-ALONE PROCESSOR OPERATING UNDER OS/360, EXCEPT THAT THE CHANNEL-TO-CHANNEL ADAPTER REPLACES THE NORMAL SYSTEM INPUT AND OUTPUT DEVICES. THE MINIMUM SUPPORT PROCESSOR IS A MODEL 406 WITH TWO SELECTOR CHANNELS /ONE DEDICATED TO THE CHANNEL-TO-CHANNEL ADAPTER AND ONE DEDICATED TO THE CHANNEL-TO-CHANNEL ADAPTER/. ONE 2540 CARD READ PUNCH, ONE 1403 PRINTER MODEL N1, AND THREE 2311 DISK STORAGE DRIVES. THIS CONFIGURATION PERMITS QUEUING OF UP TO 30 JOBS. /A JOB IS CONSIDERED EQUAL TO A COMBINED INPUT AND OUTPUT STREAM OF 5000 100-BYTE RECORDS./ LARGER CORE, A FASTER PROCESSOR, AND ADDITIONAL 2311 DISK STORAGE DRIVES WILL PERMIT ADDITIONAL 1403 PRINTERS MODEL N1 AND 2540 CARD READ PUNCHES, AND WILL QUEUE APPROXIMATELY 15 ADDITIONAL JOBS PER ADDED 2311. THE NUMBER OF DIRECT ACCESS STORAGE DEVICES AND THE SIZE OF CORE MUST BE DETERMINED ON THE BASIS OF THE INDIVIDUAL INSTALLATIONS WORKLOAD. THE DEVICES LISTED BELOW ARE SUPPORTED AS AUXILIARY OPERATOR CONSOLES IN THE ASP SYSTEM--

- IBM 2740 COMMUNICATION TERMINAL ATTACHED THROUGH AN IBM 2740 DATA ADAPTER UNIT.
- IBM 1443 MODEL N1 PRINTER /OUTPUT ONLY/.
- IBM 1053 MODEL 4 PRINTER ATTACHED THROUGH AN IBM 2048 DISPLAY CONTROL /OUTPUT ONLY/.
- IBM 1403 PRINTER /OUTPUT ONLY/.

FOR EASE OF SYSTEM MAINTENANCE, THE SUPPORT PROCESSOR SHOULD HAVE ACCESS TO AT LEAST ONE 2400-SERIES /LINE-TRACK OR SEVEN-TRACK WITH THE DATA CONVERSION FEATURE/ TAPE UNIT. THE 7090 EMULATOR, THE EC LEVELS REQUIRED FOR PROPER FUNCTIONING OF THE ASP SYSTEM ARE EC 705754 AND EC 254902 ON THE CHANNEL-TO-CHANNEL ADAPTER /NO. 1850/.

ENGINEERING CHANGE LEVELS-- IN ADDITION TO THE REQUIRED ENGINEERING CHANGES TO RUN THE SUPPORTED LEVELS OF OS/360 AND THE 7090 EMULATOR, THE EC LEVELS REQUIRED FOR PROPER FUNCTIONING OF THE ASP SYSTEM ARE EC 705754 AND EC 254902 ON THE CHANNEL-TO-CHANNEL ADAPTER /NO. 1850/.

BASIC PROGRAM MATERIAL -- DOCUMENTATION -- APPLICATION DIRECTORY... PROGRAMMERS MANUAL, H20-0322... CONSOLE OPERATORS MANUAL, H20-0321... SYSTEM PROGRAMMERS MANUAL, H20-0323. MACHINE-ORIENTED PROGRAMS, SOURCE PROGRAMS, OS/360 MODIFICATIONS, 709X EMULATOR MODIFICATIONS AND MODIFICATIONS ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ 2400 FOOT REEL OF MAGNETIC TAPE.

OPTIONAL PROGRAM MATERIAL -- TWO 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REELS OF MAGNETIC TAPE-- ONE CONTAINING ASSEMBLY LISTINGS, ONE CONTAINING FLOWCHART LISTINGS.

NOTES-- THE TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400 FEET IN LENGTH. IF TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-CX-16X CONTINUOUS SYSTEM MODELING
PROGRAM /CSMP/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CX-16X

PH

SIMULATION IS A WELL ESTABLISHED TOOL FOR INVESTIGATING PHENOMENA RANGING FROM INFORMATION FLOW IN BUSINESS ORGANIZATIONS TO THE DYNAMIC BEHAVIOR OF COMPLEX CONTINUOUS SYSTEMS. FOR MANY PROBLEMS, S/360 CSMP OBTAINS THE NEED TO USE AN ANALOG COMPUTER FACILITY. IT ALLOWS SIMULATION PROBLEMS TO BE PREPARED DIRECTLY AND SIMPLY FROM EITHER A BLOCK DIAGRAM REPRESENTATION OR A SET OF ORDINARY DIFFERENTIAL EQUATIONS. IT PROVIDES A BASIC SET OF FUNCTIONAL BLOCKS WITH WHICH THE COMPONENTS OF A CONTINUOUS SYSTEM MAY BE REPRESENTED AND ACCEPTS APPLICATION-ORIENTED STATEMENTS FOR DEFINING THE CONNECTIONS BETWEEN THESE FUNCTIONAL BLOCKS. THIS BLOCK MODELING TECHNIQUE IS COMMON TO ENGINEERING AND SCIENTIFIC PRACTICE. S/360 CSMP ALSO ACCEPTS FORTRAN STATEMENTS, THEREBY ALLOWING THE USER TO READILY HANDLE NONLINEAR AND TIME-VARIANT PROBLEMS OF CONSIDERABLE COMPLEXITY. INCLUDED IN THE BASIC FUNCTION SET ARE CONVENTIONAL ANALOG COMPUTER COMPONENTS /I.E., INTEGRATORS AND RELAYS, PLUS MANY SPECIAL PURPOSE FUNCTIONS LIKE DELAY TIME AND LIMITER FUNCTIONS/. THIS BASIC LIBRARY IS AUGMENTED BY THE FORTRAN LIBRARY. IN ADDITION, SPECIAL FUNCTIONS CAN BE DEFINED BY THE USER, THEREBY ALLOWING S/360 CSMP TO TAKE ON THE CHARACTERISTICS OF A LANGUAGE ORIENTED TO ANY PARTICULAR SPECIAL PURPOSE FIELD IN CONTINUOUS SYSTEM SIMULATION. INPUT AND OUTPUT ARE FACILITATED BY MEANS OF USER-ORIENTED CONTROL STATEMENTS. A FIXED FORMAT IS PROVIDED FOR PRINTING /TABULAR FORMAT/, PRINT-PLOTTING /GRAPHIC FORMAT/, AND PREPARATION OF A DATA SET AT SELECTED INCREMENTS OF THE INDEPENDENT VARIABLE. CONVENIENT MEANS ARE AVAILABLE FOR TERMINATING A SIMULATION RUN WITH A SEQUENCE OF COMPUTATIONS AND LOGICAL TESTS. THESE CAN BE DESIGNED TO TEST RUN RESPONSES AND DEFINE RUN CONTROL CONDITIONS FOR ACCOMPLISHING ITERATIVE SIMULATIONS OF THE TYPE REQUIRED IN PARAMETER OPTIMIZATION STUDIES. WITH FEW EXCEPTIONS, PARAMETER DATA, RUN CONTROL DATA, AND CONNECTION STATEMENTS CAN BE PREPARED IN ANY ORDER FOR AUTOMATIC SEQUENCING BY THE PROGRAM. THROUGH THESE FEATURES, S/360 CSMP PERMITS THE USER TO CONCENTRATE UPON THE PHENOMENON BEING SIMULATED RATHER THAN THE MECHANISM FOR IMPLEMENTING THE SIMULATION.

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FEATURES- A PROBLEM CAN BE PREPARED DIRECTLY FROM EITHER A FUNCTIONAL BLOCK DIAGRAM OR A SYSTEM OF ORDINARY DIFFERENTIAL EQUATIONS... THE INPUT LANGUAGE IS APPLICATION ORIENTED AND FREE FORM... THE STATEMENTS MAY BE GENERALLY WRITTEN IN ANY ORDER, AND, BY USER OPTION, MAY BE SEQUENCED BY THE PROGRAM TO ESTABLISH THE CORRECT INFORMATION FLOW... FORTRAN STATEMENTS CAN BE INTERMIXED WITH THE S/360 CSMP SIMULATION STATEMENTS... THE METHOD OF INTEGRATION CAN BE CHOSEN FROM SEVERAL STANDARD OPTIONS PROVIDED IN THE PROGRAM... OUTPUT IS PROVIDED AUTOMATICALLY IN A FIXED FORMAT FOR ALL OUTPUT OPTIONS... THIRTY-FOUR STANDARD FUNCTIONAL BLOCKS ARE PROVIDED, AND, IN ADDITION, THE USER CAN ADD HIS OWN FUNCTIONS TO THE LIBRARY... SIMULATION RUNS ARE COMPLETELY REPEATABLE... PROBLEM DECKS MAY BE CONVENIENTLY STORED FOR FUTURE RERUNS... THE ENTIRE SIMULATION MAY BE CONTROLLED BY A SEQUENCE OF CONVENTIONAL FORTRAN STATEMENTS.

USER RESPONSIBILITIES- THE USER MUST REPRESENT THE PHENOMENON TO BE SIMULATED BY EITHER AN ANALOG BLOCK DIAGRAM OR A SYSTEM OF ORDINARY DIFFERENTIAL EQUATIONS... THEN THE INPUT LANGUAGE STATEMENTS MUST BE PREPARED AND PUNCHED ON CARDS FOR INPUT TO THE APPLICATION PROGRAM. FAMILIARITY WITH BASIC FORTRAN IS HELPFUL, BUT NOT NECESSARY. SPECIAL FUNCTIONS MAY BE DEFINED EITHER THROUGH FORTRAN PROGRAMMING OR SIMPLY THROUGH A MACRO CAPABILITY WHICH PERMITS THE COMBINATION OF INDIVIDUAL LIBRARY FUNCTIONS INTO LARGER FUNCTIONAL BLOCKS. A CUSTOMER-PREPARED PLOTTING PROGRAM CAN BE USED WITH THE OUTPUT DATA FILE TO OBTAIN GRAPHIC OUTPUT ON ANY PARTICULAR PLOTTING EQUIPMENT.

PROGRAMMING SYSTEMS- FORTRAN IV /E/ IS USED AS THE SOURCE LANGUAGE FOR APPROXIMATELY 95 PER CENT OF THE PROGRAMS. OPERATIONS NOT READILY PERFORMED IN FORTRAN IV /E/ ARE CODED AS SUBROUTINES IN SYSTEM/360 ASSEMBLER LANGUAGE. ALL ROUTINES OPERATE UNDER OS/360.

MINIMUM SYSTEM REQUIREMENTS- THE PROGRAM WILL REQUIRE A MINIMUM OF 102K BYTES OF STORAGE /EXCLUDING THAT REQUIRED BY OS/360/, THE STANDARD INSTRUCTION SET, AND THE FLOATING-POINT OPTION. IN ADDITION TO THE I/O UNITS NEEDED BY THE OPERATING SYSTEM/360 FOR FORTRAN IV COMPIING, THE PROGRAM WILL REQUIRE THREE LOGICAL UTILITY UNITS, ONE OF WHICH MUST BE A DIRECT ACCESS STORAGE DEVICE /DASD/.

BASIC PROGRAM MATERIAL
DOCUMENTATION - APPLICATION DIRECTORY-USERS MANUAL,H20-0367.. OPERATORS MANUAL,H20-0368.
MACHINE READABLE - OBJECT MODULES AND SAMPLE PROBLEM ARE AVAILABLE ON ONE 9-TRACK DTR AT EITHER 800BPI OR 1600BPI.

OPTIONAL PROGRAM MATERIAL - SOURCE MODULES ON ONE 9-TRACK DTR.

NOTES- THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

X-17X REMOTE ACCESS COMPUTING

/RAX/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-CX-17X

RAX IS A TIME SHARED, REMOTE COMPUTING SYSTEM. USERS OF RAX CAN SUBMIT BASIC FORTRAN IV AND BASIC ASSEMBLER LANGUAGE JOBS FROM OTHER ON-LINE EQUIPMENT AT THE COMPUTER SITE. PROGRAMMERS CAN COMPIL, MODIFY, AND EXECUTE PROGRAMS FROM THEIR TERMINALS WHILE NON-COMPUTER ORIENTED USERS CAN BE CONVERSATIONALLY INTERACTING WITH PROGRAMS PREVIOUSLY STORED IN THE RAX LIBRARY. RAX USER FLEXIBILITY IS PROVIDED BY A MODULAR AND COMPATIBLE DESIGN. THREE CPU MODELS /30, 40, AND 50/ ARE SUPPORTED. THREE MEMORY SIZES /64K, 128K, AND 256K BYTES/ CAN BE USED WITH THE THREE CPU MODELS. TWO TERMINALS /THE IBM 1050 DATA COMMUNICATIONS TERMINAL AND THE IBM 2260 DISPLAY STATION/ CAN BE USED WITH UP TO A MAXIMUM OF 63 TERMINALS SIMULTANEOUSLY OPERATIONAL. TWO IBM 2311 DIRECT ACCESS STORAGE DEVICES ARE NECESSARY, BUT UP TO EIGHT CAN BE UTILIZED BY RAX.

FEATURES-

- UP TO 63 TERMINALS CAN BE USED WITH RAX, DEPENDING UPON THE AMOUNT OF CORE MEMORY AVAILABLE. THE NUMBER OF RAX TERMINALS SUPPORTED FOR THE ALLOWABLE MEMORY CONFIGURATIONS ARE:
 - 256K BYTE MEMORY - MAXIMUM OF SIXTY-THREE 1050 DATA COMMUNICATIONS TERMINALS.
 - MAXIMUM OF EIGHT 2260 DISPLAY STATIONS.
 - TOTAL NUMBER OF 1050 TERMINALS AND 2260 DISPLAY STATIONS MAY NOT EXCEED SIXTY-THREE.
- 128K BYTE MEMORY - MAXIMUM OF THIRTY-SIX 1050 TERMINALS.
- 2260/S CAN BE USED WITH THIS MEMORY CONFIGURATION WITH ONE 2260 EQUATED TO THREE 1050/S IN DETERMINING THE THIRTY-SIX LIMIT.
- 64K BYTE MEMORY - MAXIMUM OF TEN 1050 TERMINALS.
- USERS MAY SHARE PROGRAMS AND DATA STORED IN THE RAX USER LIBRARY. FILE SECURITY IS PROVIDED BY MEANS OF A LOCK CODE USED TO PREVENT UNAUTHORIZED DELETION OR MODIFICATION OF ANY FILE IN THE LIBRARY.
- A RESTART CAPABILITY IS PROVIDED FOR RESUMPTION OF JOBS AFTER RECOVERY FROM SYSTEMS ERROR. UPON RECOVERY RAX WILL INDICATE TO EACH USER THE LAST LINE OF INPUT ACCEPTED OR REPEAT THE LAST FEW LINES OF OUTPUT.
- THE 2260 DISPLAY STATIONS ALLOW ENTRY OF UP TO TWELVE LINES OF INPUT AT A TIME. THE NON-DESTRUCTIVE CURSOR FEATURE IS USED TO PROVIDE FOR SINGLE CHARACTER MODIFICATION WITHIN A LINE WHEN UPDATING PROGRAM OR DATA FILES.
- OBJECT PROGRAM EXECUTION STORAGE OF 32K BYTES IS PROVIDED ON THE MINIMUM MEMORY CONFIGURATION. 64K BYTES ARE AVAILABLE ON THE 128K AND 256K BYTE CONFIGURATIONS.
- USERS OF RAX MAY ENTER PROGRAMS AND DATA ONE LINE AT A TIME FROM THEIR TERMINALS OR USE A SINGLE TERMINAL COMMAND TO INSERT A PREVIOUSLY STORED DATA OR SOURCE PROGRAM MODULE INTO HIS JOB STREAM AT COMPILE TIME.
- UP TO SEVEN 2311 DISK STORAGE DRIVES ARE SUPPORTED FOR ON-LINE LIBRARY STORAGE.
- THE USER MAY ENTER EITHER BASIC FORTRAN IV OR BASIC ASSEMBLER JOBS FROM HIS TERMINALS. RAX SUPPORTS USA BASIC FORTRAN WITH THE FOLLOWING EXCEPTIONS- EMBEDDED BLANKS ARE NOT PERMITTED, AND RESERVED WORDS CANNOT BE USED IN THE PROGRAM. ALL INPUT/OUTPUT MUST BE PROGRAMMED IN FORTRAN. EXECUTION OF PRIVILEGED INSTRUCTIONS IN A USER PROGRAM IS NOT

ALLOWED BY RAX.
- A DISPLAY COMMAND IS AVAILABLE FOR TOTAL OR SELECTIVE LISTING OF A USERS INPUT OR LIBRARY FILES.
RAX PROVIDES A FACILITY FOR CONVERSATIONAL INTERACTION BETWEEN A USER AND AN EXECUTING PROGRAM. THIS IS ACCOMPLISHED BY THE USE OF INPUT/OUTPUT STATEMENTS IN A PROBLEM PROGRAM WHICH ADDRESSES THE USERS TERMINAL AS AN I/O DEVICE. THUS, PROGRAMS CAN BE WRITTEN TO TAKE ADVANTAGE OF THE ,ON-LINE,, PRESENCE OF THE USER BY PERMITTING HIM TO SELECTIVELY MODIFY HIS INPUT, OBSERVE INTERMEDIATE RESULTS, AND ALTER PARAMETERS - OR PERHAPS THE EXECUTION SEQUENCE - OF THE PROGRAM BASED ON HIS INTERPRETATION OF THESE RESULTS.

PROGRAMMING SYSTEM- RAX IS WRITTEN IN BPS BASIC ASSEMBLER LANGUAGE.

MACHINE REQUIREMENTS- SYSTEM/360 MODEL 30F WITH ONE SELECTOR CHANNEL, INTERVAL TIMER, STORAGE PROTECTION, DECIMAL ARITHMETIC, FLOATING POINT ARITHMETIC FEATURES... 1052 PRINTER-KEYBOARD MODEL 8 AS A SYSTEM CONSOLE... 2540 CARD READ PUNCH... 1403 PRINTER MODEL 2, 3, 7 OR N1... TWO 2311 DISK STORAGE DRIVES,, FOR ATTACHING 1050 DATA COMMUNICATIONS EITHER A 2702 TRANSMISSION CONTROL WITH TERMINAL CONTROL - TYPE 1 /NO. 4615/, SELECTIVE SPEED /NO. 9684/, AND APPROPRIATE LINE ADAPTERS OR A 2701 DATA ADAPTER

UNIT WITH TERMINAL ADAPTER - TYPE 1 /NO. 4645 OR 4646/ AND APPROPRIATE LINE ADAPTER FOR EACH LINE /UP TO 4/. UP TO TEN 1050 DATA COMMUNICATION TERMINALS MAY BE ATTACHED TO THE MINIMUM CONFIGURATION. 2260 DISPLAY STATIONS ARE NOT SUPPORTED ON THE 64K BYTE CONFIGURATION.

TERMINAL CONFIGURATION- THE MINIMUM IBM 1050 DATA COMMUNICATION TERMINAL CONSISTS OF- ONE IBM 1051 CONTROL UNIT MODEL 2 WITH THE FIRST PRINTER ATTACHMENT FEATURE /NO. 4408/ AND ONE IBM 1052 PRINTER-KEYBOARD MODEL 2, THE 1052 PRINTING ELEMENT USED BY RAX IS DATA 1 FONT /NO. 9575 OR NO. 9576/. THE 1050 CAN UTILIZE THE 1051 PAPER TAPE READER OR 1056 CARD READER ATTACHED AS READER NO. 1 ON THE 1051. FOR USE WITH THE 1056 CARDS CAN BE PREPARED ON EITHER THE 26 OR 29 KEYPUNCH. THE 1056 MUST HAVE THE EXTENDED CHARACTER READ SPECIAL FEATURE.

MAXIMUM SUPPORT CONFIGURATION- SYSTEM/360 MODEL 50 H /256K BYTE MEMORY/ WITH TWO SELECTOR CHANNELS, INTERVAL TIMER, STORAGE PROTECTION, FLOATING POINT ARITHMETIC, 1052 PRINTER-KEYBOARD MODEL 7, 2540 CARD READ PUNCH, 1403 PRINTER MODEL 2, 3, 7 OR N1, EIGHT 2311 DISK STORAGE DRIVES, TWO 2702 TRANSMISSION CONTROLS UP TO SIXTY-THREE 1050 DATA COMMUNICATIONS TERMINALS, ONE 2848 DISPLAY CONTROL MODEL 3 WITH NON-DESTRUCTIVE CURSOR FEATURE AND UP TO EIGHT 2260 DISPLAY STATIONS WITH THE ALPHAMERIC KEYBOARD FEATURE /WITH A MAXIMUM OF SIXTY-THREE 1050/S AND 2260/S COMBINED/, FOUR 2400 9-TRACK TAPE DRIVES.

BASIC PROGRAM MATERIAL
DOCUMENTATION - APPLICATION DIRECTORY... USERS MANUAL /H20-0354/... OPERATORS MANUAL /H20-0355/.
MACHINE READABLE - OBJECT PROGRAM LOAD MODULES AND SAMPLE PROBLEM DECKS ON EITHER ONE 9-TRACK /800 OR 1600BPI/ DTR OR ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL - SOURCE DECKS ON EITHER ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE.

NOTES- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT, NO TAPE SUBMITTAL IS REQUIRED. THE TAPE REQUIRED FOR OPTIONAL MATERIAL MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-DW-05X IBM SYSTEM/360 WHOLESALE
IMPACT PROGRAM LIBRARY
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-DW-05X

THE IBM SYSTEM/360 WHOLESALE IMPACT PROGRAM LIBRARY OFFERS SYSTEM/360 USERS THE OPPORTUNITY TO USE THE IMPACT SYSTEM OF INVENTORY MANAGEMENT NOW IN WIDE USE AMONG 1400-1311 SYSTEMS USERS /1401/1440/1460/.

THE IBM IMPACT /INVENTORY MANAGEMENT PROGRAM AND CONTROL TECHNIQUES/ SYSTEM OF SCIENTIFIC INVENTORY MANAGEMENT PROVIDES THE WAREHOUSE DISTRIBUTOR /OR ANY ORGANIZATION WITH THE SAME INVENTORY CONTROL CHARACTERISTICS/ WITH THE INFORMATION OF ,WHEN,, AND ,HOW MUCH,, TO BUY FOR EACH INVENTORY ITEM CONTROLLED BY THE SYSTEM. IT DOES THIS THROUGH THE MEANS OF PROBABILITY SCIENCE IN CONJUNCTION WITH THE MANY FACTORS INFLUENCING THE DISTRIBUTORS INVENTORY CONTROL DECISIONS. FACTORS CONSIDERED INCLUDE- LEAD TIME, LEAD TIME VARIABILITY, FORECAST DEMAND, FORECAST ERROR, SERVICE DESIRED, INVENTORY CARRYING COSTS, PURCHASING/RECEIVING COSTS, DISCOUNT STRUCTURES, MINIMUMS, MAXIMUMS, SHELF LIVES, AND PACK SIZES. THE ,WHEN,, AND ,HOW MUCH,, ANSWERS FIND THE MOST EFFICIENT BALANCE BETWEEN THE COST OF CARRYING INVENTORY, COST OF PURCHASING AND RECEIVING, DISCOUNTS REALIZED, AND CUSTOMER SERVICE REQUIREMENTS. THE SYSTEM/360 IMPACT INCLUDES THE IBM SYSTEM/360 WHOLESALE IMPACT PROGRAM LIBRARY AND A NUMBER OF IBM AND CUSTOMER EDUCATION CLASSES AND MANUALS. THE SYSTEM/360 WHOLESALE IMPACT PROGRAM LIBRARY ENABLES THE DISTRIBUTOR WHO HAS AN IBM SYSTEM/360 DATA PROCESSING SYSTEM /MODEL 30 OR GREATER/ TO SUCCESSFULLY IMPLEMENT AN IMPACT INVENTORY MANAGEMENT SYSTEM WITH MINIMUM EFFORT AND EXPENSE. PROGRAMS ARE INCLUDED THAT PERFORM IN THE FOLLOWING FUNCTIONAL AREAS- EDITING, FILE INITIALIZATION, ESTIMATING, AND THE CONTROL OF INDEPENDENT AND JOINT REPLENISHMENT ORDERING.

FEATURES- THE SYSTEM/360 PROGRAM LIBRARY PERFORMS THE SAME FUNCTIONS AS THE EXISTING 1440-1311 PROGRAM LIBRARIES-

- EDIT ALL INPUT FOR FORMAT.
- SCREEN HISTORICAL DEMANDS FOR PRIMITIONS.
- DETERMINE THE FORECAST MODEL /HORIZONTAL, TREND, HORIZONTAL-SEASONAL OR TREND-SEASONAL/.
- DETERMINE THE ORDERING STRATEGY TO BE USED AND CALCULATE ORDER QUANTITY OR ORDER FREQUENCY AS APPROPRIATE FOR STRATEGY SELECTED.
- CALCULATE FOR EACH ITEM THE SAFETY FACTOR REQUIRED FOR A PRESCRIBED LEVEL OF CUSTOMER SERVICE.

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- CALCULATE INITIALIZING VALUES REQUIRED FOR FORECAST AND ORDER MODELS SELECTED.
 - ESTIMATE IN ADVANCE RESULTS TO BE EXPECTED FROM APPLYING THE RULES AND VALUES DEVELOPED.
 - DETERMINE WHEN TO ORDER ITEMS AND ITEM GROUPS TO MEET SERVICE OBJECTIVES AFTER THE SYSTEM IS OPERATIONAL.
 - CALCULATE THE PRODUCT MIX TO BE ORDERED WITHIN AN ITEM GROUP THAT WILL MEET BOTH SERVICE OBJECTIVES AND LIMITATIONS ON TOTAL SIZE OF ORDER.
- IN ADDITION, THE 360 PROGRAMS PROVIDE INCREASED FLEXIBILITY IN THE TYPE OF INPUT/OUTPUT DEVICES USED.
- BOTH INPUT AND OUTPUT OF MAIN DATA FLOW IN ALL PROGRAMS MAY BE BY DISK OR TAPE. AN ADDITIONAL CARD TO INPUT FILE AND/OR OUTPUT FILE TO CARD OPTION IS AVAILABLE AND CAN BE SPECIFIED AT RUN TIME. EITHER 1442 OR 2540 CARD READ PUNCH AND 1443 OR 1403 PRINTER MAY BE SPECIFIED BY THE USER.
- FOR MAXIMUM COMPATIBILITY WITH IMPACT SYSTEMS DEVELOPED BY PRESENT USERS, ALL INPUT AND OUTPUT FORMATS ARE IDENTICAL TO THOSE OF THE 1400-1311 PROGRAM LIBRARIES.

THE PROGRAM LIBRARY INCLUDES BOTH INITIALIZING PROGRAMS AND OPERATING PROGRAMS. INITIALIZING PROGRAMS ARE DESIGNED TO BE USED ONCE TO SET UP AN IMPACT SYSTEM, THEN PERIODICALLY AT LEAST ONCE A YEAR, OR, AS REQUIRED, TO MEET CHANGING CONDITIONS. A COMPLETE SET OF PROGRAMS IS PROVIDED TO PERFORM NECESSARY INITIALIZING FUNCTIONS. OPERATING PROGRAMS ARE USED IN THE DAY-TO-DAY CONTROL OF THE IMPACT SYSTEM /FORECASTING AND ORDERING/. LIBRARY PROGRAMS ARE PROVIDED TO CONTROL THE ORDERING OF BOTH INDEPENDENT AND JOINT VENDORS.

BECAUSE REQUIREMENTS VARY WIDELY, THE USER WRITES HIS OWN PROGRAMS TO PERFORM RECORD-KEEPING, FORECASTING, REVIEWING /FIXELECTS TO USE, ORDER-POINT OR PEAK-POINT APPROACH/, ORDERING FOLLOW-UP /PREPARING PURCHASE ORDERS, STATUS LISTINGS, ETC./, AND LINKAGE BETWEEN HIS PROGRAMS AND IMPACT LIBRARY PROGRAMS. TO GUIDE THE USER IN DEVELOPING HIS OWN PROGRAMS WITH MINIMUM EFFORT, THE IMPACT PACKAGE PROVIDES FLOWCHARTS OF TYPICAL FORECASTING AND REVIEW SYSTEMS.

PROGRAMMING SYSTEMS- PROGRAMS IN THE SYSTEM/360 WHOLESALE IMPACT PROGRAM LIBRARY ARE WRITTEN IN ASSEMBLER LANGUAGE AND OPERATE UNDER CONTROL OF THE BASIC OPERATING SYSTEM/360, DISK OPERATING SYSTEM/360, OR THE OPERATING SYSTEM/360.

MINIMUM SYSTEM REQUIREMENTS-
FOR USE WITH BOS/360 OR DOS/360- A 16K SYSTEM/360 MODEL D30 WITH DECIMAL ARITHMETIC, 1442 OR 2540 CARD READ PUNCH, 1443 OR 1403 PRINTER, AND EITHER TWO 2311 DISK DRIVES OR ONE 2311 AND TWO MAGNETIC TAPE DRIVES.
FOR USE WITH OS/360- A 32K SYSTEM/360 MODEL E30 WITH DECIMAL ARITHMETIC, 1442 OR 2540 CARD READ PUNCH, 1443 OR 1403 PRINTER, AND EITHER TWO 2311 DISK DRIVES OR ONE 2311 AND TWO MAGNETIC TAPE DRIVES. THE 32K MINIMUM CONFIGURATION IS APPLICABLE ONLY IF THE USERS OPERATING SYSTEM/360 IS 14K BYTES OR LESS. /FIXED MAIN STORAGE MUST NOT EXCEED 14K BYTES SINCE THE SEQUENTIAL SCHEDULER REQUIRES 18K BYTES./

BASIC PROGRAM MATERIAL -
DOCUMENTATION - APPLICATION DIRECTORY... APPLICATION DESCRIPTION, H20-0173... USERS MANUAL, H20-0255... OPERATORS MANUAL, H20-0256... SYSTEM MANUAL.
MACHINE RELEASABLE SAMPLE PROGRAMS AND SAMPLE PROBLEM DECKS MAY BE OBTAINED ON ONE 9-TRACK OR ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE OR ONE 1316 DISK PACK.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. IT MUST BE 2400 FEET IN LENGTH. ONLY THOSE USERS WITHOUT TAPE CAPACITY SHOULD ORDER THIS PROGRAM ON DISK.

360A-FB-15X DEMAND DEPOSIT ACCOUNTING ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360A-FB-15X

THE DEMAND DEPOSIT ACCOUNTING APPLICATION PROGRAM GIVES SUPPORT TO COMMERCIAL BANKS USING SYSTEM/360. THE OBJECTIVE OF THE APPLICATION PROGRAM IS TO MEET THE CUSTOMERS PROGRAMMING REQUIREMENTS FOR INSTALLING DEMAND DEPOSIT ACCOUNTING.

THE PROGRAM PACKAGE COVERS THREE AREAS- DEMAND DEPOSIT ACCOUNTING, ANALYSIS, AND CONVERSION.

DEMAND DEPOSIT ACCOUNTING - THE APPLICATION ACCEPTS TRANSACTIONS IN THE FORM OF MICR DOCUMENTS OR PUNCHED CARDS, CONVERTS THESE TRANSACTIONS TO DISK STORAGE, AND SORTS THE TRANSACTIONS INTO SEQUENCE FOR PROCESSING. THE TRANSACTION FILE IS RUN AGAINST A STOP-HOLD FILE AND STOP-HOLD SUSPECTS ARE RECORDED IN DISK STORAGE. CONTROL TOTALS ARE ADDED TO THE TRANSACTION FILE AND HIGH VOLUME ACTIVITY SUMMARIZED. THIS EDITED AND SUMMARIZED TRANSACTION FILE IS USED TO POST TO CUSTOMER ACCOUNTS. DURING POSTING, A TRIAL BALANCE OR JOURNAL TRIAL BALANCE IS PREPARED. EXCEPTION CONDITIONS ARE RECORDED ON DISK STORAGE IN THE REPORTS FILE. AT THE COMPLETION OF POSTING, TODAY'S TRANSACTIONS FILE IS MERGED WITH AN ACCUMULATED TRANSACTION FILE. STATEMENTS ARE CYCLED AND PRINTED IN ANY OF THREE OPTIONAL PRINT FORMATS. EIGHT EXCEPTION REPORTS ARE PRINTED FROM THE REPORTS FILE. A LEDGER CONTROL RECAP REPORT IS INCLUDED AS A SEPARATE REPORT.

ANALYSIS - THE OPTIONAL ANALYSIS PROCESSING ACCUMULATES A HISTORY FILE OF BALANCE AND TRANSACTION ACTIVITY FOR SELECTED ACCOUNTS. INCLUDED ARE PROGRAMS TO CREATE, PERIODICALLY REORGANIZE, AND UPDATE THIS FILE. THE ANALYSIS REPORT PROGRAM PREPARES, ON USER REQUEST, A COMPARATIVE ANALYSIS OF ACCOUNTS OR GROUPS OF ACCOUNTS. ITS USE IS OPTIONAL.

CONVERSION - THE CONVERSION PROCESSING PORTION OF THE APPLICATION PROGRAM PACKAGE PROVIDES PROGRAMS TO ASSIST USERS IN THE CREATION OF INITIAL DATA FILES /BALANCES AND NAMES AND ADDRESSES/. THESE PROGRAMS ACCEPT AS INPUT- /1/ THE NAME AND ADDRESS FILE TAPES AND BALANCE FILE TAPE FORMATTED AS USED BY THE 1401 DEMAND DEPOSIT ACCOUNTING APPLICATION PROGRAM, 1401-FB-01X, AND /2/ 1311 MASTER FILE AS FORMATTED BY THE 1440 DEMAND DEPOSIT ACCOUNTING APPLICATIONS PROGRAMS, 1440-FB-03X.

FEATURES-
- ALL PROCESSING CAN BE ACCOMPLISHED ON A MULTI-BANK BASIS. IN MULTI-BANK PROCESSING, THE DATA FOR ALL BANKS IS PROCESSED THROUGH ONE APPLICATION PROGRAM BEFORE PROCEEDING TO THE NEXT.
- ALL ACCOUNTING CONTROLS ARE ORGANIZED TOGETHER ON A SINGLE REPORT PRINTED DAILY.

CONTINUED FROM PRIOR COLUMN--

- DATA FOR SINGLE AND RELATED GROUPS OF ACCOUNTS MAY BE COLLECTED, ORGANIZED INTO AN HISTORICAL FILE AND PROCESSED TO DETERMINE ACCOUNT PROFITABILITY. A COMPARATIVE REPORT BASED ON FLEXIBLE CRITERIA IS PRINTED ON DEMAND.
- THE ACCOUNT BALANCE FILE IS ORGANIZED SO THAT FUTURE INQUIRY CAN BE ACCOMPLISHED WITHOUT REQUIRING EXTRAORDINARY DISK DRIVE CAPACITY. APPROXIMATELY 48,000 ACCOUNTS ARE RECORDED ON ONE 1316 DISK PACK.
- THE ACCOUNT NAME AND ADDRESS FILE IS ORGANIZED TO KEEP SIGNIFICANT DATA ONLY. THIS REDUCES DISK PACK REQUIREMENTS AND SPEEDS THROUGHPUT.
- THE IBM 1419 AND 1412 MAGNETIC CHARACTER READERS ARE PROGRAMMED TO OPERATE IN CONJUNCTION WITH 8K BASIC OPERATING SYSTEM.
- A GENERALIZED SERVICE CHARGE CALCULATION ROUTINE IS PROVIDED. THIS ROUTINE WILL MEET ALL THE REQUIREMENTS FOR MANY USERS AND PROVIDE A GUIDE FOR THOSE WHICH REQUIRE ADDITIONAL PROGRAMMING.
- THE PROGRAMS CONTAIN A SERIES OF OPTIONS AT BOTH THE OVERALL SYSTEM AND THE INDIVIDUAL BANK LEVEL. AMONG THEM ARE -- 3 READER SORTER DISTRIBUTION ROUTINES... 2 SELF CHECK ACCOUNT NUMBER ROUTINES... THE ABILITY TO MAINTAIN THE STOP-HOLD FILE IN BOTH DISK AND CARDS... PROVISION FOR A 2-UP TRIAL BALANCE OR A COMBINED TRIAL BALANCE - TRANSACTION JOURNAL - FLEXIBLE OVERDRAFT POLICY CRITERIA... 3 FORMATS OF CUSTOMER STATEMENTS... 4 CRITERIA FOR STATEMENT SELECTION.

USER RESPONSIBILITIES

- A THOROUGH KNOWLEDGE AND UNDERSTANDING OF THE SYSTEM BEFORE INSTALLATION.
- CREATION OF BALANCE AND NAME AND ADDRESS FILES IF CONVERSION PROGRAMS ARE NOT UTILIZED.
- PARALLEL OPERATION OF NEW AND PRESENT SYSTEMS OR A SATISFACTORY ALTERNATIVE TO VERIFY VALIDITY OF ANY MODIFICATIONS MADE TO PACKAGE PROGRAMS.
- CUSTOMIZED PRE-PRINTED FORMS IF USER CHOOSES VARIOUS PRE-PRINTED OPTIONS.
- IN-HOUSE TRAINING OF OPERATOR PERSONNEL AND DATA CAPTURE PERSONNEL.
- WRITE ROUTINES REQUIRED FOR INSERTION TO PACKAGE PROGRAMS TO TAILOR THE SYSTEM TO USERS REQUIREMENTS.
- WRITE PROGRAMS THAT USER DETERMINES NECESSARY TO INCREASE THE SCOPE OF THE DEMAND DEPOSIT ACCOUNTING PROGRAMS.
- WRITE PROGRAM MODIFICATIONS REQUIRED TO TAILOR OR INCREASE THE SCOPE OF IBM PACKAGE PROGRAM.

PROGRAMMING SYSTEMS- THE FOLLOWING FEATURES OF THE IBM SYSTEM/360 BASIC OPERATING SYSTEM /SYSTEM RELEASE 8/ ARE USED-

- BASIC CONTROL PROGRAM 360B-CL-302.
- INPUT OUTPUT CONTROL SYSTEM /IOCS/.
- CONSECUTIVE PROCESSING /DTSR/ 360B-IO-303.
- INDEX AND SEQUENTIAL FILE MANAGEMENT SYSTEM /ISFMS/ 360B-IO-304.
- IBM BASIC OPERATING SYSTEM/360 SORT MERGE PROGRAM 360B-SM-308.
- IBM BASIC OPERATING SYSTEM/360 ASSEMBLER WITH I/O MACROS 360B-AS-309.
- IBM SYSTEM/360 BASIC OPERATING SYSTEM UTILITIES, GROUP 1 360B-UT-300.
- IBM SYSTEM/360 BASIC PROGRAMMING SUPPORT UTILITY PROGRAM INITIALIZE DISK 360P-UT-069.
- IBM 1401/1440/1460 AUTOCODER /ON DISK/ 1401-AU-008.

SYSTEM REQUIREMENTS- MANY SYSTEM CONFIGURATIONS ARE POSSIBLE. ALL, HOWEVER, MUST INCLUDE- A 2030 MODEL D OR 2040 MODEL D PROCESSING UNIT WITH DECIMAL ARITHMETIC /NO. 3237/, SELECTOR CHANNEL /NO. 6960/, 1051 ATTACHMENT /NO. 7915/... 1051 CONTROL UNIT MODEL N1... 1052 PRINTER-KEYBOARD... PROCESSOR ATTACHMENT /NO. 3130/... ADAPTER FOR FIRST PUNCH /NO. 3410/... ADAPTER FOR FIRST READER /NO. 4411/... 2841 STORAGE CONTROL READER... THREE 2311 DISK STORAGE DRIVES... ONE READER PUNCH SELECTED FROM 1442 CARD READ PUNCH MODEL N1, 2540 CARD READ PUNCH, 2520 CARD READ PUNCH MODEL A1, OR ONE READER AND ONE PUNCH SELECTED FROM 2501 CARD READER MODEL B1 OR B2, 2520 CARD PUNCH MODEL B2 /OR B3/, 1442 CARD PUNCH MODEL N2... ONE PRINTER AND THE ASSOCIATED CONTROL UNIT IF THE LATTER IS REQUIRED- 1403 PRINTER MODELS 2, 3, OR N1 WITH 2821 CONTROL UNIT, MODELS 1, 2, 3, 5 AND 1416 INTERCHANGEABLE TRAIN CARTRIDGE, OR 1443 PRINTER MODEL N1 WITH 24 PRINT POSITIONS ADDITIONAL /NO. 5598/, SELECTIVE CHARACTER SET FOR 13 CHARACTER BAR /NO. 6402/, AND PREFERRED CHARACTER SET FEATURE /NO. 9562 OR 9564/... ONE MAGNETIC CHARACTER READER WITH ATTACHED 1412 MAGNETIC CHARACTER READER WITH 7720 ADAPTER OR 1419 MAGNETIC CHARACTER READER WITH 7720 ADAPTER/. THE CONVERSION OF 1440 COMBINED MASTER FILE PROGRAM REQUIRES THE FOLLOWING MACHINE CONFIGURATION OR ITS EQUIVALENT IN S/360 WITH COMPATIBILITY. ONE 1441 PROCESSING UNIT MODEL A4... ONE CARD READER AND ASSOCIATED CONTROL UNIT... ONE PRINTER AND ASSOCIATED CONTROL UNIT... ONE 1311 DISK STORAGE DRIVE AND DISK STORAGE CONTROL UNIT /NO. 3321/... TWO 7335 MAGNETIC TAPE UNITS AND 7802 TAPE ADAPTER.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - APPLICATION DIRECTORY... APPLICATION DESCRIPTION MANUAL, E20-0246... PROGRAMMERS MANUAL, H20-0263... OPERATORS MANUAL, H20-0262... SAMPLE PROBLEM MANUAL.
MACHINE RELEASABLE - ONE 9-TRACK OR ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ 800 BPI MAGNETIC TAPE OR ONE 1316 DISK PACK /VENTED HUB MODEL/ CONTAINING ASSEMBLER LANGUAGE SOURCE DECKS, OBJECT DECKS /SOME UTILITY FUNCTIONS/, SAMPLE PROBLEM JOB CONTROL DECKS, SAMPLE PROBLEM DATA DECKS, 1440 AUTOCODER SOURCE DECK.

OPTIONAL PROGRAM MATERIAL - SYSTEMS MANUAL.

NOTE- THE REEL OF TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-FB-16X ON LINE TELLER PROGRAM 32K CAPABILITY ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360A-FB-16X

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THE ON LINE TELLER PROGRAM PERFORMS BASIC ACCOUNTING NORMALLY ASSOCIATED WITH TELLER ACTIVITY AT THE SAVINGS WINDOW. IT ACCEPTS ENTRIES FROM THE 1060 SYSTEM, MAINTAINS DEPOSITORS RECORDS ON 2316 DISKS, RESPONDS TO THE TELLER TERMINAL TAPE OR THE PASSBOOK, ACCUMULATES TELLER TOTALS AND DEVELOPS A JOURNAL OF SAVINGS TRANSACTIONS. IT KEEPS CONTROL TOTALS WHICH, WITH TELLER TOTALS AND THE JOURNAL, MAKE POSSIBLE A DAILY AUDIT OF THE DEPOSITORS RECORDS. THE PROGRAMS FURNISHED ARE - MASTER FILE CONVERSION, ON LINE PROCESSING AND FILE REORGANIZATION.

ON LINE TELLER 32K CAPABILITY REQUIRES A 2030 MODEL E /32K/. IN ADDITION TO REAL TIME SAVINGS ACCOUNTING, THE USER WILL BE ABLE TO PERFORM LIMITED SPOOL OPERATIONS SUCH AS CARD TO DISK, DISK TO PRINTER AND DISK TO CARD. UP TO 44 SUBCHANNELS CAN BE HANDLED BY THE 32K PROGRAM. THE ON LINE TELLER PROGRAM IS DESIGNED TO CONTROL THE OPERATION OF MULTIPLE 1060 AND 1050 TERMINALS FOR ON LINE SAVINGS ACCOUNTING WITH S/360.

PROGRAMMING SYSTEMS - SOURCE LANGUAGE IS S/360 ASSEMBLER. THE FOLLOWING PROGRAMS ARE REQUIRED FOR PROGRAM ASSEMBLY AND USE WITH THE CONVERSION AND REORGANIZATION PROGRAMS - 360B-CL-302, 360B-ID-303, 360B-IO-305, 360B-UT-300, 360B-AS-309 AND 360P-UT-069.

MINIMUM SYSTEM REQUIREMENTS - 32K CAPABILITY WITH A MAXIMUM OF 44 SUBCHANNELS... 2030 MODEL E WITH DECIMAL ARITHMETIC, INTERVAL TIMER, STORAGE PROTECTION, SELECTOR CHANNEL, CONSOLE TYPEWRITER, 1060 AND/OR 1050 TERMINALS AS REQUIRED TO A MAXIMUM OF 88... 2701 /FROM 1 TO 4 SUBCHANNELS/ TERMINAL ADAPTER TYPE 1 /ONE PER LINE/, EXPANSION FEATURES /ONE FOR EACH LINE BEYOND ONE/, EXPANDED CAPABILITY /ONE FOR LINES 3 AND 4/, LINE ADAPTER /ONE PER LINE/... OR TWO 2702/S /FROM 1 TO 31 SUBCHANNELS/, TERMINAL CONTROL TYPE /TWO/, LINE ADAPTERS /ONE PER LINE/, 31 LINE EXPANSION FEATURE /ONE PER 2702 WITH MORE THAN 15 LINES/... 2311 DISK STORAGE DRIVE /MINIMUM OF 2*/... 2841 STORAGE CONTROL.
* WHEN USING SPOOL YOU MUST HAVE AN ADDITIONAL 2311 DISK DRIVE. DEVICES SUPPORTED BY SPOOL INCLUDE - 2821 CONTROL UNIT /REQUIRED/ 2540 MODEL 1, 1403 MODELS 2, 3, 7, N1, 1443 PRINTER MODEL N1.

BASIC PROGRAM MATERIAL
DOCUMENTATION- APPLICATION DIRECTORY - PROGRAMMERS MANUAL, H20-0305... OPERATORS MANUAL, H20-0325... SYSTEMS MANUAL, Y20-0071.
MACHINE READABLE - AVAILABLE IN SOURCE CARD IMAGE FORMAT ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE OR ON ONE 1316 DISK PACK.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE 9-TRACK OR 7-TRACK MUST BE INDICATED ON THE ORDER CARD. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
THE TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.

I-06X OPTIMUM BOND BIDDING PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-FI-06X

THE OPTIMUM BOND BIDDING PROGRAM, HAS BEEN DESIGNED FOR BOND UNDERWRITERS TO ASSIST THEM IN DETERMINING THE COUPON SCHEDULE AND ASSOCIATED VALUES FOR A BID ON A NEW BOND ISSUE. A MATHEMATICAL PROCEDURE IS USED WHICH DEVELOPS AN OPTIMAL SET OF COUPON RATES. THE OPTIMIZATION PROCEDURE MINIMIZES THE NET INTEREST COST OR EFFECTIVE RATE, WHICHEVER IS APPLICABLE, WHILE REMAINING WITHIN THE CONSTRAINTS ESTABLISHED BY THE ISSUER AND THE CONSTRAINTS ESTABLISHED BY THE UNDERWRITER. THE PROGRAM IS EXTENSIBLE IN THAT A NUMBER OF OPTIONS ARE PROVIDED WHICH AID A USER IN OBTAINING BIDDING INFORMATION FOR ISSUES WITH VARIOUS CHARACTERISTICS.

NEW MUNICIPAL BOND ISSUES, USUALLY SERIAL IN NATURE, ARE NORMALLY OFFERED FOR COMPETITIVE BIDDING. THE ISSUE IS, THEREFORE, AWARDED TO THE UNDERWRITER WHOSE BID RESULTS IN THE LOWEST COST TO THE MUNICIPALITY. OTHER TYPES OF BOND ISSUES, SUCH AS CORPORATE OR FOREIGN ISSUES, MAY BE EITHER OFFERED FOR COMPETITIVE BIDDING OR NEGOTIATED FOR PRIVATE PLACEMENT. REGARDLESS OF THE NATURE OF THE ISSUE OR THE METHOD OF PLACEMENT, THE OPTIMUM BOND BIDDING PROGRAM WILL PROVE TO BE A VALUABLE AID.

TO BID FOR A SERIAL BOND ISSUE, IT IS NECESSARY FOR THE USER TO DECIDE UPON A YIELD FOR BONDS OF EACH MATURITY, A SPREAD WHICH COVERS THE EXPENSE AND PROFIT OF THE UNDERWRITER, AND A RANGE OF COUPON RATES ACCEPTABLE FOR EACH MATURITY. THE PROGRAM THEN CONSTRUCTS A SET OF FIGURES WHICH SATISFIES ALL CONSTRAINTS OF THE ISSUE AND WHICH SETS A COUPON RATE FOR EACH MATURITY SO THAT A RELATIVELY LOW NET INTEREST COST OR EFFECTIVE RATE, WHICHEVER IS APPLICABLE, IS OBTAINED. THE OPTIMUM BOND BIDDING PROGRAM REPLACES THE MANUAL METHODS COMMONLY USED TO OBTAIN BID FIGURES FOR A SERIAL BOND ISSUE. THE PROGRAM UTILIZES A MATHEMATICAL PROCEDURE TO DEVELOP AN OPTIMAL SET OF COUPON RATES WHICH MINIMIZE EITHER THE NET INTEREST COST OR THE EFFECTIVE RATE DEPENDING UPON THE BASIS FOR THE AWARD OF THE ISSUE. MANY POSSIBLE COMBINATIONS OF CONSTRAINTS CAN BE QUICKLY AND ACCURATELY ANALYZED BY THE USE OF THE OPTIMUM BOND BIDDING PROGRAM PRIOR TO SUBMITTING A BID.

FEATURES ARE-

- OPTIMIZE A BID FOR A SERIAL BOND ISSUE ON THE BASIS OF NET INTEREST COST.
- OPTIMIZE A BID FOR A SERIAL BOND ISSUE ON THE BASIS OF EFFECTIVE RATE.
- OPTIMIZE TWO POSSIBLE BIDS WITHOUT PREMIUM TO PRODUCE SPREADS IN JUXTAPosition ABOVE AND BELOW THE DESIRED SPREAD.
- OPTIMIZE ALL POSSIBLE NET INTEREST COSTS WITHOUT PREMIUM WHICH PRODUCE SPREADS WITHIN A RANGE OF ACCEPTABLE SPREADS.
- OPTIMIZE A BID PREDICATED UPON A DESIRED BID PRICE OTHER THAN PAR. THIS PERMITS A CONTROLLED PREMIUM OR DISCOUNT ON THE ISSUE.
- OPTIMIZE A BID WHILE USING ONLY AUTHORIZED COUPON MULTIPLES.
- OPTIMIZE OR EVALUATE A BID, TAKING INTO CONSIDERATION STATED CALL PROVISIONS IN THE COMPUTATION OF THE SELLING PRICE OF THE BOND.
- OPTIMIZE OR EVALUATE AN ISSUE WITH BONDS MATURING AT EITHER SIX MONTH OR TWELVE MONTH INTERVALS.
- EVALUATE EITHER A SERIAL OR TERM BOND ISSUE TO DETERMINE SPREAD.
- EVALUATE EITHER A SERIAL OR TERM BOND ISSUE TO DETERMINE BID PRICE.

OTHER SALIENT FEATURES-

- BOTH THE OPTIMIZATION AND EVALUATION PROCEDURES ADJUST FOR AN IRREGULAR FIRST INTEREST PAYMENT PERIOD.
- BOTH THE OPTIMIZATION AND EVALUATION PROCEDURES BASE THE SELLING PRICE ON DELIVERY DATE RATHER THAN ON ISSUE DATE.
- CONTROL OF THE DESIRED SPREAD MAY BE ACHIEVED IN THE OPTIMIZATION MODE. A SINGLE BID MAY BE GENERATED TO PRODUCE AN EXACT SPREAD, OR, MULTIPLE BIDS MAY BE GENERATED TO PRODUCE SPREADS FOR STATED INTERVALS WITHIN A RANGE OF ACCEPTABLE SPREADS.
- COUPON STRUCTURE LIMITATIONS ARE CHECKED AUTOMATICALLY AND ANY VIOLATION IS REPORTED IN A WARNING MESSAGE. THE LIMITATIONS ARE MAXIMUM COUPON RATE, MAXIMUM NUMBER OF DIFFERENT RATES, MAXIMUM NUMBER OF TIMES RATE MAY CHANGE, AND MAXIMUM RANGE BETWEEN HIGH AND LOW RATE.
- THE EFFECTIVE OR "CANADIAN" RATE OF INTEREST TO THE ISSUER IS COMPUTED FOR EACH BID.
- ACCRUED INTEREST PER DAY ON THE ENTIRE ISSUE IS COMPUTED FOR EACH BID.
- YIELD IS COMPUTED ON THE BASIS OF THE ACTUAL AMOUNT PRODUCTION DECREASES WHEN EACH YIELD IS INCREASED .05 PERCENT.
- THE WEIGHTED AVERAGE YIELD AND THE WEIGHTED AVERAGE MATURITY OF THE ENTIRE BOND ISSUE ARE COMPUTED.
- CONTROL AND DESCRIPTIVE INFORMATION IS PRINTED AT THE TOP OF EACH OUTPUT PAGE.
- A COMPLETE LISTING OF INPUT IS PRINTED, IF DESIRED.
- THIS LISTING INCLUDES A SCHEDULE OF BOND YIELD VALUES.
- COMPLETE DATA IS PROVIDED FOR EACH MATURITY ON AN OUTPUT REPORT.
- ABBREVIATED OUTPUT REPORTS MAY BE OBTAINED IF DESIRED.
- ALL ESSENTIAL INFORMATION CONCERNING THE BID IS SUMMARIZED AT THE BOTTOM OF EACH REPORT.
- AN INTEREST AND PRINCIPAL PAYMENT SCHEDULE IS PRINTED, IF DESIRED. THIS CASH-FLOW REPORT WILL BE OF PARTICULAR VALUE IN THE CALCULATION OF BIDS REQUIRING LEVEL-DEBT SERVICE. ANNUAL TOTALS MAY BE GENERATED ON EITHER A CALENDAR YEAR OR FISCAL YEAR BASIS.

BASIC DATA CONCERNING THE BOND OFFERING IS TRANSCRIBED FROM AN INFORMATION SHEET DESCRIBING THE ISSUE ONTO A WORKSHEET. THEN THE ANALYST DECIDES UPON A YIELD FOR BONDS OF EACH MATURITY, A SPREAD MARGIN WHICH COVERS THE EXPENSE AND PROFIT OF THE UNDERWRITER, AND A RANGE OF COUPON RATES ACCEPTABLE FOR EACH MATURITY. AFTER THESE DECISIONS HAVE BEEN MADE, THIS DATA IS INDICATED ON THE WORKSHEET. INPUT CARDS ARE THEN PUNCHED FROM THE DATA ON THE WORKSHEET AND ENTERED INTO THE COMPUTER. THE PROGRAM THEN PRODUCES THE DESIRED REPORTS.

PROGRAMMING SYSTEMS- IBM BASIC OPERATING SYSTEM/360 /8K DISK/ IS REQUIRED. ASSEMBLY - ASSEMBLER WITH INPUT/OUTPUT MACROS /8K DISK/ /360B-AS-309/, MONITOR SYSTEM - CONTROL PROGRAM /8K DISK/ /360B-CL-302/, CONSECUTIVE PROCESSING MACROS /360B-IO-303/, ISF MS MACROS /360B-IO-304/, UTILITY PROGRAMS /8K DISK/, CARD TO DISK, CLEAR DISK, /360B-UT-300/.

MINIMUM SYSTEM REQUIREMENTS - 32K SYSTEM/360 CENTRAL PROCESSING UNIT WITH DECIMAL INSTRUCTION SET, PRINTER /ANY OF THOSE AVAILABLE WITH 120 OR MORE PRINT POSITIONS/, CARD READER/PUNCH /ANY OF THOSE AVAILABLE/, DIRECT ACCESS STORAGE /ONE 2311 DISK STORAGE DRIVE/, AND CONSOLE TYPEWRITER FOR OPERATOR/PROGRAM COMMUNICATION /OPTIONAL/.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - APPLICATION DIRECTORY... USERS MANUAL E20-0228.
MACHINE READABLE - OBJECT DECKS AND A SAMPLE PROBLEM WHICH CAN BE ORDERED ON A 7- OR 9-TRACK DTR OR IN CARD FORM*.
OPTIONAL PROGRAM MATERIAL - SYSTEMS MANUAL... SOURCE DECKS ON EITHER 9- OR 7-TRACK DTR*.
* 9- AND 7-TRACK DTR ARE WRITTEN AT 800 DPI. THE DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK DTR IS USED. IF TRACK REQUIREMENT IS NOT SPECIFIED A 9-TRACK DTR WILL BE SUPPLIED. THE DTR WILL BE SUPPLIED BY PROGRAM INFORMATION.

360A-ME-06X IBM SYSTEM/360 BILL OF MATERIAL PROCESSOR
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-ME-06X

THE BILL OF MATERIAL PROCESSOR SUPPORTS THE FUNCTIONS OF CREATION AND MAINTENANCE OF THE PART NUMBER MASTER AND PRODUCT STRUCTURE FILES AS DESCRIBED BELOW. ALSO INCLUDED ARE THE AUTOMATIC CUSTOMIZING FEATURE, THE SEQUENTIAL PROCESSING MACROS AND THE SINGLE LEVEL PRODUCT STRUCTURE RETRIEVAL MACRO.

THE PACKAGE PROVIDES MANUFACTURING ORGANIZATIONS WITH-
1. EASY-TO-MODIFY PROGRAMS THAT ESTABLISH AND MAINTAIN BASIC INFORMATION FILES DESCRIBING THE STRUCTURE OF PRODUCTS AND THEIR MANUFACTURING PROCEDURES.
2. LOGIC DIAGRAMS EXPLAINING THE RETRIEVAL OF THIS INFORMATION IN FUNDAMENTAL APPLICATIONS.

THE SYSTEM/360 BILL OF MATERIAL IS A DIRECT ACCESS FILE-ORIENTED CONCEPT THAT REQUIRES THE PART NUMBER MASTER /INVENTORY-TYPE/ FILE TO BE ON-LINE SIMULTANEOUSLY WITH THE PRODUCT STRUCTURE FILE AND/OR THE STANDARD ROUTING FILE. ALL THREE COULD BE USED ON-LINE TO PRODUCE ALTERNATE MANUFACTURING WORK ORDERS AND COMPONENTS LISTS. THE WORK CENTER MASTER FILE CAN BE INTEGRATED BY THE USER WITH THE ROUTING FILE FOR A MACHINE LOADING APPLICATION. ALL FILES ARE CREATED, ADDED, DELETED AND REORGANIZED BY THE BILL OF MATERIAL PROCESSOR EMPLOYING ASSEMBLER LANGUAGE WITH INPUT/OUTPUT MACROS.

THE PACKAGE INCLUDES LOGIC DIAGRAMS FOR EIGHT FUNDAMENTAL CLASSIFICATIONS OF RETRIEVAL PROGRAMS THAT THE USER MAY DESIRE TO PREPARE. THEY ARE-
1. ONE-LEVEL BILL OF MATERIAL OR PARTS LIST.
2. NEXT ASSEMBLY WHERE-USED LISTING.
3. INDENTED PARTS LIST.
4. INDENTED WHERE-USED LIST.
5. SUMMARIZED WHERE-USED LIST.
6. SUMMARIZED IMPLSION.
7. MANUFACTURING ROUTINGS.
8. WORK CENTER WHERE USED.

THE PACKAGE IS DESIGNED SO THAT THE LOGIC DIAGRAMS CAN BE USED BY ANY CUSTOMER AS A GUIDE IN THE PREPARATION OF HIS OWN SET OF PROGRAMS.
THE LOGIC DIAGRAMS FOR CLASSIFICATIONS 5 AND 6 ARE PARTICULARLY SIGNIFICANT SINCE THEY ARE THE FRAMEWORK FOR TWO MAJOR

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APPLICATION AREAS THAT ARE VITAL TO THE PLANNING AND EXECUTION OF THE MANUFACTURING OPERATION. THE SUMMARIZED EXPLOSION LOGIC PROVIDES THE FRAMEWORK FOR PERFORMING A GROSS TO NET REQUIREMENTS GENERATION APPLICATION. THE SUMMARIZED IMPLSION LOGIC CAN BE EXPANDED TO SHOW THE EFFECT OF INCREMENTAL COST INCREASES OR DECREASES OF PARTS AND SUB-ASSEMBLIES ON TOP LEVEL PRODUCTS.

FEATURES- THIS PACKAGE HAS ALL THE FEATURES OF THE IBM 1440/1311 BILL OF MATERIAL PROCESSOR /1440-ME-02X/-

- PRODUCT STRUCTURE RECORDS ARE LINKED WITH PART NUMBER MASTER INVENTORY TYPE RECORDS ON DISK FILES.
- DISK FILE CHAINING IS USED TO ORGANIZE PRODUCT STRUCTURE DATA IN TWO INHERENT SEQUENCES.
 1. ASSEMBLY OR BILL OF MATERIAL SEQUENCE /I.E., LINKING THE COMPONENTS OF AN ASSEMBLY/. THE USER DETERMINES THE MAINTAINED SEQUENCE OF COMPONENTS WITHIN THE ASSEMBLY. TYPICAL SEQUENCES MIGHT BE COMPONENT PART NUMBER OR ENGINEERING DRAWING ITEM NUMBER.
 2. WHERE-USED SEQUENCE /I.E., LINKING THE USAGES OF A PART NUMBER ON HIGHER LEVEL ASSEMBLIES/. THIS CROSS-REFERENCED SEQUENCE ELIMINATES THE NEED TO /A/ MAINTAIN A DUPLICATE FILE IN WHERE-USED SEQUENCE, OR /B/ PERIODICALLY SORT AN ASSEMBLY DECK FILE TO WHERE-USED SEQUENCE FOR LISTING PURPOSES.
- RAW MATERIAL CAN BE INCLUDED IN THE PRODUCT STRUCTURE FILE, PROVIDING COMPLETE WHERE-USED CROSS REFERENCE OF EACH RAW MATERIAL NUMBER.
- USER DESIGNS HIS OWN RECORD LAYOUTS BY INCORPORATING HIS OWN INFORMATION PLUS CERTAIN REQUIRED DATA INTO PART NUMBER MASTER INVENTORY AND PRODUCT STRUCTURE RECORDS.
- LOW LEVEL CODING FORMATTING MAINTAINS THE PRODUCT STRUCTURE FILE.
- ASSEMBLY CONTINUITY IS VERIFIED. THIS FEATURE GUARANTEES THAT THE PRODUCT STRUCTURE RECORDS CAN BE EXPLODED.
- USER BUILDS HIS OWN ENGINEERING CHANGE PROCEDURE INTO THE FILE ORGANIZATION AND MAINTENANCE PROGRAMS.
- MODULAR IN DESIGN, THE SYSTEM PERMITS THE USER TO USE ONLY THOSE FEATURES THAT SUIT HIS NEEDS.
- THE ABILITY TO COMBINE PROGRAM MODULES SO THAT COMBINATIONS OF MAINTENANCE FUNCTIONS CAN BE PERFORMED AGAINST MULTIPLE FILES DURING THE SAME PROGRAM RUN.
- BI-DIRECTIONAL FILE CHAINS TO SPEED THE MAINTENANCE OF PART NUMBER WHERE-USED DATA. /WHERE RECORD A POINTS TO RECORD B, RECORD B ALSO POINTS TO RECORD A./
- WORK CENTER MASTER FILE ORGANIZATION AND MAINTENANCE CONTAINING ONE RECORD PER UNIQUE WORK CENTER AND INCLUDING BI-DIRECTIONAL WORK CENTER WHERE-USED CHAINS.
- STANDARD ROUTING FILE ORGANIZATION AND MAINTENANCE INCLUDING:
 - A. BI-DIRECTIONAL FILE CHAINS TO --
 1. SPECIFY THE LOGICAL SEQUENCE BETWEEN FABRICATION OR ASSEMBLY OPERATIONS.
 2. SPECIFY THE REVERSE SEQUENCE TO AID IN THE CALCULATION OF SCHEDULED START AND FINISH TIMES.
 3. SPEED THE MAINTENANCE OF THE FILE.
 - B. LINKS TO THE WORK CENTER MASTER FILE TO FACILITATE THE ACCUMULATION OF WORK LOADS.
 - C. LINKS TO AND FROM THE CORRESPONDING PART NUMBER MASTER RECORDS.
- A RUN ACTIVITY CONTROL TECHNIQUE TO AID IN RESTART AND RECONSTRUCTION AND TO FACILITATE ADDITIONAL RETRIEVAL FEATURES.
- RECORD COUNT FOR AUDIT AND CONTROL OF DIRECT ACCESS CHAINS. THE COUNT IS MAINTAINED IN THE PART NUMBER MASTER AND WORK CENTER MASTER FILES WHERE THE CHAINS ARE ANCHORED.
- TAILORING OF THE GENERALIZED SOURCE PROGRAMS TO THE SPECIFIC NEEDS OF EACH USER'S INSTALLATION THROUGH A SPECIAL CUSTOMIZING PROGRAM SUPPLIED WITH THE PACKAGE. THE USER HAS ONLY TO PREPARE A SET OF PARAMETER CARDS TO SPECIFY HIS NEEDS. THE CHOICE OF BOS/360 OR DOS/360 IS MADE IN ONE OF THESE PARAMETER CARDS.
- MACROS FOR SEQUENTIAL PROCESSING OF BOTH MASTER FILES. THIS CAPABILITY IS AVAILABLE FOR RETRIEVAL PROGRAMS WRITTEN IN EITHER ASSEMBLER LANGUAGE OR COBOL UNDER DOS/360.
- MACRO FURNISHING THE CAPABILITY TO RETRIEVE THE SET OF DISK FILE RECORDS WHICH COMPRISE A SINGLE LEVEL BILL OF MATERIAL OR A SINGLE-LEVEL PARTS WHERE-USED LIST. A MACRO ALSO PROVIDES THE CAPABILITY TO RETRIEVE A MANUFACTURING ROUTING OR A WORK CENTER WHERE-USED LIST. THIS CAPABILITY IS ALSO FURNISHED FOR EITHER COBOL UNDER DOS/360 OR ASSEMBLER LANGUAGE.

A THOROUGH KNOWLEDGE OF BILLS OF MATERIAL BY THE SYSTEM DESIGNER IS NECESSARY. TO IMPLEMENT THIS SYSTEM, THE FOLLOWING STEPS MUST BE TAKEN-

- DETERMINE THE FORMAT AND CONTENT REQUIREMENTS OF THE DISK FILE.
- WRITE RETRIEVAL PROGRAMS TO ACQUIRE INFORMATION FROM THE FILES.
- DESIGN INPUT CARD FORMAT.
- DESIGN AUDIT LIST PRINT FORMATS AND WRITE PRINT ROUTINES TO IMPLEMENT THEM.

REQUIRED PROGRAMMING SYSTEMS- THE BILL OF MATERIAL PROCESSOR OPERATES UNDER EITHER BOS/360 OR DOS/360.

THE BOS MODULES REQUIRED IN SUPPORT ARE-

CONTROL PROGRAM - 360B-CL-302, DIRECT ACCESS METHOD /DAM/, 360B-IO-305, ASSEMBLER 360B-AS-309, AND UTILITIES, GROUP 1 - 360B-UT-300.

THE DOS MODULES REQUIRED IN SUPPORT ARE-

ASSEMBLER BASIC MODULES 360N-AS-465, SYSTEM CONTROL AND BASIC INPUT/OUTPUT CONTROL SYSTEMS 360N-CL-453, DIRECT ACCESS METHOD MACROS 360N-IO-454 AND DISK UTILITIES, GROUP 1 360N-UT-461. THE USER MAY, AT HIS OWN OPTION, EMPLOY THE FOLLOWING ADDITIONAL DOS/360 MODULES - COBOL 360N-CB-452, CONSECUTIVE TAPE I/O CONTROL SYSTEM MACROS 360N-IO-456. USER DATA FILES CREATED UNDER BOS/360 MAY LATER BE MAINTAINED AND PROCESSED UNDER DOS/360.

MINIMUM SYSTEM REQUIREMENTS -

- FOR OPERATING UNDER BOS/360 -
 - 16K PROCESSING UNIT /MODEL D/ WITH DECIMAL ARITHMETIC /NO. 3237/, 1052 PRINTER-KEYBOARD WITH APPROPRIATE ATTACHMENT... CARD-READ-PUNCH /ANY SYSTEM/360 MODEL/...
- PRINTER /ANY SYSTEM/360 MODEL/... 2841 STORAGE CONTROL MODEL 1... 2311 DISK STORAGE DRIVES AS REQUIRED TO CONTAIN BOS/360 AND USERS DATA FILES. /MINIMUM OF TWO. AUTOMATIC REORGANIZATION OF THE PRODUCT STRUCTURE FILE WILL REQUIRE ONE DRIVE IN ADDITION TO THOSE REQUIRED TO CONTAIN THE PART NUMBER MASTER FILE AND THE PRODUCT STRUCTURE FILE./
- FOR OPERATING UNDER DOS/360 -
 - 32K PROCESSING UNIT /MODEL E/ WITH DECIMAL ARITHMETIC /NO. 3237/, 1052 PRINTER-KEYBOARD WITH APPROPRIATE ATTACHMENT... CARD-READ-PUNCH /ANY SYSTEM/360 MODEL/...

CONTINUED FROM PRIOR COLUMN--

PRINTER /ANY SYSTEM/360 MODEL/... 2841 STORAGE CONTROL MODEL 1... 2311 DISK STORAGE DRIVES AS REQUIRED TO CONTAIN DOS/360 AND USERS DATA FILES. /MINIMUM OF TWO. AUTOMATIC REORGANIZATION OF THE PRODUCT STRUCTURE FILE WILL REQUIRE ONE DRIVE IN ADDITION TO THOSE REQUIRED TO CONTAIN THE PART NUMBER MASTER FILE AND THE PRODUCT STRUCTURE FILE./

BASIC PROGRAM MATERIAL -

DOCUMENTATION - APPLICATION DIRECTORY... PROGRAMMERS MANUAL, H20-0246... OPERATORS MANUAL, H20-0254. MACHINE READABLE - THE MACROS, GENERALIZED SOURCE PROGRAMS SPECIALIZED UTILITY OBJECT PROGRAMS AND SAMPLE PROBLEM INPUT MAY BE OBTAINED ON ONE 9-TRACK OR ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE OR ONE 1316 DISK PACK.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT INDICATED 9-TRACK WILL BE FORWARDED. THE TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. IT MUST BE 2400 FEET IN LENGTH. ONLY THOSE USERS WITHOUT TAPE CAPACITY SHOULD ORDER THIS PROGRAM ON 1316 DISK PACK.

360A-ME-07X PRODUCT STRUCTURE RETRIEVAL ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360A-ME-07X

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THE GENERAL STRUCTURE OF THE RETRIEVAL PROGRAM CONSISTS OF A MAINLINE PHASE AND THREE RETRIEVAL PHASES... A SINGLE LEVEL RETRIEVAL PHASE... AN INDENTED RETRIEVAL PHASE... A SUMMARIZED RETRIEVAL PHASE. EACH PHASE INCORPORATING BOTH EXPLOSION AND IMPLSION LOGIC. ALL FILES ARE CREATED, ADDED, DELETED, AND REORGANIZED BY THE BILL OF MATERIAL PROCESSOR PROGRAM /360A-ME-06X/. THE PACKAGE INCLUDES LOGIC DIAGRAMS AND PROGRAMMING SUPPORT FOR THE THREE RETRIEVAL PHASES OF THE MODULE. THE DIAGRAMS SUPPLYING THE MASTER LOGIC DESCRIBE THE DECISIONS REQUIRED TO DETERMINE WHICH RECORDS TO ACCESS... ACCESSING OF THE RECORDS... CONTROLS... THE LOCATIONS IN THE LOGIC FLOW WHERE THE USER MAY INSERT HIS OWN PROCESSING SUBROUTINES.

FEATURES- THE MAINLINE PHASE IS THE CONTROL SECTION OF THIS RETRIEVAL SYSTEM. IT PERFORMS SYSTEM INITIALIZATION, OPENING FILES, UPDATING THE RUN NUMBER... READS THE FIRST REQUEST CARD /TYPE OF RETRIEVAL DESIRED/... FETCHES THE APPROPRIATE RETRIEVAL PROGRAM PHASE INTO MEMORY... PASSES CONTROL TO IT. THE RETRIEVAL PHASES OPERATE GENERALLY BY-READING THE PART NUMBER REQUEST CARD... RETRIEVING THE APPROPRIATE FILE RECORDS... PASSING CONTROL TO THE APPROPRIATE REPORT FORMATTING ROUTINE... READING THE NEXT PART NUMBER REQUEST CARD /IF ANY/... CONTINUING TO LINK TO AND FROM THE REPORT FORMATTING ROUTINE UNTIL A NEW RETRIEVAL REQUEST CARD IS ENCOUNTERED... RETURNING CONTROL TO THE MAINLINE. WHEN ONE OF THE PHASES ENCOUNTERS AN END-OF-JOB CARD, CONTROL IS ALSO RETURNED TO THE MAINLINE WHICH PERFORMS END-OF-JOB FUNCTIONS AND ENDS THE RUN. USE OF THE PRODUCT DATA CAN BE CLASSIFIED AS EXPLOSION /ASSEMBLY DATA/ OR IMPLSION /WHERE USED DATA/ BY USING THE ASSEMBLY-COMPONENT ADDRESSES /CHAINS/ OR WHERE-USED ADDRESSES /CHAINS/ CONTAINED IN THE MASTER AND PRODUCT STRUCTURE FILES.

THE FOLLOWING IS A DISCUSSION OF THE FEATURES OF EACH OF THE THREE RETRIEVAL PHASES WHICH PRODUCE THE FOLLOWING SIX REPORT TYPES-

- SINGLE LEVEL EXPLOSION- THE MOST FUNDAMENTAL TYPE OF RETRIEVAL PROGRAM USING PRODUCT STRUCTURE DATA IN ASSEMBLY COMPONENT SEQUENCE. THE PROCESSING OUTPUT IS A BILL OF MATERIAL. THE ASSEMBLY IS EXPLODED INTO DIRECT STRUCTURE FILES AND ASSOCIATED QUANTITIES PER ASSEMBLY. AN EXAMPLE OF A SINGLE LEVEL EXPLOSION APPLICATION THAT USES PRODUCT STRUCTURE DATA AS A FRAMEWORK FOR PROCESSING IS THE EXTENDED BILL OF MATERIAL.
- INDENTED EXPLOSION- A PROCESSING TECHNIQUE FOR COMPLETELY BREAKING A TOP-LEVEL OR OTHER MAJOR ASSEMBLY INTO ITS MULTIPLE SUB-ASSEMBLY LEVELS OR TIERS. THE TERM ,,INDENTED,, REFERS TO THE FORMAT OF THE PRINTED OUTPUT FREQUENTLY CALLED AN INDENTED PARTS LIST. IN ADDITION, THE ORDER QUANTITY OF THE STARTING ASSEMBLY IS MULTIPLIED BY EACH OF THE QUANTITY-PER-ASSEMBLY FIELDS GIVING THE TOTAL QUANTITY FOR EACH COMPONENT NEEDED. THIS REPORT SHOWS A LEVEL BY LEVEL RELATIONSHIP OF ALL PARTS WITHIN AN ASSEMBLY.
- SUMMARIZED EXPLOSION- PROVIDES GROSS REQUIREMENTS FOR END PRODUCTS AND SUBASSEMBLIES. THIS IS A PROCESSING TECHNIQUE FOR COMPLETELY BREAKING A TOP-LEVEL OR OTHER MAJOR ASSEMBLY INTO ALL ITS MULTIPLE SUB-ASSEMBLY LEVELS AND SUMMARIZING THE QUANTITIES OF EACH PART /SUB-ASSEMBLIES AND SIMPLE PARTS/ FOUND IN THE ENTIRE PRODUCT STRUCTURE. LOW LEVEL CODES ARE USED TO ELIMINATE RE-EXPLOSION OF MULTIPLE-USE ASSEMBLIES. THIS TYPE OF RETRIEVAL PROVIDES THE FRAMEWORK FOR PERFORMING A GROSS TO NET REQUIREMENTS APPLICATION.
- SINGLE LEVEL IMPLSION- THE MOST BASIC TYPE OF RETRIEVAL PROGRAM USING THE PRODUCT STRUCTURE DATA IN WHERE-USED SEQUENCE. THE OUTPUT OF THE PROCESSING IS A NEXT ASSEMBLY WHERE-USED LISTING.
- INDENTED IMPLSION- A PROCESSING TECHNIQUE FOR TRACING THE USAGES OF A GIVEN PART NUMBER IN ASSEMBLIES AT VARIOUS USAGE LEVELS, AND IN TURN, THE USE OF THE PART NUMBER IN HIGHER LEVEL ASSEMBLIES UP TO THE TOP ASSEMBLY LEVEL. THE TERM ,,INDENTED,, REFERS TO THE FORMAT OF THE PRINTED OUTPUT WHICH SHOWS A LEVEL BY LEVEL RELATIONSHIP THROUGH ALL PRODUCTS.
- SUMMARIZED IMPLSION- A MULTI-LEVEL PROCESSING TECHNIQUE THAT TOTALS THE DIRECT AND INDIRECT USAGES OF A PART NUMBER ON ALL HIGHER LEVEL ASSEMBLIES. THE PRINTED OUTPUT INDICATES ALL THE ASSEMBLIES THAT DIRECTLY OR INDIRECTLY CONTAIN THE PART NUMBER, INCLUDING THE TOTAL QUANTITY OF THE PART NUMBER IN EACH ASSEMBLY. THIS TYPE OF RETRIEVAL ALSO REFLECTS THE EFFECT OF INCREMENTAL COST INCREASES OR DECREASES OF SIMPLE PARTS OR SUB-ASSEMBLIES ON TOP LEVEL PRODUCTS.

USER RESPONSIBILITIES- A THOROUGH KNOWLEDGE OF THE SYSTEM/360 INVENTORY FILES... BILL OF MATERIAL PROCESSOR PROGRAM... CREATION OF MASTER CREATION OF PRODUCT STRUCTURE FILES... TAILOR SAMPLE FILE LAYOUTS TO INSTALLATION REQUIREMENTS.

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PROGRAMMING SYSTEMS- ASSEMBLER LANGUAGE WITH INPUT/OUTPUT MACROS UNDER SUPERVISION OF THE BASIC OPERATING SYSTEM/360 OR DISK OPERATING SYSTEM/360.

MINIMUM SYSTEM REQUIREMENTS- A 2030 D OR E CENTRAL PROCESSING UNIT /16K UNDER BOS CONTROL OR 32K UNDER DOS CONTROL/ WITH DECIMAL ARITHMETIC /NO. 3237/, 1051 ATTACHMENT /NO. 7915/... 1051 CONTROL UNIT MODEL N1 FOR CONSOLE PRINTER-KEYBOARD, FIRST PRINTER ATTACHMENT /NO. 4409/, CPU ATTACHMENT /NO. 3130/, FIRST PUNCH ATTACHMENT /NO. 4410/, FIRST READER ATTACHMENT /NO. 4411/... 1052 CONSOLE PRINTER-KEYBOARD /MODEL 8/... /ANY S/360 MODEL CARD READ PUNCH... /ANY S/360 MODEL PRINTER... 2841 STORAGE CONTROL MODEL 1... 2311 DISK STORAGE DRIVES MODEL 1 AS REQUIRED TO CONTAIN BASIC OR DISK OPERATING SYSTEM/360 AND USERS DATA FILES /MINIMUM OF 2/.

BASIC PROGRAM MATERIAL
DOCUMENTATION - APPLICATION DIRECTORY, PROGRAMMERS MANUAL/H20-0269... OPERATORS MANUAL/H20-0370.
MACHINE READABLE - SOURCE PROGRAM DECKS IN CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTES- IF THE TRACK REQUIREMENT IS NOT INDICATED, 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

C-01X COMMUNICATIONS CONTROL
OPTION PROGRAM /CCAP/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-5C-01X

THE COMMUNICATIONS CONTROL APPLICATION PROGRAM /CCAP/ IS A BASIC PROGRAMMING PACKAGE FOR IMPLEMENTING A COMPUTER CONTROLLED, STORE AND FORWARD COMMUNICATIONS NETWORK. NOT ONLY CAN YOUR CUSTOMERS USE THIS PACKAGE TO INSTALL A MODERN COMMUNICATIONS SYSTEM, BUT WITH THE IOCS OPTION USER PROGRAMS CAN NOW PROCESS VARIOUS APPLICATIONS CONCURRENT WITH MESSAGE SWITCHING. SOME EXAMPLES ARE- SALES ORDER ENTRY... DATA COLLECTION... ORDER PROCESSING... SPOOL.

THIS PROGRAM IS A COMPLETE PACKAGE WHICH PERFORMS THE BASIC FUNCTIONS OF A COMMUNICATIONS STORE AND FORWARD MESSAGE SWITCHING CENTER INCLUDING-

- TERMINAL POLLING, RECEIVE AND TRANSMISSION OF ALL TRAFFIC.
 - AUTOMATIC LOGGING AND ROUTING OF TRAFFIC.
 - MESSAGE SECURITY AND SEQUENCE NUMBER CHECKING UNDER COMPUTER CONTROL. DATE TIME STAMP AND SEQUENCE NUMBERING OF OUTPUT MESSAGES.
 - LINE AND NETWORK STATUS REPORTING.
 - MESSAGE RETRIEVAL PROCEDURES.
 - QUEUEING OF TRAFFIC FOR INOPERATIVE OR CLOSED TERMINALS AND AUTOMATIC TRANSMISSION UPON RECOGNITION OF TERMINAL-UP CONDITION.
 - LINE AND TERMINAL ERROR DETECTION AND REPORTING.
- PROVISION IS MADE FOR ACCOMMODATION OF SPECIFIC USER TERMINAL MNEMONICS /1-4 CHARACTERS/ AND TERMINAL POLLING CHARACTERS. HEADER ANALYSIS IS PROVIDED AS A SERIES OF MODULAR SUBROUTINES WHICH CAN BE UTILIZED AS REQUIRED BY THE SPECIFIC USERS HEADER FORMAT. THE MAXIMUM NUMBER OF TERMINALS THAT CAN BE CONTROLLED IS 259.
- IN ADDITION TO THESE FEATURES, THE PROGRAM INCLUDES PHYSICAL IOCS ROUTINES FOR 2400 SERIES MAGNETIC TAPE DRIVES, 2540 CARD READ PUNCH, 1403 PRINTER, AND 2311 DISK STORAGE. WHEN ADEQUATE CORE MEMORY IS AVAILABLE, A USER MAY UTILIZE THESE ROUTINES TO ADD HIS OWN PROCESSING PROGRAMS, WRITTEN IN S/360 BASIC ASSEMBLER, TO BE RUN IN CONJUNCTION WITH THE MESSAGE SWITCHING APPLICATION. I/O IS SCHEDULED BY THE CCAP MONITOR SUPERVISOR GIVES HIGHER PRIORITY TO THE MESSAGE SWITCHING FUNCTIONS, AND THEN ON A FIFO BASIS WITHIN AN INDIVIDUAL QUEUE PER DEVICE. DEVICES ARE HANDLED INDEPENDENTLY, ALLOWING OVERLAP OF OPERATIONS.
- THE PROGRAM IS DESIGNED TO OPERATE IN A SYSTEM/360 MODEL 30 PROCESSOR WITH 16K OR 32K POSITIONS OF CORE STORAGE. BEFORE ATTEMPTING TO INSTALL THE SYSTEM ON A LARGER MODEL SYSTEM/360, CONSULT THE SYSTEM FORM INFORMATION RELATIVE TO REQUIRED MODIFICATIONS IN ADDRESSING. ADDITIONAL MODIFICATIONS ARE NECESSARY IN THE DIAGNOSTIC ROUTINES FOR USE ON THE SYSTEM/360 MODEL 40.

FEATURES-

- EXTENSIVE SUPERVISOR CONTROLS TO DISPLAY TERMINAL STATUS, LINE QUEUES, ALTER TERMINAL AND LINE STATUS, SET POLLING LIMITS, START AND STOP SYSTEM.
- AUTOMATIC CHECKPOINT AND RESTART FACILITY.
- FACILITY FOR AUTOMATIC BROADCAST AND DISTRIBUTION MESSAGES.

CCAP INCLUDES ALL OF THE ERROR ROUTINES REQUIRED TO CONTROL A COMMUNICATIONS NETWORK AND IS, THEREFORE, A COMPLETE PACKAGE. THE PROGRAM IS ALSO MODULAR SO THAT ADDITIONS OF NON-SUPPORTED TERMINALS OR A NON-SUPPORTED HEADER FORMAT MAY BE INCLUDED WITH MINIMUM EFFORT.

THE USER MUST ADAPT THE PROGRAM TABLES TO MEET THE SPECIFIC REQUIREMENTS OF HIS NETWORK. THE BASIC FUNCTIONS OF RECEIVE AND SEND, LOG AND QUEUE, IDENTIFY AND ROUTE, CODE CONVERT, ANALYZE AND CONTROL ARE PROVIDED BY THE PROGRAM PACKAGE. INFORMATION CONCERNING TERMINAL MNEMONICS, POLLING CHARACTERS AND HEADER FORMATS IS INCLUDED IN THE PROGRAM BY THE USER. MESSAGES ARE PREPARED ON PAPER TAPE AT THE VARIOUS TERMINAL LOCATIONS AND ENTERED INTO THE TERMINAL. AFTER BEING POLLED BY THE COMPUTER, THE MESSAGE WILL ENTER THE SYSTEM, BE RECEIVED AND LOGGED ON DISK FILE STORAGE. THE MESSAGE HEADER WILL BE ANALYZED, ROUTING PERFORMED, TABLES UPDATED, OUTPUT HEADERS CONSTRUCTED AND QUEUED FOR TRANSMISSION. WHEN THE OUTPUT LINE IS AVAILABLE, THE MESSAGE WILL BE TRANSMITTED. INFORMATION CONCERNING LINE QUEUES AND TERMINAL LINE IS PRINTED OUT UPON DEMAND, UTILIZING SUPERVISOR CONTROLS. THE SOURCE LANGUAGE IS THE SYSTEM/360 BASIC ASSEMBLER.

MINIMUM SYSTEM REQUIREMENTS- A 2030 MODEL D PROCESSOR WITH DECIMAL ARITHMETIC, INTERVAL TIMER, 1050 ATTACHMENT AND ONE SELECTOR CHANNEL... A 1051 CONTROL UNIT MODEL N1 WITH CPU ATTACHMENT... FIRST PRINTER ATTACHMENT FEATURE AND A 1052 PRINTER-KEYBOARD MODEL 6... A 2841 STORAGE CONTROL UNIT AND AT LEAST ONE 2311 DISK STORAGE DRIVE /MAXIMUM 8/... A 2702 TRANSMISSION CONTROL UNIT WITH TELEGRAPH TERMINAL CONTROL - TYPE I FEATURE, TELEGRAPH LINE ADAPTERS, LINE EXPANSION FEATURE IF MORE THAN 15 LINES ARE REQUIRED AS WELL AS APPROPRIATE FEATURES FOR ATTACHMENT OF 45, 57, OR 75 BPS COMMUNICATION LINES. IT MUST BE REALIZED THAT IN ORDER TO ASSEMBLE CCAP, A SYSTEM CONFIGURATION IS REQUIRED THAT CONTAINS CARD AND TAPE EQUIPMENT.

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WHEN THE MINIMUM CONFIGURATION IS USED, 6,100 BYTES HAVE BEEN ALLOCATED FOR LINE TABLES AND BUFFERS AND TERMINAL TABLES. THE PROGRAM REQUIRES 194 BYTES PER LINE APPEARANCE AND 19 BYTES PER TERMINAL, THUS A TYPICAL CONFIGURATION OF 20 LINES AND 100 TERMINALS MAY BE ACCOMMODATED WITHIN THE 16K SYSTEM. VARIATIONS OF THE LINE AND TERMINAL CONFIGURATIONS MAY BE ACCOMMODATED WITHIN THE 6,100 BYTE CORE LIMITATION. EXPANSION OF CORE STORAGE AND APPROPRIATE FILE AND LINE TERMINATION CAPABILITIES WILL PERMIT SERVICING OF NETWORKS INCLUDING MORE THAN 20 LINES AND UP TO THE MAXIMUM OF 255 TERMINAL LOCATIONS. THE MAXIMUM NUMBER OF LINES THAT CAN BE ACCOMMODATED IN A 32K OR 64K SYSTEM WILL REQUIRE ANALYSIS OF PROCESS TIMINGS AND CHANNEL UTILIZATION. THE ADDITION OF THE IOCS ROUTINES MAKES LARGER SYSTEM CONFIGURATIONS VERY ATTRACTIVE. IT WILL BE NECESSARY TO MAKE INDIVIDUAL STUDIES OF CONFIGURATIONS WITH GREATER NUMBERS OF LINES, OR THROUGHPUT AND CHANNEL UTILIZATION CONSIDERATIONS WHICH MAY REQUIRE LARGER BUFFER AREAS.

TYPICAL CORE STORAGE ALLOCATIONS-	
16K MODEL 30	
10,300	MESSAGE SWITCHING /INCLUDES 2311 IOCS/
3,880	20 LINES
1,900	100 TERMINALS

16,080	TOTAL BYTES
32K MODEL 30	
10,300	MESSAGE SWITCHING
1,400	IOCS FOR 2400, 2540, AND 1403
7,760	40 LINES
3,800	200 TERMINALS
9,440	USER-WRITTEN PROGRAMS

32,700	TOTAL BYTES

BASIC PROGRAM MATERIAL -
DOCUMENTATION - APPLICATION DIRECTORY... APPLICATION DESCRIPTION, H20-0165... PROGRAMMERS MANUAL, H20-0244... OPERATORS MANUAL, H20-0245... SYSTEMS MANUAL.
MACHINE READABLE - ONE 9-TRACK OR ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ 800 CPI MAGNETIC TAPE CONTAINING BLOCKED SOURCE STATEMENT RECORDS.

NOTE- THE ONE REEL OF TAPE REQUIRED TO OBTAIN THIS PROGRAM MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. WHEN ORDERING THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.

360A-5E-15X IBM S/360 DATA CONVERSION UTILITY I PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-5E-15X

THE IBM SYSTEM/360 DATA CONVERSION UTILITY I PROVIDES AN EFFECTIVE AND FLEXIBLE CAPABILITY FOR CUSTOMERS TO CONVERT THEIR CURRENT IBM SYSTEM DATA FILES TO SYSTEM/360 DATA SETS. DESIGNED AS A GENERAL PURPOSE UTILITY PROGRAM UTILIZING CONTROL CARDS, THIS PROGRAM ACCEPTS AS INPUT DATA SETS IN THE FORMAT OF THE IBM 1620, 1401, 1440, 1460, 1410, AND 7010 SYSTEMS AND PRODUCES AS OUTPUT THE DATA FORMAT DESIRED FOR SYSTEM/360. THE PROGRAM ACCEPTS TO CARD, TAPE OR DASD DATA SETS FROM THE ABOVE CURRENT IBM SYSTEM /WHERE IBM WRITTEN DUMP OR UNLOAD ROUTINES HAVE BEEN USED WHEN COMING FROM A CURRENT IBM SYSTEM DASD/ AND WRITES THESE DATA SETS ON SYSTEM/360 TAPE OR DASD UNITS. THE PROGRAM HAS DATA TRANSFORMATION CAPABILITY THAT ALLOWS THE USER MAXIMUM FLEXIBILITY IN REFORMATIZING HIS DATA SETS FOR SYSTEM/360.

THIS PROGRAM ACCOMMODATES THE THREE GENERAL CONSIDERATIONS IN DATA CONVERSIONS-

- THE PHYSICAL CHARACTERISTICS OF THE I/O DEVICE /I.E., 7-TRACK TAPE FORMAT/.
- CURRENT IBM PROGRAMMING SYSTEMS STANDARDS /I.E., LABELS, PADDING, CHARACTERS, CHECKPOINT RECORDS, ETC./.
- OPTIMIZATION OF DATA REPRESENTATION /I.E., FLOATING POINT, BINARY, PACKED DECIMAL, ETC./.

THE DATA CONVERSION UTILITY I PROGRAM IS DESIGNED TO RUN UNDER CONTROL OF THE IBM BASIC OPERATING SYSTEM/360 /ON DISK/ AND WILL UTILIZE THE BASIC OPERATING SYSTEM INPUT AND OUTPUT CAPABILITY. DESCRIPTION- THE PROGRAM IS DIVIDED INTO TWO STEPS --

- ANALYZING THE CONTROL CARDS
- PERFORMING THE REQUESTED DATA CONVERSION

TO DESCRIBE ANY OF THE ALLOWABLE DATA CONVERSION OPTIONS, CONTROL CARDS ARE USED TO SPECIFY INFORMATION IN FOUR AREAS --

- THE INPUT DATA
- THE DESIRED MOVE/TRANSFORMATIONS...
- THE OUTPUT DATA...
- THE USER EXITS AND USER TASKS TO BE PERFORMED.

THE ANALYSIS OF THE CONTROL CARDS EXTRACTS THE DATA FROM CONTROL CARDS SO IT IS AVAILABLE TO THE MODULES AT EXECUTION TIME AND PROVIDES FOR USER EXITS AND TASKS THAT ARE SPECIFIED. THIS STEP ALSO ANALYZES THE MOVE/TRANSFORM INFORMATION FROM THE CONTROL CARDS TO PROVIDE THE NECESSARY INFORMATION TO RELATE THE INPUT AND OUTPUT FIELDS.

THE SECOND STEP IS DIVIDED INTO A MAXIMUM OF FOUR FUNCTIONS WITH OVERLAYS, AS REQUIRED, TO PERFORM THE DATA CONVERSION SPECIFIED IN THE CONTROL CARDS. THE FUNCTIONS AND THEIR OVERLAYS ARE --

- CURRENT IBM SYSTEM INPUT -- 14XX LABEL CHECKING... 14XX/7010 CHECKPOINT ELIMINATION... BCD FIXED LENGTH TAPE RECORDS /WITH OR WITHOUT PADDING/... BCD VARIABLE LENGTH TAPE RECORDS /14XX/... 1620/14XX DASD CARDS... CODE CONVERSION OF DUAL SPECIAL CHARACTERS... CARD DATA FILES.
- MOVE/TRANSFORM STRINGS -- THE MOVE/TRANSFORM STRINGS CAN BE USED FOR MULTIPLE RECORD TYPES OR COMBINING MULTIPLE RECORDS FROM THE INPUT DATA SET INTO ONE OUTPUT DATA RECORD.
- SYSTEM/360 OUTPUT -- SYSTEM/360 LABELS /VOLUME AND FILE/... FIXED LENGTH TAPE RECORDS /7- OR 9-TRACK/... VARIABLE LENGTH TAPE RECORDS /7- OR 9-TRACK/... DASD - INDEXED SEQUENTIAL, SEQUENTIAL, AND DIRECT ACCESS.
- USER MODULES -- USER ROUTINES AS REQUIRED /E.G., NON-STANDARD TAPE LABELS... /.

FEATURES-

- THE IBM SYSTEM/360 USERS ARE PROVIDED A FACILITY TO REDUCE SUBSTANTIALLY THE DIFFICULTIES, TIME, AND COSTS OF PERFORMING THE REQUIRED DATA CONVERSIONS.
- ALLOWS GREATER FLEXIBILITY FOR SCHEDULING USER MANPOWER IN NEW APPLICATION AREAS WHERE POTENTIAL SAVINGS MAY BE MADE. MORE OF THE MANPOWER CAN BE CONCENTRATED ON THE SOLUTION TO THE APPLICATION PROBLEM, RATHER THAN THE NATURE OF THE DATA.

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- ENCOURAGES THE USER TO WRITE HIS IBM SYSTEM/360 APPLICATION PROGRAMS USING RECORD ORGANIZATION AND DATA FORMATS WHICH WILL ALLOW HIM TO GIVE THE FULL ADVANTAGES OF THE IBM SYSTEM/360.
- ENCOMPASSES THE REQUIREMENTS OF CURRENT IBM SYSTEM USERS, REGARDLESS OF THE MACHINE SIZE AND CONFIGURATION.
- PROVIDES COMPARABLE DATA CONVERSION FACILITIES TO USERS, REGARDLESS OF THE IBM SYSTEM/360 LANGUAGE USED.
- DESIGNED FOR EASE OF USER IMPLEMENTATION, MODIFICATION, AND MAINTENANCE.
- ALLOWS THE USER TO READILY CHANGE HIS DATA STORAGE MEDIA.
- ALLOWS THE USER OF THE IBM SYSTEM/360 TO TAKE ADVANTAGE OF THE FLEXIBILITY PROVIDED BY DASD CAPACITIES AND CAPABILITIES.
- DESIGNED TO ALLOW THE USER TO TAILOR THE PROGRAM TO HIS INDIVIDUAL REQUIREMENTS THROUGH USER EXITS AND MODULAR PROGRAM ORGANIZATION.

USE- THE DATA CONVERSION UTILITY I PROGRAM IS DESIGNED FOR EASE AND FLEXIBILITY OF USE. THE PROGRAM RESIDES ON THE RELOCATABLE LIBRARY AND RUNS UNDER CONTROL OF THE IBM BASIC OPERATING SYSTEM/360 /8K DISK/. THE PROGRAM CAN BE USED FOR THE PERMANENT CONVERSION OF CURRENT IBM SYSTEM DATA SETS INTO SYSTEM/360 SETS AND CAN ALSO BE USED TO OBTAIN ,,LIVE,, TEST DATA FROM CURRENT IBM SYSTEMS FOR USE IN TESTING SYSTEM/360 APPLICATION PROGRAMS. SINCE INPUT DATA MAY BE ON EITHER 7- OR 9-TRACK TAPE, CUSTOMERS WHOSE INITIAL CONVERSION TO SYSTEM/360 IS PLANNED AROUND EMULATION WILL BE ABLE TO USE THE DATA CONVERSION UTILITY I PROGRAM TO CONVERT THEIR EVEN PARITY, AND BCD 9-TRACK EMULATOR DATA SETS WHEN THEY CONVERT THEIR PROGRAMS TO SYSTEM/360. THE SPECIFIC DATA CONVERSION REQUIRED ON A DATA SET IS INDICATED BY CONTROL CARDS AS FOLLOWS --

INPUT- SPECIFIC DESCRIPTION OF THE CURRENT IBM SYSTEM INPUT DATA SET: DASD, 7- OR 9-TRACK TAPE, RECORD FORM... /.
TAPE LABELS, RECORD LENGTH, BLOCK LENGTH... /.
MOVE/
TRANSFORM- RELATIVE LOCATION, SIZE, AND TYPE OF INPUT FIELD AND ITS CORRESPONDING OUTPUT FIELDS RELATIVE LOCATION, SIZE, AND TYPE.
OUTPUT- SPECIFIC DESCRIPTION OF THE SYSTEM/360 OUTPUT DATA SET: DASD, 7- OR 9-TRACK TAPE, RECORD FORM... /.
USER- SPECIFIED EXITS IN THE PROGRAM TO BE ACTIVATED AND THE NAME OF THE USER'S TASK TO WHICH THE PROGRAM IS TO PASS CONTROL WHEN THE EXIT IS TAKEN.

THE INSTALLATION STANDARDS FOR ANY OR ALL CONTROL CARDS, EXCEPT THE MOVE/TRANSFORM CARDS CAN BE SET BY THE INSTALLATION WHEN THE LIBRARY IS CREATED. ONLY THOSE CONTROL CARDS AND PARAMETERS USED AS INPUT DURING EXECUTION WILL CHANGE THIS STATUS TO REFLECT THE INFORMATION NOT STANDARD TO THE INSTALLATION /I.E., RECORD SIZE, BLOCK SIZE, ETC./.
THE PROGRAM IS DESIGNED TO ALLOW EASE OF CUSTOMER MODIFICATIONS. USER EXITS ARE PROVIDED FOR NON-STANDARD CURRENT SYSTEM LABELS ON INPUT, NON-STANDARD SYSTEM/360 LABELS ON OUTPUT, AND BEFORE EACH FUNCTION WITHIN THE PROGRAM TO ALLOW THE USER TO PERFORM THE FUNCTION OR CHANGE THE METHOD OF PERFORMING THE FUNCTION /I.E., THE USER COULD BYPASS THE NORMAL INPUT GET /LOCATE/ ON THE CURRENT IBM SYSTEM DATA SET/. WHEN USER TASKS ARE INDICATED, THE USER TASK/S/ AND THE DATA CONVERSION PROGRAM WILL RESIDE IN STORAGE TOGETHER.

PROGRAMMING SYSTEMS- THE DATA CONVERSION UTILITY I IS PROGRAMMED USING THE IBM BASIC OPERATING SYSTEM/360 ASSEMBLER WITH INPUT/OUTPUT MACROS /8K DISK/ AS DESCRIBED IN C24-3361.

MACHINE CONFIGURATION- AN IBM SYSTEM/360 MODEL C30 /8K/ OR ABOVE WITH DECIMAL ARITHMETIC /NO. 3237/.
THE BASIC OPERATING SYSTEM/360 /8K DISK/ REQUIREMENTS OF DEVICES FOR SYSTEM RESIDENCE AND SYSTEM INPUT ARE NECESSARY. IN ADDITION, INPUT/OUTPUT DEVICES, AS REQUIRED, ARE NEEDED FOR THE FOLLOWING --
- ONE OR TWO 2400 SERIES TAPE DRIVES FOR THE INPUT DATA SET.
- 2560/2501 FOR 1620/14XX DASD OR OTHER DATA CARD INPUT.
- ONE OR TWO 2400 SERIES TAPE DRIVES FOR THE OUTPUT DATA SET.
- ONE OR MORE IBM 2311/S FOR THE DASD OUTPUT DATA SET.

NOTE- 2400 SERIES TAPE DRIVES CAN BE 9-TRACK UNLESS THEY INTERFACE WITH 729 TAPE DRIVES IN WHICH CASE THE 7-TRACK HEAD AND 7-TRACK FEATURE ARE REQUIRED.
WHEN ORDERING THIS PROGRAM, 7- OR 9-TRACK TAPE MUST BE INDICATED ON THE PROGRAM REQUEST CARD. IF NOT SPECIFIED, 9-TRACK TAPE WILL BE SUPPLIED. THE DATA CONVERSION FEATURE IS REQUIRED FOR 7-TRACK. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

BASIC PROGRAM MATERIAL - DOCUMENTATION - APPLICATION DIRECTORY... APPLICATION DESCRIPTION H20-0194... PROGRAMMERS MANUAL H20-0232... OPERATORS MANUAL H20-0233.
MACHINE READABLE - OBJECT PROGRAM IS AVAILABLE ON 7-OR 9-TRACK DTR, OR IN PUNCHED CARDS.

OPTIONAL PROGRAM MATERIAL - SOURCE PROGRAMS AND SAMPLE PROBLEMS IN CARD-IMAGE FORM ARE AVAILABLE ON A 7- OR 9-TRACK DTR...
- SYSTEMS MANUAL.
IF THE TRACK REQUIREMENT IS NOT SPECIFIED, A 9-TRACK TAPE WILL BE SUPPLIED.
THE DTR /DISTRIBUTION TAPE REEL/ WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT- NO TAPE SUBMITTAL IS REQUIRED.

360A-SE-19X 1400 AUTOCODER TO COBOL
CONVERSION AID PROGRAM /ACCAP/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-19X

ACCAP IS A SYSTEM/360 APPLICATION PROGRAM WHICH ACCEPTS AS INPUT SOURCE STATEMENTS WRITTEN IN AUTOCODER OR SPS FOR THE 1401, 1410, 1440, 1460 AND 7010 SYSTEMS. IT PRODUCES SYSTEM/360 COBOL STATEMENTS WHEN POSSIBLE AND DIAGNOSTIC MESSAGES IN THE CASE WHERE THE PROGRAM IS UNABLE TO COMPLETE THE TRANSLATION. ACCAP PERFORMS THE CONVERSION ON A STATEMENT-FOR-STATEMENT BASIS. THEREFORE, THE GENERATED CODE MAY NOT BE AS OPTIMUM AS COBOL CODING WRITTEN EXPRESSLY FOR SYSTEM/360. WHERE THE PROGRAM IS UNABLE TO TRANSLATE THE AUTOCODER /SPS/ SOURCE STATEMENT, IT WILL PROVIDE A DIAGNOSTIC MESSAGE. THUS A MANUAL CODING EFFORT IS REQUIRED TO COMPLETE THE NEW COBOL SOURCE PROGRAM PRIOR TO ITS COMPILATION AND TESTING.

FEATURES- MACHINE ASSISTED CONVERSION OF AUTOCODER /SPS/ PROGRAM TO A PROBLEM ORIENTED LANGUAGE... GENERATES COBOL STATEMENTS USING THE SAME SYMBOLIC LABELS OF THE AUTOCODER PROGRAM, SUPPLEMENTED WITH INFORMATION INDICATING THEIR ORIGINAL USE... ALL AUTOCODER COMMENTS ARE INCLUDED ON THE

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COBOL LISTING AND COMMENT CARDS BECOME COBOL NOTES IN THE NEW SOURCE DECK... THE OUTPUT LISTING ALLOWS A PROGRAMMER TO RELATE THE ORIGINAL AUTOCODER STATEMENTS TO THE GENERATED COBOL STATEMENTS... DIAGNOSTICS, PROVIDED ON THE OUTPUT LISTING, HIGHLIGHT THE SPECIFIC STATEMENTS WHICH REQUIRE USER ATTENTION... RETENTION OF THE ORIGINAL PROGRAM LOGIC ALLOWS THE USER TO RELATE THIS LOGIC TO THE NEW COBOL PROGRAM... NO USER MODIFICATIONS TO THE AUTOCODER SOURCE PROGRAMS ARE REQUIRED... TESTING OF THE NEW COBOL PROGRAM IS FACILITATED BY THE USE OF THE GENERATED CROSS-REFERENCE LISTING... PRODUCES PROPERLY STRUCTURED COBOL DIVISIONS IN SEQUENCE AND CREATES A SYNTACTICALLY CORRECT COBOL SOURCE DECK. ACCAP CONTAINS ITS OWN CONTROL PROGRAM WHICH WAS ADAPTED FROM OS/360. THIS CONTROL PROGRAM IS INDEPENDENT OF THE USERS SYSTEM/360 OPERATING SYSTEM AND ALLOWS AUTOCODER OR SPS PROGRAMS OR BOTH TO BE STACKED FOR INPUT.

MACHINE REQUIREMENTS- A SYSTEM/360 MODEL 640 /131K/ WITH DECIMAL ARITHMETIC... 1052 PRINTER-KEYBOARD MODEL 7... 2540 CARD READ PUNCH MODEL 1... 1403 PRINTER... TWO 2311 DISK STORAGE DRIVES.
THE MINIMUM CONFIGURATION ACCEPTS AUTOCODER OR SPS SOURCE DECKS OF UP TO APPROXIMATELY 6,000 CARDS... SOURCE DECKS UP TO 10,000 CARDS CAN BE HANDLED BY ADDING TO THE MINIMUM CONFIGURATION ONE 2311 DISK STORAGE DRIVE OR TWO 2400 TAPE DRIVES. THE SAME EC LEVELS REQUIRED FOR OS/360 ARE REQUIRED FOR EXECUTION OF ACCAP.

BASIC PROGRAM MATERIAL DOCUMENTATION - APPLICATION DIRECTORY... PROGRAMMERS MANUAL /Y20-0105/... OPERATORS MANUAL /Y20-0106/.
MACHINE READABLE THE DUMP/RESTORE IMAGE OF ACCAP SYSTEM PACK ON ONE 9-TRACK /800 BPI OR 1600 BPI/ TAPE, ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE, OR ONE 1316 DISK PACK.

NOTES- THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK 800 BPI WILL BE FORWARDED.

360A-SE-20X SYSTEM/360 DATA CONVERSION
UTILITY II /SEQUENTIAL/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-20X

DATA CONVERSION UTILITY II PROVIDES AN EFFECTIVE AND FLEXIBLE CAPABILITY FOR USERS TO CONVERT THEIR CURRENT IBM SYSTEM DATA FILES TO SYSTEM/360 DATA SETS. THE PROGRAM IS DESIGNED TO RUN UNDER THE CONTROL OF THE IBM OPERATING SYSTEM/360. DESIGNED AS A GENERAL-PURPOSE PROGRAM, IT WILL ACCEPT, AS INPUT, DATA SETS IN THE FORMAT FOR USE WITH THE IBM 705/1410/7010 AND 7000 SERIES SYSTEMS... SYSTEM/360 DATA SETS ARE ALSO ACCEPTED AS INPUT AS INDICATED BELOW. THE PROGRAM PRODUCES AS OUTPUT THE DATA FORMAT DESIRED FOR SYSTEM/360 TAPE OR DASD. THE PROGRAM HAS DATA TRANSFORMATION CAPABILITY THAT ALLOWS THE USER FLEXIBILITY IN ,,RESYSTEMATIZING,, HIS DATA SETS FOR SYSTEM/360.

THE DATA CONVERSION UTILITY II PROGRAM ACCOMMODATES THE THREE GENERAL CONSIDERATIONS IN DATA CONVERSIONS-
1. THE PHYSICAL CHARACTERISTICS OF THE I/O DEVICE /I.E., 7-TRACK TAPE FORMAT/.
2. CURRENT IBM PROGRAMMING SYSTEMS STANDARDS /I.E., LABELS, PADDING CHARACTERS, CHECKPOINT RECORDS, ETC./.
3. OPTIMIZATION OF DATA REPRESENTATION /I.E., FLOATING POINT, BINARY, PACKED DECIMAL, ETC./.

DATA CONVERSION UTILITY II IS A SET OF SPECIAL-PURPOSE MACROS, SUBROUTINES, AND MODULES. THESE MAY BE COMBINED IN A LARGE VARIETY OF WAYS TO CREATE A SPECIFIC DATA CONVERSION PROGRAM THAT MEETS THE EXACT REQUIREMENTS OF THE USERS DATA SET TO BE CONVERTED FROM CURRENT IBM SYSTEM FORMATS TO SYSTEM/360 FORMATS. THERE ARE TWO STEPS INVOLVED IN USING THE DATA CONVERSION UTILITY II PROGRAM.
1. CREATING A SPECIFIC DATA CONVERSION UTILITY II PROGRAM.
2. EXECUTING THIS SPECIFIC DATA CONVERSION UTILITY II PROGRAM.

TO PERFORM THE FIRST STEP, THE USER CREATES A DATA CONVERSION UTILITY II CONTROLLER BY COMBINING IN ASSEMBLY LANGUAGE -- THREE CONTROLLER MACROS... DATA MOVE/TRANSFORM MACROS AS REQUIRED TO PERFORM FIELD TRANSFORMATIONS... TEST MACROS AS REQUIRED FOR RECORD SELECTION, ETC... A COMMON TABLE MACRO THAT PROVIDES SPECIFIC INFORMATION ABOUT THE INPUT AND OUTPUT FILES THAT CANNOT BE FURNISHED VIA THE DD CARD, SUCH AS 7070/7074 FORM 3 RECORDS 35 WORDS OR LESS IN SIZE, ETC... USER CODE AS REQUIRED. THE CONTROLLER IS COMBINED WITH AN INPUT MODULE AND AN OUTPUT MODULE BY USE OF THE LINKAGE EDITOR TO CREATE THE UNIQUE DATA CONVERSION UTILITY II PROGRAM. THE SECOND STEP IS PERFORMED BY EXECUTING THE UTILITY PROGRAM CREATED IN STEP ONE. THIS IS DONE BY PROVIDING THE IBM OPERATING SYSTEM/360 WITH THE NECESSARY JOB CONTROL CARDS AND THE DATA SET TO BE CONVERTED. DURING PROGRAM EXECUTION, OPERATING SYSTEM/360 CAN MAKE USE OF A SET OF MODULES PROVIDED WITH THIS PROGRAM TO SIMPLIFY PROCESSING OF CURRENT IBM SYSTEM STANDARD LABELS ON INPUT TAPES, WHICH ARE CONSIDERED NON-STANDARD BY SYSTEM/360. IN ADDITION, LINKAGE IS PROVIDED TO USER-WRITTEN HEADER AND TRAILER LABEL MODULES IF PROCESSING OF CURRENT IBM SYSTEM NON-STANDARD LABELS IS REQUIRED. THESE LABEL CHECKING MODULES ALSO PROVIDE LINKAGE FOR USER-WRITTEN LABEL CHECKING MODULES.

INPUT MODULE- FOR A PARTICULAR DATA CONVERSION RUN, THE INPUT MODULE THAT IS BEST SUITED TO PROCESS THE INPUT DATA FILE IS SELECTED FROM --

- CARD DATA FILE INPUT- THESE MODULES READ DATA CARDS ON AN 80/80 BASIS. THEY ARE INTENDED TO ASSIST IN CONVERTING CARD DATA FILES, SUCH AS TUB FILES, TO SYSTEM/360 TAPE OR DASD DATA SETS. THERE ARE TWO CARD INPUT MODULES- ONE IS PROVIDED TO PROCESS HOLLERITH/EBDCOD CARDS, AND THE OTHER HANDLES COLUMN BINARY CARD INPUT.
- 705/1410/7010/7000 BCD VARIABLE-LENGTH TAPE RECORD INPUT- THREE TYPES OF MODULES ARE PROVIDED TO GET EVEN-PARITY BCD VARIABLE-LENGTH RECORDS WRITTEN ON 7- OR 9-TRACK TAPE. THE FIRST TYPE LOCATES BLOCKED OR UNBLOCKED LOGICAL RECORDS WHOSE LENGTH IS ESTABLISHED BY TERMINAL RECORD MARKS. THE SECOND LOCATES BLOCKED OR UNBLOCKED LOGICAL RECORDS OF THE SIZE SPECIFIED BY A BCD LENGTH COUNTER WITHIN THE LOGICAL RECORD. THE THIRD WILL LOCATE AN UNBLOCKED LOGICAL RECORD WHERE THE RECORD REQUIRES NEITHER A TERMINAL RECORD MARK NOR A BCD LENGTH COUNTER. ALL MODULE TYPES WILL BYPASS APPLICABLE CHECKPOINT RECORDS.

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- BCD FIXED-LENGTH TAPE RECORD INPUT- THIS MODULE WILL GET EVEN-PARITY BCD FIXED-LENGTH RECORDS WRITTEN ON 7- OR 9-TRACK TAPE. INTERMIXED CHECKPOINT RECORDS OR SEGMENT MARK RECORDS WILL BE DELETED. THE INPUT TAPE MAY BE ZERO-SUPPRESSED OR NON-ZERO-SUPPRESSED.
- MIXED MODE TAPE RECORD INPUT- THIS MODULE WILL GET ALL BINARY OR INTERMIXED EVEN-PARITY BCD RECORDS AND ODD-PARITY BINARY RECORDS. RECORDS MAY BE EITHER VARIABLE-LENGTH UNBLOCKED OR FIXED-LENGTH BLOCKED OR UNBLOCKED.
- SEQUENTIAL SYSTEM/360 TAPE/DASD RECORD INPUT- THIS MODULE WILL GET RECORDS FROM ANY SYSTEM/360 SEQUENTIAL DATA SET. RECORDS MAY BE EITHER FIXED OR VARIABLE, BLOCKED OR UNBLOCKED.

OUTPUT MODULES-

- SYSTEM/360 SEQUENTIAL TAPE/DASD OUTPUT- FIXED OR VARIABLE-LENGTH, BLOCKED OR UNBLOCKED LOGICAL RECORDS CAN BE CREATED ON SYSTEM/360 TAPE OR DASD WITH THIS MODULE. THE DATA RECORDS MAY THEN BE PROCESSED SEQUENTIALLY BY THE APPLICATION PROGRAM.
- SYSTEM/360 DIRECT ACCESS DASD OUTPUT- FIXED OR VARIABLE-LENGTH UNBLOCKED RECORDS CAN BE CREATED ON SYSTEM/360 DASD WITH THIS MODULE. THE BDM METHOD IS USED TO WRITE THE RECORDS, THEREFORE, IF BLOCKING OF RECORDS IS TO BE DONE, THE USER HAS TO SET THE BLOCKED PHYSICAL RECORD BEFORE CALLING THE DIRECT ACCESS OUTPUT MODULE.
- SYSTEM/360 INDEXED SEQUENTIAL DASD OUTPUT- FIXED-LENGTH, BLOCKED OR UNBLOCKED LOGICAL RECORDS CAN BE CREATED ON SYSTEM/360 DASD WITH THIS MODULE. THE RECORDS CAN THEN BE RETRIEVED SEQUENTIALLY OR DIRECTLY.

FEATURES-

- PROVIDES THE IBM SYSTEM/360 USERS WITH A FACILITY TO REDUCE SUBSTANTIALLY THE DIFFICULTIES, TIME, AND COSTS OF PERFORMING THE REQUIRED DATA CONVERSIONS.
- ALLOWS GREATER FLEXIBILITY FOR SCHEDULING USER MANPOWER IN NEW APPLICATION AREAS WHERE POTENTIAL SAVINGS MAY BE MADE. MORE OF THE MANPOWER CAN BE CONCENTRATED ON THE SOLUTION TO THE APPLICATION PROBLEM, RATHER THAN THE NATURE OF THE DATA.
- ENCOURAGES THE USER TO WRITE HIS IBM SYSTEM/360 APPLICATION PROGRAMS USING RECORD ORGANIZATION AND DATA FORMATS WHICH ARE OPTIMUM FOR THE IBM SYSTEM/360.
- ENCOMPASSES THE REQUIREMENTS OF CURRENT IBM SYSTEM USERS, REGARDLESS OF THE MACHINE SIZE AND CONFIGURATION.
- PROVIDES COMPARABLE DATA CONVERSION FACILITIES TO USERS, REGARDLESS OF THE IBM SYSTEM/360 LANGUAGE USED.
- IS DESIGNED TO ALLOW THE USER TO TAILOR THE PROGRAM TO HIS INDIVIDUAL REQUIREMENTS THROUGH MODULAR PROGRAM ORGANIZATION AND THE DATA MOVE/TRANSFER AND TEST MACROS. DATA CONVERSION UTILITY II, /SEQUENTIAL, DIRECT ACCESS/ RUNS UNDER CONTROL OF OPERATING SYSTEM/360. THE PROGRAM CAN BE USED FOR THE PERMANENT CONVERSION OF CURRENT IBM SYSTEM DATA SETS INTO SYSTEM/360 SETS AND CAN ALSO BE USED TO OBTAIN LIVE TEST DATA FROM CURRENT IBM SYSTEMS FOR USE IN TESTING SYSTEM/360 APPLICATION PROGRAMS. SINCE INPUT DATA MAY BE ON 7- OR 9- TRACK TAPE, USERS WHOSE INITIAL CONVERSION TO SYSTEM/360 IS PLANNED AROUND EMULATION WILL BE ABLE TO USE THE DATA CONVERSION UTILITY II PROGRAM TO CONVERT THEIR EVEN-PARITY BCD 9-TRACK EMULATOR DATA SETS WHEN THEY CONVERT THEIR PROGRAMS TO SYSTEM/360.

THE OBJECT DECKS AND THE MACRO DEFINITIONS WHICH MAKE UP PART OF THE DATA CONVERSION UTILITY II PACKAGE MUST BE CATALOGED IN A LINK LIBRARY AND THE MACRO LIBRARY RESPECTIVELY. USERS OF THE SEQUENTIAL VERSION MUST DELETE THE OLD DATA CONVERSION UTILITY II MACROS BEFORE CATALOGING THE NEW MACROS. THE NSL MODULES MUST BE CATALOGED IN THE SYSL-SYCLIB LIBRARY. THE USER THEN WRITES THE NECESSARY DATA CONVERSION UTILITY II MACRO STATEMENTS /AND USER ROUTINES IF REQUIRED/ TO SPECIFY THE DESIRED DATA CONVERSION PROGRAM. THE USER ALSO HAS TO SPECIFY IN THE LINKAGE EDITOR RUN WHICH INPUT AND OUTPUT MODULES TO INCLUDE.

THE PROGRAM IS WRITTEN IN THE IBM OPERATING SYSTEM/360 ASSEMBLER LANGUAGE AS DESCRIBED IN C28-6514. IT IS DESIGNED TO RUN UNDER CONTROL OF THE IBM OPERATING SYSTEM/360, AND USES THE OPERATING SYSTEM/360 INPUT/OUTPUT CAPABILITY.

MACHINE CONFIGURATION- A SYSTEM/360 MODEL 30 OR ABOVE WITH DECIMAL ARITHMETIC. STORAGE REQUIREMENTS ARE DEPENDENT ON THE SIZE OF THE IBM OPERATING SYSTEM/360 SUPERVISOR USED; THE DATA CONVERSION UTILITY MODULES SELECTED; THE MAXIMUM INPUT PHYSICAL RECORD SIZE; THE MAXIMUM OUTPUT PHYSICAL RECORD SIZE; THE MAXIMUM WORK AREA SIZE /REQUIRED FOR 7070 INPUT MODULE/, THE AREA USED FOR THE REQUESTED MOVE/TRANSFORMATIONS /INSTRUCTIONS, CONVERSION SUBROUTINES, SUBROUTINE LINKAGES, CONSTANTS AND LITERALS/, AND USER ROUTINES. THE OS/360 REQUIREMENTS FOR SYSTEM OPERATION AND PROGRAM ASSEMBLY MUST BE UTILIZED TO CREATE A SPECIFIC DATA CONVERSION UTILITY PROGRAM. FOR EXECUTING THE CREATED UTILITY, THE DEVICES FOR OPERATING SYSTEM/360 SYSTEM OPERATION ARE REQUIRED. IN ADDITION, THE FOLLOWING INPUT/OUTPUT DEVICES MAY BE USED-

- ONE 2400 SERIES TAPE DRIVE FOR THE INPUT DATA SET.
- 2540/2501 FOR DATA CARD INPUT.
- DASD FOR INPUT OF S/360 SEQUENTIAL DATA SET.
- ONE 2400 SERIES TAPE DRIVE FOR THE OUTPUT DATA SET.
- ONE DASD FOR THE OUTPUT DATA SET.

NOTE- THE 2400 SERIES TAPE DRIVES CAN BE 9-TRACK, UNLESS THEY INTERFACE WITH 729 TAPE DRIVES, IN WHICH CASE THE 7-TRACK READ/WRITE HEAD FEATURE AND A 7-TRACK COMPATIBILITY FEATURE ARE REQUIRED.

BASIC PROGRAM MATERIAL

DOCUMENTATION- PROGRAMMERS MANUAL, H20-0313... OPERATORS MANUAL, H20-0314... APPLICATION DIRECTORY... MACHINE READABLE - OBJECT CARDS, MACRO DEFINITION CARDS, SOURCE CARDS AND SAMPLE PROBLEMS ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL - ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF TAPE CONTAINING THE ASSEMBLY LISTINGS.

NOTE- WHEN ORDERING THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE PROVIDED.

DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED. THE TAPE REQUIRED TO OBTAIN THE OPTIONAL MATERIAL MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-SE-22X SYSTEM/360 FLOWCHART ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360A-SE-22X

SYSTEM/360 FLOWCHART IS A PROGRAM FOR GENERATING PRINTED PROGRAM FLOWCHARTS FROM STATEMENTS WRITTEN IN A SPECIALLY DESIGNED INPUT LANGUAGE. ONLY A GENERAL UNDERSTANDING OF FLOWCHARTING IS NEEDED BY THE USER OF THIS PROGRAM. IT CAN BE USED READILY BY NON-PROGRAMMERS AS WELL AS PROGRAMMERS. THE INPUT LANGUAGE IS EASY TO LEARN, SIMPLE TO USE, AND WILL DESCRIBE FLOWCHARTS FOR ANY SYSTEM. BENEFITS FROM USING THIS PROGRAM INCLUDE

- PROVIDING AN EASY-TO-USE METHOD OF PRODUCING FLOWCHARTS.
 - REDUCING TOTAL PROGRAM EFFORT BY MINIMIZING THE TIME REQUIRED FOR PRODUCING AND MAINTAINING NECESSARY PROGRAM DOCUMENTATION.
 - FACILITATING PROGRAM MAINTENANCE IN A DYNAMIC ENVIRONMENT BY PROVIDING A CROSS-REFERENCE LISTING WHICH GIVES ALL REFERENCES TO A BLOCK SHAPE.
 - PROVIDING WIDE FLEXIBILITY FOR DRAWING FLOWCHARTS TO SPECIFIC USER REQUIREMENTS.
 - PROVIDING FLOWCHART UNIFORMITY.
- ALTHOUGH THE INPUT LANGUAGE HAS BEEN SIMPLIFIED CONSIDERABLY AND IS ENTIRELY DIFFERENT, THE OUTPUT FORMAT IS SIMILAR TO THE 7070/74 AUTOCHART PROGRAM.

THE PROGRAM USES DATA PROCESSING METHODS TO FACILITATE THE PRODUCTION OF PROGRAM FLOWCHARTS AND CERTAIN OTHER GRAPHIC INFORMATION. THE USER PREPARES THE ORIGINAL INPUT IN SYSTEM/360 FLOWCHART LANGUAGE. THIS LANGUAGE IS VERY SIMPLE AND IS MACHINE INDEPENDENT. IT CAN BE USED TO PREPARE FLOWCHARTS FOR ANY SYSTEM. THE COMPUTER PROCESSES THIS INPUT TO PRODUCE A FILE OF CHARTS ON THE 1403 PRINTER. IF A FLOWCHART IS TO BE PRODUCED, IT WILL DESCRIBE THE TYPE OF BLOCKS, SYMBOLICALLY DIRECT NON-SEQUENTIAL FLOW, AND SUPPLY ANY OTHER INFORMATION DESIRED, SUCH AS LABELS, EXIT CONDITIONS, TEXT WITHIN BLOCKS, ETC. THE LANGUAGE CAN ALSO BE USED TO DESCRIBE LINES OTHER THAN FLOWLINES AND ANY OTHER TEXTUAL INFORMATION. THE FLOWCHART PAGES, EACH OF WHICH CAN BE MADE UP TO 50 BLOCKS, ARE PLANNED AUTOMATICALLY BY SYSTEM/360 FLOWCHART. FLOWLINES ARE DRAWN WHERE POSSIBLE, AND WHERE THEY CANNOT BE DRAWN, CONNECTORS ARE GENERATED. ALL BLOCK SHAPES USED IN SYSTEM/360 FLOWCHART ARE COMBINATIONS OF PRINTER CHARACTERS TO APPROXIMATE CONVENTIONAL FLOWCHART SYMBOLS. AN OPTION IS PROVIDED SO THAT EITHER THE AUTOCHART SYMBOLS OR THE FLOWCHART SYMBOLS FOR INFORMATION PROCESSING MAY BE SPECIFIED. THERE ARE SIX BASIC OPERATOR TYPES FOR INPUT, ONE IS REQUIRED FOR EVERY STATEMENT. THEY ARE-

1. HEADINGS, USED TO GENERATE NEW HEADINGS AND PAGE NUMBERS.
2. BLOCK-SHAPE OPERATORS TO DESIGNATE THE TYPE OF BLOCK DESIRED.
3. BRANCHING OR FLOWLINE CONTROL, TO DESIGNATE CONDITIONS AND SYMBOLIC LINE DESTINATIONS WHEN THE FLOW IS NON-SEQUENTIAL.
4. SPACING, USED TO SKIP BLOCKS OR COLUMNS OR EJECT A PAGE.
5. CURRENT OPERATORS TO ADD COMMENTS AND LINES.
6. END OF JOB OPERATOR, WHICH IS REQUIRED.

SYSTEM/360 FLOWCHART IS A MULTI-PHASE PROGRAM, THE OUTPUT OF EACH PHASE BECOMES INPUT TO A LATER PHASE. THE INPUT CAN BE CARDS OR TAPE IN CARD-IMAGE FORMAT. THE FINAL OUTPUT WILL BE PRINTED CHARTS OR CHARTS ON TAPE. IN ADDITION TO THE MACHINE-GENERATED FLOWCHARTS, THE OUTPUT WILL INCLUDE-

1. A DIAGNOSTIC LISTING OF THE ANALYZED SOURCE DECKS.
2. A LABEL TABLE LISTING.
3. A CROSS-REFERENCE LISTING.
4. VARIOUS ERROR REPORTS.
 - A. BLANK LABELS.
 - B. UNDEFINED LABELS.
 - C. DRAW ERRORS.
 - D. COMMENT ERRORS.

FEATURES-

- EASE IN PREPARATION OF INPUT DATA WHICH MAY BE IN FREE OR FIXED FORMAT.
- AUTOMATIC PAGE PLANNING FACILITIES.
- DIRECTION OF BRANCH FLOWLINES BY SYMBOLIC REFERENCE.
- STRIPING ANY BLOCK TO INDICATE SUBROUTINES.
- AUTOMATIC FOOTNOTING OF OVERFLOW BLOCK TEXT.
- UP TO THREE LINES /OF 120 CHARACTERS EACH/ OF HEADER INFORMATION.
- AUTOMATIC OR USER DESIGNATED PAGINATION OF PRINTED CHARTS.
- AUTOMATIC DATING OF CHARTS.
- SEQUENCED LABEL TABLE LISTING.
- CROSS-REFERENCE LISTING.
- HIGH QUALITY OUTPUT WITH POWERFUL LINE SEARCHING ABILITIES.
- ON AND OFF-PAGE CONNECTORS GENERATED AUTOMATICALLY.
- AUTOMATIC BRANCH TABLE GENERATION.
- REDUCED KEY PUNCHING REQUIREMENTS.
- EASY FLOWCHART MODIFICATION.
- AUTOCHART SYMBOLS OR THE FLOWCHART SYMBOLS FOR INFORMATION PROCESSING CAN BE SPECIFIED.
- UNRESTRICTED PLACEMENT OF LINES OR COMMENTS AT ANY LOCATION.

PROGRAMMING SYSTEMS- THE PROGRAM WILL OPERATE IN CONJUNCTION WITH THE IBM DISK OPERATING SYSTEM/360 /DOS/360/ AND IS USED TO PRODUCE FLOWCHARTS. THE SOURCE LANGUAGE IS DOS/360 ASSEMBLY LANGUAGE AND USES THE EBCDIC CHARACTER SET.

MINIMUM SYSTEM REQUIREMENTS- SYSTEM/360 MODEL E30 /32K/ WITH STANDARD INSTRUCTION SET... TWO 2311 DISK STORAGE DRIVES /ONE FOR SYSTEMS RESIDENCE AND ONE FOR WORK FILE/... ONE 2540 CARD READ PUNCH... ONE 1052 PRINTER-KEYBOARD... ONE 1403 PRINTER WITH 132 PRINT POSITIONS USING THE PN OR QN CHAIN ARRANGEMENT /PL/1/.

NOTE- IF A PN OR QN CHAIN IS NOT AVAILABLE, THE FOLLOWING DELIMITER CHARACTERS MAY EITHER NOT PRINT OR ELSE PRINT AS DIFFERENT CHARACTERS- PERCENT, COLON, SEMI-COLON AND NUMBER SIGN.

OPTIONAL DEVICES- ONE 2400 SERIES TAPE DRIVE FOR SYSTEM/360 FLOWCHART LANGUAGE INPUT, ONE 2400 SERIES TAPE DRIVE FOR OUTPUT.

BASIC PROGRAM MATERIAL

DOCUMENTATION - APPLICATION DIRECTORY-USERS MANUAL, H20-0293... OPERATORS MANUAL, H20-0294... MACHINE READABLE - OBJECT MODULES, SAMPLE CATALOG CONTROL CARDS, JOB CONTROL CARDS AND SAMPLE PROBLEM CARDS IN CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DOS/360 DATA CONVERSION FEATURE REQUIRED/ DTR.

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OPTIONAL PROGRAM MATERIAL - SYSTEMS MANUAL, Y20-0062...
SOURCE CARDS, ASSEMBLY LISTINGS AND FLOWCHARTS ON ONE
9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE.

NOTE- WHEN ORDERING BASIC OR OPTIONAL MATERIAL THE REQUESTOR
MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT
SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -
NO TAPE SUBMITTAL IS REQUIRED.
THE TAPE REQUIRED TO OBTAIN THE OPTIONAL MATERIAL MAY BE ORDERED
FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED
MUST BE 2400 FEET IN LENGTH.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-SE-23X SYSTEM/360 DATA CONVERSION AND LABEL PROCESSING SUBROUTINES

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-23X

THE DATA CONVERSION AND LABEL PROCESSING SUBROUTINES
PROVIDE CHARACTER TRANSLATION FROM ONE CHARACTER SET TO
ANOTHER CHARACTER SET. THEY ALSO PROVIDE CONVERSION FOR
FLOATING POINT, BINARY, ZONED DECIMAL, PACKED DECIMAL AND
DOUBLE DIGIT NUMBERS. CONVERSION SUBROUTINES OPERATE ON
CURRENT SYSTEM NUMBER REPRESENTATIONS TO PRODUCE SYSTEM/360
NUMBER REPRESENTATIONS AND ALSO PERFORM THE REVERSE CONVERSIONS,
I.E., SYSTEM/360 REPRESENTATIONS TO CURRENT SYSTEM
REPRESENTATIONS. THE LABEL PROCESSING SUBROUTINES PERFORM
READING AND CHECKING OF CURRENT SYSTEM STANDARD IBM LABELS.
THEY WILL ALSO GENERATE AND WRITE CURRENT SYSTEM STANDARD
IBM LABELS.

DATA FILES FROM THE FOLLOWING CURRENT SYSTEMS MAY BE PROCESSED--
- 1401, 1440, 1460, 1410, 7010.
- 1620.
- 709, 7080.
- 7070, 7072, 7074.
- 7040, 7044, 7090, 7094.

FEATURES--

- ALLOWS USER TO CONTINUE TO PROCESS CURRENT SYSTEMS FILES
ALONE OR MIXED WITH SYSTEM/360 FILES ON A SYSTEM/360.
- PROVIDES FACILITY FOR FILE INTERCHANGE BETWEEN CURRENT
SYSTEM AND SYSTEM/360.

TYPICAL USE OF THESE SUBROUTINES MIGHT INVOLVE THE GRADUAL
CONVERSION OF A LARGE CURRENT SYSTEM APPLICATION TO THE
SYSTEM/360, WHEREIN ONE OR MORE DATA FILES MUST BE SHARED
BETWEEN THE TWO COMPUTERS.
THE DATA CONVERSION SUBROUTINES MAY BE CALLED BY ASSEMBLY
LANGUAGE, COBOL, OR FORTRAN CALL STATEMENTS. THE LABEL
PROCESSING SUBROUTINES ARE IMPLEMENTED FOR USAGE AT THE
NON-STANDARD LABEL EXITS OF TOS/360 AND DOS/360 LOGICAL IOCS,
AND THE NON-STANDARD LABEL EXIT OF OS/360. READING AND WRITING
ARE RESPONSIBILITIES OF THE USER /WITH THE EXCEPTION OF
LABEL PROCESSING/ SINCE THE DATA AND CHARACTER TRANSFORMATION
PERFORMED BY THESE SUBROUTINES IS DONE WITH DATA AS IT APPEARS
IN STORAGE. THE SUBROUTINES ARE WRITTEN IN EITHER SYSTEM/360
ASSEMBLY LANGUAGE OR E LEVEL COBOL. THE SUBROUTINES MAY BE
ASSEMBLED OR COMPILED AND ENTERED INTO THE TOS/360 OR DOS/360 OR
OS/360 SUBROUTINE LIBRARY.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
ARE THE SAME AS THE MINIMUM SYSTEM CONFIGURATION FOR THE
OPERATING SYSTEM THAT IS USED. THE LABEL PROCESSING SUBROUTINES
REQUIRE AT LEAST ONE 2400 MAGNETIC TAPE UNIT, EITHER 9-TRACK OR
7-TRACK WITH THE COMPATIBILITY FEATURE, AND THE FLOATING POINT
SUBROUTINES REQUIRE THE FLOATING POINT INSTRUCTION SET. THE LABEL
ROUTINES REQUIRE THE DECIMAL ARITHMETIC FEATURE.

BASIC PROGRAM MATERIAL -

DOCUMENTATION - APPLICATION DIRECTORY... PROGRAM REFERENCE
MANUAL, H20-0319 /CONTAINS APPLICATION DESCRIPTION,
USERS AND OPERATORS INFORMATION/.
MACHINE READABLE - SOURCE AND OBJECT DECKS ON ONE 9-TRACK
OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL ONE 9-TRACK OR 7-TRACK /DATA
CONVERSION FEATURE REQUIRED/ REEL OF TAPE CONTAINING
LISTINGS AND FLOWCHARTS.

NOTE- WHEN ORDERING EITHER THE BASIC OR OPTIONAL MATERIAL THE
REQUESTOR MUST INDICATE EITHER 9-TRACK OR 7-TRACK. IF NOT
SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO
TAPE SUBMITTAL IS REQUIRED.
THE TAPE REQUIRED TO OBTAIN THE OPTIONAL MATERIAL MAY BE ORDERED
FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED
MUST BE 2400 FEET IN LENGTH.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-SE-26X SYSTEM/360 DATA CONVERSION UTILITY III

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-26X

THE IBM SYSTEM/360 DATA CONVERSION UTILITY III PROVIDES AN
EFFECTIVE AND FLEXIBLE CAPABILITY FOR CUSTOMERS TO CONVERT
THEIR CURRENT IBM SYSTEM DATA FILES TO SYSTEM/360 DATA SETS.
THIS GENERAL PURPOSE UTILITY PROGRAM ACCEPTS, AS INPUT,
DATA SETS IN THE FORMAT OF THE IBM 1620, 1400, AND 7000
SERIES SYSTEMS AND PRODUCES AS OUTPUT THE DATA FORMAT DESIRED
FOR SYSTEM/360. THE PROGRAM ACCEPTS CARD, TAPE, OR DASD
DATA SETS FROM THE ABOVE IBM SYSTEMS /WHERE IBM WRITTEN DUMP
OR UNLOAD ROUTINES HAVE BEEN USED WHEN COMING FROM A CURRENT
IBM SYSTEM DASD/ AND WRITES THESE DATA SETS ON SYSTEM/360
TAPE OR DASD UNITS. THE PROGRAM HAS DATA TRANSFORMATION
CAPABILITY THAT ALLOWS THE USER FLEXIBILITY IN
,,RESYSTEMATIZING,, HIS DATA SETS FOR SYSTEM/360. THE DATA
CONVERSION UTILITY III PROGRAM ACCOMMODATES THE THREE GENERAL
CONSIDERATIONS IN DATA CONVERSIONS--
- THE PHYSICAL CHARACTERISTICS OF THE I/O DEVICE /I.E.,
7-TRACK TAPE FORMAT, DELTA MODE CHANGE CHARACTER/.
- CURRENT IBM SYSTEMS SOFTWARE STANDARDS /I.E., LABELS,
PADDING CHARACTERS, CHECKPOINT RECORDS, ETC./.
- OPTIMIZATION OF DATA REPRESENTATION /I.E., FLOATING POINT,
BINARY PACKED DECIMAL, ETC./.

DATA CONVERSION UTILITY III IS A SET OF INTERDEPENDENT
MACRO DEFINITIONS WHICH MAY BE GENERATED IN A VARIETY OF
WAYS TO CREATE SPECIFIC DATA CONVERSION PROGRAMS THAT MEET THE
EXACT REQUIREMENTS OF THE USERS DATA SET. THE PROGRAM IS
DIVIDED INTO TWO STEPS--

CONTINUED FROM PRIOR COLUMN--

STEP 1- ASSEMBLING AND GENERATING A PROGRAM--
THE PARAMETERS OF THE MACRO STATEMENTS ARE USED TO SPECIFY
THE CHARACTERISTICS OF THE USERS DATA FILE TO BE CONVERTED
AND THE FORM OF THE CONVERTED OUTPUT. THE MACRO STATEMENTS
ARE THEN ASSEMBLED AND THE RESULTING OBJECT MODULES ARE THEN
COMBINED TO FORM A DATA CONVERSION PROCESSING TASK IN
LOADABLE FORM. THE SPECIFIC DATA CONVERSION REQUIRED ON A
DATA SET IS INDICATED BY MACRO PARAMETERS AS FOLLOWS--
INPUT SPECIFIC DESCRIPTION OF THE CURRENT IBM
SYSTEM INPUT DATA SET. /RECORD FORM,
TYPE OF TAPE LABELS, RECORD LENGTH, BLOCK
LENGTH.../.
MOVE/TRANSFORM RELATIVE LOCATION, SIZE, AND TYPE OF INPUT
FIELD AND ITS CORRESPONDING OUTPUT FIELDS
RELATIVE LOCATION, SIZE, AND TYPE.
OUTPUT SPECIFIC DESCRIPTION OF THE SYSTEM/360
OUTPUT DATA SET /RECORD FORM.../.
USER SPECIFIES EXITS IN THE PROGRAM THAT ARE
TO BE ACTIVATED AND THE NAME OF THE USERS
TASK TO WHICH THE PROGRAM IS TO PASS
CONTROL WHEN THE EXIT IS TAKEN.

STEP 2- PERFORMING THE DATA CONVERSION--
THE SECOND STEP CAN EXECUTE THE FOLLOWING FOUR FUNCTIONS
AS ORIGINALLY SPECIFIED IN THE MACRO STATEMENTS.

1. INPUT OF CURRENT IBM SYSTEM DATA--
- IBM STANDARD LABEL CHECKING /80, 84, AND 120 CHARACTER
LABELS/.
- CHECKPOINT ELIMINATION.
- BCD FIXED LENGTH TAPE RECORDS /WITH OR WITHOUT PADDING/.
- BCD VARIABLE LENGTH TAPE RECORDS /14XX/7080/.
- 7070/7074 TAPE FORM 1, 2, 3.
- 7040/7090 BINARY OR MIXED MODE TAPE.
- 1620/14XX DASD CARDS.
- CARD DATA FILES.
- CODE CONVERSION OF DUAL SPECIAL CHARACTERS.
2. PERFORMING MOVE/TRANSFORM STRING OPERATIONS--
THE MOVE/TRANSFORM CAN BE USED FOR MULTIPLE RECORD
TYPES OR TO COMBINE MULTIPLE RECORDS FROM THE INPUT
DATA SET INTO ONE OUTPUT DATA RECORD.
3. OUTPUT TO SYSTEM/360 DATA SETS--
FIXED LENGTH TAPE RECORDS /7- OR 9-TRACK/.
FIXED LENGTH DASD RECORDS.
VARIABLE LENGTH TAPE RECORDS /7- OR 9-TRACK/.
VARIABLE LENGTH DASD RECORDS.
4. EXECUTING USER MODULES--
USER ROUTINES AS REQUIRED /E.G., NON-STANDARD TAPE LABELS.../.
USER EXITS ARE PROVIDED FOR SUCH SITUATIONS AS NON-STANDARD
CURRENT SYSTEM LABELS ON INPUT. WHEN USER TASKS ARE
INDICATED, THE USER TASK/S/ AND THE DATA CONVERSION
PROGRAM WILL RESIDE IN STORAGE TOGETHER.

FEATURES--

- THE IBM SYSTEM/360 USERS ARE PROVIDED A FACILITY TO REDUCE
SUBSTANTIALLY THE DIFFICULTIES, TIME, AND COSTS OF PERFORMING
THE REQUIRED DATA CONVERSIONS.
- ALLOWS GREATER FLEXIBILITY FOR SCHEDULING USER MANPOWER IN
NEW APPLICATION AREAS WHERE POTENTIAL SAVINGS CAN BE MADE.
MORE OF THE MANPOWER CAN BE CONCENTRATED ON THE SOLUTION TO
THE APPLICATION PROBLEM, RATHER THAN THE NATURE OF THE
DATA.
- ENCOURAGES THE USER TO WRITE HIS IBM SYSTEM/360 APPLICATION
PROGRAMS USING RECORD ORGANIZATION AND DATA FORMATS WHICH
ARE OPTIMUM FOR THE IBM SYSTEM/360.
- ENCOMPASSES THE REQUIREMENTS OF CURRENT IBM SYSTEM USERS,
REGARDLESS OF THE MACHINE SIZE AND CONFIGURATION.
- PROVIDES COMPARABLE DATA CONVERSION FACILITIES TO USERS,
REGARDLESS OF THE IBM SYSTEM/360 LANGUAGE USED.
- DESIGNED FOR EASE OF USER IMPLEMENTATION.
- ALLOWS THE USER TO READILY CHANGE HIS DATA STORAGE MEDIA.
- DESIGNED TO ALLOW THE USER TO TAILOR THE PROGRAM TO HIS
INDIVIDUAL REQUIREMENTS THROUGH USER EXITS AND MODULAR
PROGRAM ORGANIZATION.

DATA CONVERSION UTILITY III RUNS UNDER CONTROL OF TOS/360 OR
DOS/360. THE PROGRAM CAN BE USED FOR THE PERMANENT CONVERSION
OF CURRENT IBM SYSTEM DATA SETS INTO SYSTEM/360 DATA SETS AND
CAN ALSO BE USED TO OBTAIN ,,LIVE,, TEST DATA FROM CURRENT
IBM SYSTEMS FOR USE IN TESTING SYSTEM/360 APPLICATION PROGRAMS.
SINCE INPUT DATA MAY BE ON 7- OR 9-TRACK TAPE, CUSTOMERS
WHOSE INITIAL CONVERSION TO SYSTEM/360 IS PLANNED AROUND
EMULATION WILL BE ABLE TO USE THE DATA CONVERSION UTILITY III
PROGRAM TO CONVERT THEIR EXISTING 7- OR 9-TRACK EMULATOR
DATA SETS WHEN THEY CONVERT THEIR PROGRAMS TO SYSTEM/360.
THE MACRO DEFINITIONS WHICH MAKE UP THE DATA CONVERSION
UTILITY III PROGRAM PACKAGE MUST BE CATALOGED IN THE USERS
SOURCE STATEMENT LIBRARY. THE USER THEN WRITES THE NECESSARY
DCU III MACRO STATEMENTS /AND USER ROUTINES IF REQUIRED/
TO SPECIFY THE DESIRED DATA CONVERSION PROGRAM. THE IBM
SYSTEM/360 DATA CONVERSION UTILITY III PROGRAM IS WRITTEN IN
TOS/360 AND DOS/360 MACRO LANGUAGE AS DESCRIBED IN C24-3414.
IT IS DESIGNED TO RUN UNDER CONTROL OF TOS/360 OR DOS/360.
THE FOLLOWING UTILITY PROGRAMS WILL BE REQUIRED TO PREPARE THE
SUPPLIED PROGRAM MATERIAL- FOR TOS/360 USERS, 360M-UT-403...
FOR DOS/360 USERS, 360M-UT-462.

MACHINE CONFIGURATION- AN IBM SYSTEM/360, MODEL D30 /16K/,
WITH THE DECIMAL ARITHMETIC FEATURE. THE TOS/360, DOS/360
REQUIREMENTS OF DEVICES FOR SYSTEM OPERATION AND PROGRAM
ASSEMBLY ARE NECESSARY FOR GENERATING A DATA CONVERSION
UTILITY PROGRAM. THE CREATED DATA CONVERSION PROGRAM REQUIRES
THE NECESSARY DEVICES FOR SYSTEM OPERATION, AND IN ADDITION,
INPUT/OUTPUT DEVICES AS REQUIRED FOR THE DATA SETS ARE
NEEDED AS FOLLOWS--

- ONE 2400 SERIES TAPE DRIVE FOR THE INPUT DATA SET.
- 2540/2501 FOR 1620/14XX DASD OR OTHER DATA CARD INPUT.
- ONE 2400 SERIES TAPE DRIVE FOR THE OUTPUT DATA SET.
- ONE DASD DEVICE FOR THE OUTPUT DATA SET.

NOTE- 2400 SERIES TAPE DRIVES CAN BE 9-TRACK UNLESS THEY
INTERFACE WITH 729 TAPE DRIVES, IN WHICH CASE THE 7-TRACK
HEAD AND 7-TRACK FEATURE ARE REQUIRED.

BASIC PROGRAM MATERIAL -

DOCUMENTATION - APPLICATION DIRECTORY... PROGRAMMERS
MANUAL, H20-0285... OPERATORS MANUAL, H20-0286.
MACHINE READABLE - CONTROL CARDS AND MACRO DEFINITION CARDS
ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE
WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK
WILL BE FORWARDED. DTR WILL BE SUPPLIED BY THE PROGRAM
INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

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---32X SYNCHRONOUS TRANSMIT-RECEIVE
METHOD FOR DDS/360
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-32X

*N

CONTINUED FROM PRIOR COLUMN---

THE PROGRAM PROVIDES MACRO-INSTRUCTIONS AND ROUTINES TO ALLOW TRANSMISSION AND RECEPTION OF DATA VIA THE 2701 SYNCHRONOUS DATA ADAPTER - TYPE I CONNECTED TO STR TERMINALS, REMOTE OR LOCAL. USER TYPE MACROS AND ROUTINES ARE PROVIDED TO INTERFACE THE DISK OPERATING SYSTEM, MAINTAIN LINE CONTROL, DIAGNOSE AND RECOVER FROM TRANSMISSION EXECUTE DATA TRANSMISSION, AND CONVERT CODE. THE ACCESS METHOD PROVIDES A MACRO LANGUAGE AT THE ASSEMBLER LEVEL TO PROVIDE ENVIRONMENT DEFINITION... LINE CONTROL... READ/WRITE LEVEL TRANSMISSION... DATA TRANSLATION... ERROR RECOVERY AND RESTART... MULTIPLE LINE WAIT WITH ERROR CHECKING. THE PROGRAM UTILIZING THE STR ACCESS METHOD MACROS AND ROUTINES OCCUPIES ONE PARTITION. THE OTHER PARTITIONS CAN BE USED BY OTHER PROGRAMS WITHIN THE SCOPE OF DDS/360.

FEATURES- THE ACCESS METHOD EXTENDS THE TELE-PROCESSING SUPPORT OF DDS/360 TO INCLUDE STR TERMINALS... THE PROGRAMMING LANGUAGE IS INDEPENDENT OF LINE SPEED, ALLOWING DATA TRANSMISSION AT SPEEDS RANGING FROM 1200 BPS TO 40,800 BPS... CPU TO CPU TRANSMISSION IS SUPPORTED... AUTOMATIC ANSWER, MANUAL DIAL, MANUAL ANSWER, AND LEASED LINE OPERATIONS ARE SUPPORTED... AUTOCALL /NO. 1302 OR NO. 1303/ IS SUPPORTED... THE DUAL COMMUNICATIONS INTERFACE FEATURE /NO. 3461 OR NO. 3462/ IS SUPPORTED... THE SUPPORT IS AT THE ASSEMBLY LANGUAGE LEVEL.

USER RESPONSIBILITIES- A THOROUGH KNOWLEDGE OF THE OPERATION OF THE STR TERMINALS TO BE INCLUDED WITHIN HIS SYSTEM... A THOROUGH KNOWLEDGE OF THE MACRO LANGUAGE PROVIDED BY THE STR ACCESS METHOD... WRITE A TAILORED PROGRAM, USING THE MACROS PROVIDED, TO HANDLE HIS APPLICATION... PROVIDE SPACE IN SOURCE STATEMENT LIBRARY FOR THE STR MACRO-INSTRUCTIONS... PROVIDE SPACE IN CORE IMAGE LIBRARY FOR THE STR TRANSIENT ROUTINES... PROVIDE SPACE IN RELOCATABLE LIBRARY FOR THE STR RELOCATABLE MODULES.

PROGRAMMING SYSTEMS- DISK OPERATING SYSTEM FEATURES REQUIRED ARE CHANNEL END APPENDAGE CAPABILITY /TP EQUALS BTAM/... ENTRIES IN THE PUB TABLE FOR THE 2701 SYNCHRONOUS DATA ADAPTERS... ASSIGNMENT OF LOGICAL UNITS TO THE ADAPTERS EITHER AT SYSTEM GENERATION OR AT JOB TIME BY ASSIGN STATEMENTS. THE EXECUTABLE ROUTINES PROVIDED BY THE ACCESS METHOD ARE DISTRIBUTED AS PRE-ASSEMBLED MODULES TO BE PLACED IN THE USERS RELOCATABLE LIBRARY AND CORE IMAGE LIBRARY. THE ASSEMBLY LANGUAGE MACRO DEFINITIONS ARE TO BE PLACED IN THE USERS SOURCE LIBRARY. THE ACCESS METHOD CAN THEN BE USED AS THOUGH IT WERE PART OF HIS DDS/360 SYSTEM SUPPORT.

MINIMUM SYSTEM REQUIREMENTS- SYSTEM/360 MODEL 30E OR LARGER... ONE OR MORE 2701 SYNCHRONOUS DATA ADAPTER - TYPE I /NO. 7695 OR NO. 7696/, AS TERMINALS, ONE OR MORE SYSTEM/360 MODEL 30 OR LARGER WITH 2701 SYNCHRONOUS DATA ADAPTER - TYPE I /NO. 7695 OR NO. 7696/, MODEL 20 WITH COMMUNICATIONS ADAPTER., 1978 TERMINAL /RPQ/ MODELS 1, 2, AND 3., 1009 DATA TRANSMISSION UNIT., 7701/7702 MAGNETIC TAPE UNIT., 7711 DATA COMMUNICATIONS - MAGNETIC TAPE., 1013 CARD TRANSMISSION TERMINAL., 1974 TERMINAL /RPQ/ MODEL 2.

BASIC PROGRAM MATERIAL
DOCUMENTATION - APPLICATION DIRECTORY, USERS MANUAL, H20-0349
OPERATORS MANUAL, H20-0350...SYSTEMS MANUAL, Y20-0097.
MACHINE READABLE - JOB STREAM ON ONE 9-TRACK DTR AT EITHER 800BPI OR 1600BPI.

OPTIONAL PROGRAM MATERIAL - SOURCE MODULES ON ONE 9-TRACK DTR.

NOTES- THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

---33X SYNCHRONOUS TRANSMIT-RECEIVE
METHOD FOR OS/360
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SE-33X

*N

THE ACCESS METHOD PROVIDES A MACRO LANGUAGE AT THE ASSEMBLER LEVEL TO PROVIDE ENVIRONMENT DEFINITION... LINE CONTROL... READ/WRITE LEVEL TRANSMISSION... GET/PUT LEVEL TRANSMISSION... BUFFER MANAGEMENT... DATA TRANSLATION... ERROR RECOVERY AND RESTART... MULTIPLE EVENT WAIT WITH ERROR CHECKING. THE PROGRAM UTILIZING THE STR ACCESS METHOD OCCUPIES ONE PARTITION. THE REMAINING PARTITIONS CAN BE USED BY OTHER PROGRAMS WITHIN THE SCOPE OF OS/360. USER TYPE MACROS AND ROUTINES ARE PROVIDED TO INTERFACE THE OPERATING SYSTEM, MAINTAIN LINE CONTROL, DIAGNOSE AND RECOVER FROM TRANSMISSION ERROR, EXECUTE DATA TRANSMISSION, CONVERT CODE, AND HANDLE BUFFERS.

FEATURES- THE ACCESS METHOD EXTENDS THE TELE-PROCESSING SUPPORT OF OS/360 TO INCLUDE STR TYPE TERMINALS... LINE SPEED IS UNDER PROGRAM CONTROL, ALLOWING DATA TRANSMISSION AT SPEEDS RANGING FROM 1200 BPS TO 40,800 BPS... CPU TO CPU TRANSMISSION IS SUPPORTED... AUTOMATIC ANSWER, MANUAL DIAL, MANUAL ANSWER, AND LEASED LINE OPERATIONS ARE SUPPORTED... AUTOCALL /NO. 1302 OR NO. 1303/ IS SUPPORTED... THE DUAL COMMUNICATIONS INTERFACE FEATURE /NO. 3461 OR NO. 3462/ IS SUPPORTED... THE SUPPORT IS AT THE ASSEMBLY LANGUAGE LEVEL, WHICH ALLOWS MAXIMUM FLEXIBILITY OF USE.

USER RESPONSIBILITIES- A THOROUGH KNOWLEDGE OF THE OPERATION OF THE STR TERMINALS TO BE INCLUDED WITHIN HIS SYSTEM... A THOROUGH KNOWLEDGE OF THE MACRO LANGUAGE PROVIDED BY THE STR ACCESS METHOD... WRITE A TAILORED PROGRAM, USING THE MACROS PROVIDED, TO HANDLE HIS APPLICATION... PROVIDE SPACE IN SYCLIB FOR THE STR ACCESS METHOD LOAD ROUTINES AND ERROR ROUTINES... PROVIDE SPACE IN LINKLIB FOR THE STR ACCESS METHOD LINK ROUTINES.

PROGRAMMING SYSTEMS- OPERATING SYSTEM FEATURES REQUIRED ARE OS/360 OPTION 2 /MFT/ RELEASE 11 OR LATER... BTAM... UCB/S DEFINED AT SYSGEN FOR THE 2701 SYNCHRONOUS DATA ADAPTER UNITS... THE EXECUTABLE ROUTINES PROVIDED BY THE ACCESS METHOD ARE DISTRIBUTED AS PRE-ASSEMBLED MODULES TO BE PLACED IN THE USERS LINKLIB AND SYCLIB... THE ASSEMBLY LANGUAGE MACRO DEFINITIONS ARE TO BE PLACED IN THE USERS MACLIB... THE ACCESS METHOD CAN THEN BE USED AS THOUGH IT WERE PART OF HIS OS/360 SYSTEM SUPPORT.

MINIMUM SYSTEM REQUIREMENTS- SYSTEM/360 MODEL 30E OR LARGER... ONE OR MORE 2701 SYNCHRONOUS DATA ADAPTER - TYPE I /NO. 7695 OR NO. 7696/... AS TERMINALS ONE OR MORE SYSTEM/360 MODEL 30 OR LARGER WITH 2701 SYNCHRONOUS DATA ADAPTER - TYPE I /NO. 7695 OR NO. 7696/., MODEL 20 WITH COMMUNICATIONS ADAPTER., 1978 TERMINAL /RPQ/ MODELS 1, 2, AND 3., 1009 DATA TRANSMISSION UNIT., 7701/7702 MAGNETIC TAPE UNIT., 7711 DATA COMMUNICATIONS UNIT - MAGNETIC TAPE., 1974 TERMINAL /RPQ/ MODEL 2., 1013 CARD TRANSMISSION TERMINAL.

BASIC PROGRAM MATERIAL
DOCUMENTATION - APPLICATION DIRECTORY, USERS MANUAL, H20-0346
OPERATORS MANUAL, H20-0347...SYSTEMS MANUAL, Y20-0096.
MACHINE READABLE - JOB STREAM ON ONE 9-TRACK DTR AT EITHER 800BPI OR 1600BPI.

OPTIONAL PROGRAM MATERIAL - SOURCE MODULES ON ONE 9-TRACK DTR.

NOTES- THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-SU-11X MODEL 20 TELEPHONE REVENUE
ACCOUNTING SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-SU-11X

THE TELEPHONE REVENUE ACCOUNTING SYSTEM IS AN APPLICATION PROGRAMMING PACKAGE DESIGNED TO EFFICIENTLY PERFORM THE HIGH VOLUME REVENUE ACCOUNTING OPERATIONS OF THE SMALL AND MEDIUM SIZED TELEPHONE COMPANY. THE TELEPHONE REVENUE ACCOUNTING SYSTEM WILL SIGNIFICANTLY REDUCE THE COST IN MAN HOURS AND LENGTH OF CONVERSION REQUIRED FOR INSTALLATION.

THE TELEPHONE REVENUE ACCOUNTING SYSTEM INCLUDES TEN INDEPENDENT BUT INTERRELATED PROGRAMS. EACH PROGRAM FUNCTIONS AS A UNIT AND IS PROCESSED ONLY AS OFTEN AS REQUIRED. THE PRIMARY FUNCTIONS OF THE TELEPHONE REVENUE ACCOUNTING SYSTEM INCLUDE- CREATION AND MAINTENANCE OF TOLL MESSAGE PRICING DATA... PRICING OF BOTH MANUALLY AND AUTOMATICALLY ORIGINATED TOLL MESSAGES /EITHER INTRASTATE OR INTERSTATE/... PREPARATION OF CUSTOMER TOLL STATEMENTS... PREPARATION OF CUSTOMER BILLS TOGETHER WITH A CUSTOMER REMITTANCE CARD WHICH WILL LATER SERVE AS CUSTOMER PAYMENT INPUT DATA... PROCESSING AND CONTROL OF CUSTOMER PAYMENTS AND ADJUSTMENTS WITH MAINTENANCE OF ACCOUNTS RECEIVABLE... REVIEW OF CUSTOMERS WHO ARE DELINQUENT IN PAYMENT WITH PREPARATION OF CUSTOMER REMINDER AND DENIAL-OF-SERVICE NOTICES.

FEATURES-
- THE USER IS PERMITTED EXTENSIVE FLEXIBILITY IN THE DESIGN OF INPUT/OUTPUT FORMATS THROUGH THE USE OF REPORT PROGRAM GENERATOR /RPG/ AS A SOURCE LANGUAGE.
- MODULAR CONSTRUCTION ALLOWS SELECTION OF ONLY THOSE ROUTINES AND FUNCTIONS REQUIRED /I.E., V+H OR BLOCK AND SECTION METHODS OF DISTANCE CALCULATION FOR TOLL MESSAGES/.
- EXTENSIVE CONTROLS ARE BUILT INTO THE SYSTEM TO ASSURE ACCURACY OF ALL OPERATIONS AND TO PROVIDE REQUIRED AUDIT TRAILS.
- EXITS ARE PROVIDED IN RPG TO ALLOW USERS TO INSERT THEIR REQUIRED SUBROUTINES.
- AUTOMATIC PRODUCTION OF MULTIPLE COPIES OF BOTH CUSTOMER AND TOLL STATEMENTS.
- AUTOMATIC PUNCHING AND INTERPRETING OF A CASH REMITTANCE CARD.
- CONSISTENT APPLICATION OF COMPANY POLICY IN THE TREATMENT OF DELINQUENT ACCOUNTS.
- AUTOMATIC DETERMINATION OF THE DAY-OF-WEEK DURING RATING /MONDAY-FRIDAY, SATURDAY, SUNDAY OR HOLIDAY/ USING ONLY THE TOLL TICKET DATE AND A STANDARD FORMULA.

CUSTOMER RESPONSIBILITIES- THE USER SHOULD BE ADVISED TO PERFORM THE FOLLOWING BEFORE ACTUAL INSTALLATION OF THE PACKAGE-

- MAKE A DETAILED ANALYSIS OF THE DESIGN AND CAPABILITIES OF THE PACKAGE.
- COMPARE THE PACKAGE AGAINST THEIR OWN DESIRED SYSTEM DESIGN.
- DEFINE THE AREAS WHERE DIFFERENCES EXIST AND MAKE A DECISION WHETHER ANY OF THE PROGRAMS IN THE PACKAGE SHOULD BE MODIFIED, THE SYSTEM DESIGN MODIFIED, OR A COMBINATION OF THE TWO.
- OBTAIN THE SOURCE DECK OF TERMINATING POINT DATA USED TO PREPARE THE TERMINATING POINT MASTER RATE DECK.
- PREPARE RATE TABLES IN PUNCHED CARD FORM THAT REFLECT HIS EXISTING TARIFF STRUCTURES AS DIRECTED BY THE PROGRAM DOCUMENTATION.
- DESIGN FORMATS OF BOTH CARDS AND PAPER DOCUMENTS RELATIVE TO THE REQUIREMENTS OF THIS PACKAGE.
- ESTABLISH THE CRITERIA TO BE USED AS LIMITS IN THE TREATMENT PROGRAM TO REFLECT THE USERS POLICY.
- UNDERSTAND THE OPERATION OF REPORT PROGRAM GENERATOR TO ENABLE THE USER TO ORIGINATE HIS UNIQUE PROGRAMS AND TO FACILITATE NECESSARY MODIFICATIONS TO THIS PACKAGE.

FAILURE TO DO THE ABOVE CAN EASILY RESULT IN A DIFFICULT AND PROTRACTED INSTALLATION PERIOD.

PROGRAMMING SYSTEMS- THE TELEPHONE REVENUE ACCOUNTING SYSTEM IS WRITTEN PREDOMINANTLY USING THE SYSTEM/360 MODEL 20 REPORT PROGRAM GENERATOR. THE SYSTEM/360 MODEL 20 BASIC ASSEMBLER IS USED IN SUBROUTINE FORM TO AUGMENT REPORT PROGRAM GENERATOR.

MINIMUM SYSTEM REQUIREMENTS- 8K 2020 PROCESSOR /MODEL C1/ WITH CARD-PRINT CONTROL /NO. 1580/, 2203 ATTACHMENT /NO. 8082/, 2560 ATTACHMENT /NO. 8099/... 2560 MULTI-FUNCTION CARD MACHINE WITH CARD PRINT -- FIRST 2 LINES /NO. 1575/, 2203 PRINTER MODEL A1 WITH PRINT POSITIONS, 24 ADDITIONAL /NO. 5558/.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - APPLICATION DIRECTORY... APPLICATION DESCRIPTION, H20-0193... USERS MANUAL, H20-0264... OPERATORS MANUAL, H20-0265.
MACHINE READABLE - SOURCE DECK... SAMPLE PROBLEM DATA... TABLE CARDS ALL IN CARD FORM.

OPTIONAL PROGRAM MATERIAL - SYSTEMS MANUAL.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360A-US-06X IBM STUDENT SCHEDULING -
TALLY AND CONFLICT MATRIX PROGRAMS
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-US-06X

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CONTINUED FROM PRIOR PAGE--

THE TALLY PROGRAM ACCUMULATES THE NUMBER OF STUDENT REQUESTS FOR EACH COURSE OFFERED IN THE SCHOOL CURRICULUM. TWO OPTIONS ARE PROVIDED -- COURSE TOTALS BY MALE-FEMALE BREAKDOWN ONLY... COURSE TOTALS BY MALE-FEMALE BREAKDOWN AND BY GRADE. A MAXIMUM OF 500 COURSES MAY BE TALLIED IN ANY ONE RUN.

THE CONFLICT MATRIX PROGRAM POINTS OUT POTENTIAL SCHEDULING CONFLICTS. IT COUNTS ALL PAIRED COMBINATIONS OF STUDENT REQUESTS FOR COURSES AND DISPLAYS THESE COUNTS IN MATRIX REPORTS. TWO OPTIONS ARE PROVIDED -- A CONFLICT MATRIX... A CONFLICT MATRIX WITH IDENTIFICATION OF THE STUDENTS WHO HAVE THE POTENTIAL CONFLICTS ENTERED INTO THE MATRIX. A STUDENT'S IDENTIFICATION IS PRINTED ONLY WITH THOSE REQUESTED COURSES THAT ARE MATRIX ENTRIES. A MAXIMUM OF 250 COURSES MAY BE ENTERED INTO THE MATRIX.

SOME FEATURES ARE--

- ONE-PASS RUNS FOR BOTH TALLY AND CONFLICT MATRIX.
- VARIABLE LENGTH GRADE TITLES /ONE TO FOUR CHARACTERS, ALPHAMERIC/.
- VARIABLE LENGTH COURSE CODES /THREE TO SIX CHARACTERS, ALPHAMERIC/.
- PACKING OF COURSE CODES ON STUDENT REQUEST CARDS.
- BLANK COURSE CODE FIELDS ACCEPTABLE.
- COMMON COURSE CARD ADDITION OF UP TO 10 COURSE REQUESTS TO REQUESTS MADE IN NORMAL FASHION.
- SPECIFICATION AND CHECKING OF MAXIMUM NUMBER OF REQUESTS ALLOWED PER STUDENT.
- CONTINUED LATE USAGE OF MASTER SCHEDULE CARDS USED FOR CONFLICT MATRIX INPUT.
- INPUT SEQUENCE NOT DISTURBED BY ERRORS -- NO STACKER SELECTION.
- A MAXIMUM OF 40 COURSE REQUESTS ALLOWED PER STUDENT.

BOTH THE TALLY AND THE CONFLICT MATRIX PROGRAMS ARE USED TO FURNISH DATA A SCHOOL ORGANIZATION NEEDS TO CREATE THE BEST POSSIBLE MAPPING OF COURSE AND SECTION OFFERINGS. THE PROGRAMS ARE EMPLOYED PRIOR TO THE USE OF THE SCHEDULER PROGRAM OF STUDENT SCHEDULING SYSTEM/360.

USER RESPONSIBILITIES ARE--

- SELECT THE COURSES TO BE OFFERED IN THE CURRICULUM.
- DEVELOP STUDENT REQUEST AND MASTER SCHEDULE FILES.
- FROM TALLY OUTPUT, DETERMINE THOSE COURSES TO BE RUN WITH THE CONFLICT MATRIX.

PROGRAMMING SYSTEMS-- THE ASSEMBLER LANGUAGE WITH INPUT/OUTPUT MACROS /8K DISK/ IS USED /360-AS-309/. BOTH PROGRAMS CAN RUN UNDER CONTROL OF THE BASIC OPERATING SYSTEM/360, 8K DISK, OR UNDER THE SYSTEM/360 BASIC PROGRAMMING SUPPORT.

MINIMUM SYSTEM REQUIREMENTS-- A 2030 PROCESSING UNIT, MODEL F WITH DECIMAL ARITHMETIC /NO. 3237/... 1051 ATTACHMENT /NO. 7915/... 1051 CONTROL UNIT MODEL N1 WITH CPU ATTACHMENT /NO. 3130/, FIRST PUNCH ATTACHMENT /NO. 4410/, AND FIRST READER ATTACHMENT /NO. 4411/... 1052 PRINTER-KEYBOARD MODEL 6... 2841 STORAGE CONTROL MODEL 1... 1403 PRINTER MODEL 2... 2540 CARD READ PUNCH MODEL 1.

THE TALLY PROGRAM WILL RUN IN 32K, PROVIDED THAT THE SUPERVISOR BEING USED DOES NOT EXCEED 5,200 BYTES, AND THE CONFLICT MATRIX PROGRAMS MAY BE USED TO MODIFY THE USER TO RUN IN 32K WITH A REDUCE COURSE CAPACITY IN THE MATRIX. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

BASIC PROGRAM MATERIAL --

- DOCUMENTATION -- PROGRAM MATERIAL LIST... SYSTEMS MANUAL... APPLICATION DESCRIPTION, H20-0202... USERS MANUAL, H20-0239.
- MACHINE READABLE -- OBJECT CARD DECKS AND SAMPLE PROBLEM DECKS. THESE DECKS MAY BE ORDERED ON 7 OR 9-TRACK DTR.

OPTIONAL PROGRAM MATERIAL -- SOURCE CARD DECKS. MAY BE ORDERED ON 7 OR 9-TRACK DTR.

NOTE-- A 9-TRACK DTR WILL BE SENT UNLESS 7-TRACK IS SPECIFIED.

THE DTRS WILL BE WRITTEN AT 800 BPI. THE USER WHO ORDERS 7- OR 9-TRACK DTR FROM PID WILL REQUIRE ONE 2400 SERIES TAPE UNIT, WITH ITS ASSOCIATED CONTROL UNIT. THE DATA CONVERSION FEATURE IS REQUIRED, IF 7-TRACK TAPE IS TO BE USED. THE DTRS ARE SOLELY FOR THE PURPOSE OF PUNCHING OUT THE REQUIRED PROGRAM DECKS. A TAPE UNIT IS NOT REQUIRED FOR SYSTEM OPERATION. DTRS WILL BE SUPPLIED BY PID -- NO TAPE SUBMITTAL IS REQUIRED.

360A-US-07X STUDENT SCHEDULING
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360A-US-07X

USING A MASTER SCHEDULE PREPARED BY THE SCHOOL, STUDENT SCHEDULING SYSTEM/360 PROCESSES STUDENT COURSE REQUESTS TO CREATE STUDENT SCHEDULES, CLASS LISTS, AND AN UPDATED MASTER SCHEDULE. TWO AUXILIARY PROGRAMS, THE TALLY AND CONFLICT MATRIX PROGRAMS, 360A-US-06X, ARE USED TO FURNISH THE SCHOOL ADMINISTRATOR WITH DATA PERTINENT TO MASTER SCHEDULE CREATION. THESE PROGRAMS ARE ALREADY AVAILABLE.

IT CONTAINS IMPROVEMENTS OVER SIMILAR STUDENT SCHEDULING PROGRAMS AVAILABLE. FLEXIBILITY IS ENHANCED BY NEW PROGRAM FEATURES SUCH AS GREATER STUDENT HALL FLEXIBILITY, COMMON COURSE INPUT, AND EXPANDED PRE-RUN EDIT, AND ALTERNATE COURSE SUBSTITUTION. PARAMETERS CONTROLLING NUMBERS OF PERIODS PER DAY, COURSES OFFERED, SECTIONS PER COURSE, AND TOTAL NUMBER OF SECTIONS HAVE BEEN SIGNIFICANTLY ENLARGED.

THE USER HAS GREATLY INCREASED CONTROL OVER PUNCHED AND PRINTED STUDENT SCHEDULE AND CLASS LIST FORMATS. FEATURES ARE-- VARIABLE LENGTH ALPHAMERIC COURSE CODES /THREE TO SIX CHARACTERS/... INCREASED PERIOD, SECTION, SEMESTER, AND DAYS CAPACITY... INCREASED COURSE DESCRIPTION FIELDS... UNIQUE DESCRIPTIONS FOR EACH PERIOD OF BLOCKED COURSES... COMMON COURSE REQUEST INPUT... IMPROVED PRE-SCHEDULING EDITING... FEMALE -- MALE BALANCING OF CLASSES... ALTERNATE COURSE SCHEDULING... PARTIAL SCHEDULING FOR STUDENTS WITH CONFLICTS... REJECT MATRIX OUTPUT FOR STUDENTS WITH CONFLICTS... DAILY STUDY HALL CLASS LISTS... INDEPENDENT EDITING OF PUNCHED AND PRINTED OUTPUT... SUB-HEADING LINES MAY BE ADDED ON PRINTED REPORTS... USE OF ON-LINE DISK STORAGE INCREASES THE EFFICIENCY OF THE PROGRAM... CORE STORAGE IS EMPLOYED FOR TABLE STRUCTURING. IT IS ALSO USED TO CONTAIN PART OR ALL OF THE MASTER SCHEDULE, REDUCING PROCESSING TIME... THE SCHEDULING PROGRAM IS MODULAR IN CONSTRUCTION, CONSISTING OF FIVE DISTINCT PHASES. THE INPUT, STUDENT SCHEDULE OUTPUT, AND CLASS LIST OUTPUT PHASES MAY BE RUN INDIVIDUALLY... THE LINKAGE EDITOR FUNCTION WITHIN THE BASIC OPERATING SYSTEM/360 8K DISK VERSION, CAN BE USED TO LINK THE STANDARD SCHEDULING PROGRAM TO SPECIAL OUTPUT ROUTINES.

CONTINUED FROM PRIOR COLUMN--

THE SCHEDULER READS ALL TYPES OF SCHEDULING INPUT, CREATES STUDENT SCHEDULES, AND UPDATES THE MASTER SCHEDULE. THE STUDENT SCHEDULES ARE STORED ON DISK AND MAY BE SORTED INTO CLASS LIST SEQUENCE, WHICH ARE STORED ON A SECOND DISK PACK. UPDATED MASTER SCHEDULE, STUDENT SCHEDULE, AND CLASS LIST OUTPUT MAY BE PUNCHED AND/OR PRINTED. STUDENT SCHEDULE AND CLASS LIST OUTPUT MAY BE SAVED ON DISK FOR USE AT A LATER DATE. USER RESPONSIBILITIES ARE--

- A THOROUGH KNOWLEDGE AND UNDERSTANDING OF THE SYSTEM BEFORE USE.
- USE TALLY AND CONFLICT MATRIX PROGRAMS TO DESIGN OPTIONAL MASTER SCHEDULE.

- CREATE ERROR-FREE INPUT FILES.

PROGRAMMING SYSTEMS-- THE BASIC OPERATING SYSTEM/360, 8K DISK VERSION, IS USED TO CONTROL THE SCHEDULING PROGRAM. THE SCHEDULER IS WRITTEN IN THE IBM BASIC OPERATING SYSTEM/360 ASSEMBLER WITH INPUT/OUTPUT MACROS /8K DISK/. IF CLASS LIST OUTPUT IS DESIRED, THE BASIC OPERATING SYSTEM/360 SORT/MERGE /8K DISK/ PROGRAM IS REQUIRED.

MINIMUM SYSTEMS REQUIREMENTS-- A 2030 PROCESSING UNIT MODEL F WITH DECIMAL ARITHMETIC /NO. 3237/ AND 1051 ATTACHMENT /NO. 7915/... 1051 CONTROL UNIT MODEL N1 WITH CPU ATTACHMENT /NO. 3130/, FIRST PUNCH ATTACHMENT /NO. 4410/, AND FIRST READER ATTACHMENT /NO. 4411/... 1052 PRINTER-KEYBOARD MODEL 6... 2841 STORAGE CONTROL MODEL 1... THREE 2311 DISK STORAGE DRIVES MODEL 1... 2821 CONTROL UNIT MODEL 1... 1403 PRINTER MODEL 2... 2540 CARD READ PUNCH MODEL 1. TWO DISK UNITS ARE REQUIRED FOR THE SCHEDULER PROGRAM IN ADDITION TO THE ONE DISK UNIT REQUIRED FOR THE 8K DISK BASIC OPERATING SYSTEM AND OTHER NON-SCHEDULING DATA. IF NO CLASS LISTS ARE DESIRED, ONLY ONE EXTRA DISK UNIT IS NEEDED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

BASIC PROGRAM MATERIAL --

- DOCUMENTATION -- APPLICATION DIRECTORY... APPLICATION DESCRIPTION H20-0202... USERS MANUAL H20-0239.
- MACHINE READABLE -- OBJECT PROGRAM, JOB CONTROL CARD DECKS AND SAMPLE PROBLEM IN CARD FORM OR ON A 7- OR 9-TRACK DISTRIBUTION TAPE REEL.

OPTIONAL PROGRAM MATERIAL -- SYSTEM MANUAL... SOURCE PROGRAM ON ONE 7- OR 9-TRACK DTR OR ONE 1316 DISK PACK.

THE REQUESTOR MAY FORWARD ONE 1316 DISK PACK IN ACCORDANCE WITH CURRENT ORDERING PROCEDURES IF HE ELECTS TO RECEIVE THE OPTIONAL PACKAGE ON DISK. PROGRAMS ORDERED ON TAPE ARE IN CARD-IMAGE FORM ON EITHER 7- OR 9-TRACK DISTRIBUTION TAPE REELS /DTR/. THE USER WILL RECEIVE 9-TRACK DTR UNLESS HE SPECIFICALLY REQUESTS A 7-TRACK DTR. BOTH ARE WRITTEN AT 800 BPI. THE USER WHO ORDERS 7- OR 9-TRACK DTR FROM PID WILL REQUIRE ONE 2400 SERIES TAPE UNIT, WITH ITS ASSOCIATED CONTROL UNIT. THE DATA CONVERSION FEATURE IS REQUIRED, IF 7-TRACK TAPE IS TO BE USED. THE DTRS ARE SOLELY FOR THE PURPOSE OF PUNCHING OUT THE REQUIRED PROGRAM DECKS. A TAPE UNIT IS NOT REQUIRED FOR SYSTEM OPERATION. DTRS WILL BE SUPPLIED BY PID, NO TAPE SUBMITTAL IS REQUIRED.

REVIEW THE INFORMATION AVAILABLE IN THE APPLICATION DESCRIPTION MANUAL BEFORE DECIDING WHETHER THE PROGRAM WILL MEET THE SCHOOLS SCHEDULING PHILOSOPHIES AND NEEDS.

A-360B

360B IBM SYSTEM/360 BASIC
OPERATING SYSTEM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
USE 805/360 ORDER FORM NO. 120-1411.

USERS MAY TAILOR THE SYSTEM ACCORDING TO THEIR INSTALLATION CONFIGURATION AND PROCESSING REQUIREMENTS.

THE SYSTEM CONSISTS OF THE FOLLOWING--

THE IBM 1285 OPTICAL READER, WHICH IS USED TO READ PRINTED PAPER TAPES DIRECTLY INTO THE SYSTEM. UP TO EIGHT UNITS CAN BE ATTACHED. A BYTE MULTIPLEXING FUNCTION IS INCLUDED THAT PERMITS THE INTERLEAVING OF THE 1285 WITH OTHER I/O DEVICES THAT OPERATE IN THE BYTE MODE. UP TO TWELVE DEVICES /FOR EXAMPLE-- 1442 CARD READ PUNCH, 2501 CARD READER OR ADDITIONAL 1285 OPTICAL READERS/ MAY OPERATE IN THIS MODE.

360B-CL-302 BASIC CONTROL PROGRAM

*** BASIC CONTROL PROGRAM, 360B-CL-302 -- CONSTITUTES THE FRAMEWORK OF THE BASIC OPERATING SYSTEM/360. IT PREPARES AND CONTROLS THE EXECUTION OF ALL OTHER PROGRAMS EXECUTED. THE BASIC CONTROL PROGRAM IS A PREREQUISITE TO ANY PROGRAM IN THE BASIC OPERATING SYSTEM. ALSO A PREREQUISITE IS THE INITIALIZE DISK UTILITY PROGRAM. THEREFORE, ALL USERS OF BASIC OPERATING SYSTEM MUST ORDER THE BASIC CONTROL PROGRAM, 360B-CL-302, AND THE INITIALIZE DISK UTILITY PROGRAM, 360P-UT-069. THE CONTROL PROGRAM CONSISTS OF--

- SUPERVISOR -- HANDLES ALL INPUT/OUTPUT OPERATIONS, INTERRUPT CONDITIONS, AND OTHER FUNCTIONS FOR ALL PROGRAMS.
- JOB CONTROL -- RUNS BETWEEN JOBS AND PREPARES THE SYSTEM FOR EXECUTION OF ALL OTHER PROGRAMS.
- IPL LOADER -- LOADS THE SUPERVISOR INTO MAIN STORAGE WHEN INITIATED.
- LINKAGE EDITOR -- ALL USER PROGRAMS MUST BE READ FROM CARDS, TAPE, OR THE RELOCATABLE LIBRARY AND EDITED INTO THE CORE IMAGE LIBRARY OF THE SYSTEM DISK PACK BY THIS PROGRAM. THESE PROGRAMS CAN BE PERMANENTLY PLACED IN THE SYSTEM, REQUIRING ONLY CONTROL CARDS TO CALL THEM FOR EXECUTION, OR THEY CAN BE STORED TEMPORARILY, EXECUTED, AND THEN OVERLAYED IN THE CORE IMAGE LIBRARY OF THE SYSTEM DISK PACK. MULTIPLE QUEUES MAY BE GENERATED WITHOUT SPECIFYING A 1285 AS ONE OF THE DEVICES PRESENT. MULTIPLE BYTE MODE DEVICES /INCLUDING THE SYNCHRONOUS DATA ADAPTER TYPE 1/ MAY BE RUN SIMULTANEOUSLY ON ONE MULTIPLEXOR CHANNEL. THE UNIVERSAL CHARACTER SET FEATURE IS ALSO SUPPORTED IN THE BASIC CONTROL PROGRAM.
- LIBRARIAN -- THIS IS ACTUALLY A GROUP OF PROGRAMS, USED FOR MAINTAINING AND REORGANIZING THE DISK LIBRARY AREAS AND PROVIDING PRINTED AND PUNCHED OUTPUT FROM THE LIBRARIES.
- CORE IMAGE LIBRARY /REQUIRED/ -- ALL PROGRAMS /IBM SUPPLIED AND USER PROGRAMS/ ARE LOADED FOR EXECUTION FROM THIS LIBRARY BY THE SYSTEM LOADER ROUTINE OF THE SUPERVISOR.
- MACRO LIBRARY /OPTIONAL/ -- USED TO STORE IBM SUPPLIED AND USER-DEFINED MACRO ROUTINES IN RESIDENT PACKS BUILT TO PROVIDE PROGRAM-ASSEMBLY CAPABILITY.
- RELOCATABLE LIBRARY /OPTIONAL/ -- REQUIRED FOR ASSEMBLE-AND-EXECUTE OPERATIONS, UTILITIES /GROUP 1/, EXCEPT THE CLEAR DISK PROGRAM, AND GROUP 2/, AND FOR AUTOTEST. IT CAN BE USED TO STORE ASSEMBLED OBJECT MODULES FOR SUBSEQUENT LINKAGE FOR OTHER PROGRAM SECTIONS WHEN EDITING PROGRAMS INTO THE CORE IMAGE LIBRARY.

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- LOAD SYSTEM PROGRAM - OPERATING AS AN INDEPENDENT PROGRAM /LOADED FROM CARDS, WITH ITS OWN IPL PROGRAM, SUPERVISOR AND JOB CONTROL PROGRAM/, THE LOAD SYSTEM PROGRAM BUILDS A DISK RESIDENT SYSTEM FROM CARDS. THIS PROGRAM CAN BE USED TO BUILD MINIMUM SYSTEMS FOR SPECIALIZED APPLICATIONS. IF TWO DISK DRIVES ARE AVAILABLE, THE LIBRARIAN CAN BE USED INSTEAD OF THE LOAD SYSTEM PROGRAM TO BUILD SPECIALIZED SYSTEMS.

*** IOCS ***
3608-IO-303 CONSECUTIVE PROCESSING MACROS
3608-IO-304 IFMS- INDEXED SEQUENTIAL FILE MANAGEMENT SYSTEM MACROS
3608-IO-305 DAM- DIRECT ACCESS METHOD MACROS

THESE MACROS TOGETHER CONSTITUTE THE LOGICAL IOCS FACILITIES OF THE BASIC OPERATING SYSTEM.

CONSECUTIVE PROCESSING MACROS, 3608-IO-303 THE CONSECUTIVE-PROCESSING ROUTINES ARE USED TO READ, PROCESS, AND WRITE SUCCESSIVE RECORDS IN A LOGICAL FILE. THESE ROUTINES APPLY TO ALL FILES IN SERIAL-TYPE I/O DEVICES. THE CARD READERS, CARD PUNCHES, MAGNETIC TAPE UNITS, AND PRINTERS ARE SERIAL-TYPE DEVICES. ALSO, THESE ROUTINES CAN BE USED FOR 2311 DISK FILE RECORDS TO BE PROCESSED IN A SERIAL MANNER.

INDEXED SEQUENTIAL FILE MANAGEMENT SYSTEM, 3608-IO-304 THE /ISFMS/ ROUTINES ARE PROVIDED TO TAKE ADVANTAGE OF THE FLEXIBILITY OF THE 2311 DISK STORAGE FORMAT. THESE ROUTINES PROVIDE A COMPREHENSIVE METHOD FOR ESTABLISHING AND MAINTAINING LOGICAL FILES IN A MANNER WHICH ALLOWS RANDOM AND SEQUENTIAL PROCESSING IN THE SAME FILE.

THE DIRECT ACCESS METHOD, 3608-IO-305 THIS METHOD /DAM/ PROVIDES READ, WRITE, WAIT, AND CNTRL MACRO INSTRUCTIONS FOR PROCESSING FILES ON THE DAM MACRO INSTRUCTIONS CAN BE USED TO CREATE AND MAINTAIN LOGICAL FILES IN RANDOM ORDER.

3608-UT-300 GROUP 1 UTILITIES

- CLEAR DISK - CLEARS ONE OR MORE AREAS OF 2311 DISK STORAGE, AND ESTABLISHES TRACKS CONTAINING AN INDICATED BASE THROUGHOUT THE AREA CLEARED.
- CARD TO DISK - TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO DISK WITH OR WITHOUT KEY FIELDS.
- DISK TO CARD - TRANSFERS DATA FROM DISK TO CARDS. THE DISK FILE MAY OR MAY NOT HAVE KEY FIELDS. DATA MAY BE PUNCHED IN EITHER EBCDIC OR BINARY.
- DISK TO PRINTER - PRINTS A DISK FILE IN EITHER THE DATA DISPLAY FORMAT OR THE DATA LIST FORMAT. BOTH FORMATS ARE EXPLAINED UNDER THE TAPE TO PRINTER PROGRAM. DISK RECORDS MAY OR MAY NOT CONTAIN KEY FIELDS.
- DISK TO DISK - TRANSFERS THE DATA FROM ONE DISK FILE TO ANOTHER. THE INPUT AND/OR OUTPUT FILE MAY OR MAY NOT CONTAIN KEY FIELDS. THE DISK FILE MAY BE COPIED, REBLOCKED, FIELD SELECTED OR REBLOCKED AND FIELD SELECTED.
- CARD TO PRINTER AND/OR PUNCH - TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO A PRINTER AND/OR A CARD PUNCH.

3608-UT-301 GROUP 2 UTILITIES

- CARD TO TAPE - TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO MAGNETIC TAPE.
- TAPE TO PRINTER - PRINTS A TAPE FILE IN ONE OF TWO FORMATS -
- DATA DISPLAY - PRINTS ALL, IN A SERIES OF LINES, OF THE TAPE BLOCK USING 100 PRINT POSITIONS FOR THE DATA /WITH TOP AND BOTTOM SCALE LINE, AND PAGE NUMBERING/. TWENTY POSITIONS OF THE PRINTER LINE ARE USED FOR BLOCK SIZE, BLOCK NUMBER AND RECORD NUMBER. FIELD SELECTION OF DATA IS NOT AVAILABLE WITH THIS OPTION.
- DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD. THE DATA, IF LARGER THAN THE PRINT SPAN, WOULD USUALLY BE EDITED TO PRINTER SIZE BY USING THE *,FIELD SELECT., FEATURE OF THE UTILITY PROGRAM. SOME OTHER OPTIONS FOR THE USER INCLUDE PAGE NUMBERING, HEADING LINES AND SPACING CONTROL.
- TAPE TO CARD - TRANSFERS DATA FROM MAGNETIC TAPE TO CARDS. DATA MAY BE PUNCHED IN EITHER EBCDIC OR BINARY.
- TAPE TO TAPE - TRANSFERS THE DATA FROM ONE TAPE TO ANOTHER. THE TAPE FILE MAY BE SIMPLY COPIED, BLOCK BY BLOCK., OR REORGANIZED BY ALTERING THE NUMBER OF RECORDS IN THE BLOCK /REBLOCKING./, OR REORGANIZED BY DELETING OR RE-POSITIONING THE FIELDS WITHIN THE RECORD /FIELD SELECT/ AS WELL AS REBLOCKING.
- DISK TO TAPE - TRANSFERS DATA FROM ONE DISK FILE TO A TAPE FILE. THE DISK FILE MAY OR MAY NOT CONTAIN KEY FIELDS. THE TAPE FILE MAY BE COPIED, REBLOCKED, FIELD SELECTED OR REBLOCKED AND FIELD SELECTED.
- TAPE TO DISK - TRANSFERS DATA FROM A TAPE FILE TO A DISK FILE. THE DISK FILE MAY OR MAY NOT CONTAIN FIELDS. THE TAPE FILE MAY BE COPIED, REBLOCKED, FIELD SELECTED OR REBLOCKED AND FIELD SELECTED.
- TAPE COMPARE - COMPARES TWO FILES FROM TWO OR MORE TAPE REELS TO INSURE THAT THE FILES ARE IDENTICAL. THE NUMBER OF REELS IN EACH FILE NEED NOT BE IDENTICAL. FILES CONTAINING MIXED, VARIABLE OR UNDEFINED RECORD LENGTHS MAY BE COMPARED. PHYSICAL RECORDS WHICH DO NOT COMPARE ARE DOCUMENTED ALONG WITH AN INDEX INDICATING THE BYTES THAT DO NOT MATCH, AND THE PHYSICAL RECORD NUMBER. A USER ROUTINE MAY BE SUPPLIED FOR PROCESSING ON UNEQUAL COMPARES. A COMPARE MAY BE TERMINATED AND A NEW COMPARE INITIATED AT ANY TIME.

3608-PT-306 AUTOTEST

AUTOTEST IS THE DEBUGGING AID FOR OBJECT PROGRAMS THAT HAVE BEEN ASSEMBLED BY THE ASSEMBLER. USING AUTOTEST, RUNS CAN BE PLANNED TO PROCEED WITH A MINIMUM OF OPERATOR INTERVENTION. /FOR USE ON SYSTEMS WITH AT LEAST 16K BYTES OF MAIN STORAGE/. AUTOTEST RESIDES ON DISK /SYSRES/ DURING TESTING. IT CONTROLS TESTING AND-ALLOWS THE EXCHANGE, ADDITION, OR DELETION OF INSTRUCTIONS WITHOUT REASSEMBLY. ALLOWS REPLACEMENT OF CONSTANTS. PROVIDES THE DUMP OF ALL OR ANY PORTION OF MAIN STORAGE, PERMANENT STORAGE ASSIGNMENTS, AND/OR GENERAL REGISTERS/FLOATING REGISTERS WHENEVER A DESIGNATED ADDRESS IS REACHED DURING OBJECT PROGRAM EXECUTION. SUCH TEST REQUEST OUTPUT CAN BE REGULATED EVEN WITHIN USER PROGRAM LOOPS.
STIMULAL DEBUGGING FEATURES ARE AVAILABLE. END-OF-JOB MAIN STORAGE PRINTOUTS CAN REFLECT USER ASSEMBLED LABELS ASSOCIATED WITH THE APPROPRIATE MAIN STORAGE LOCATIONS. ALSO, ADDRESS FOR TEST REQUESTS AND PATCHES CAN BE REFERENCED SYMBOLICALLY.
WILL PRINT OUT MAIN STORAGE AT ABNORMAL END-OF-JOB, AND OPTIONALLY AT NORMAL END-OF-JOB.

CONTINUED FROM PRIOR COLUMN--

PRE-SCAN LOADING OF THE OBJECT PROGRAM AND CLEARS UNUSED MAIN STORAGE.
ALLOWS EXECUTION OF BOS RESIDENT UTILITIES/USER UTILITIES TO BE RUN PRIOR TO OR FOLLOWING EXECUTION OF THE USER TEST PROGRAM.
- CARD TO TAPE UTILITY IS SUPPLIED TO GENERATE VARIABLE LENGTH TAPE RECORDS.
ALLOWS ASSEMBLY AND IMMEDIATE TEST CAPABILITY.

3608-RG-307 REPORT PROGRAM GENERATOR

THE REPORT PROGRAM GENERATOR /R P G/ IS A PROBLEM ORIENTED LANGUAGE DESIGNED TO PROVIDE USERS WITH AN EFFICIENT, EASY-TO-USE TECHNIQUE FOR GENERATING PROGRAMS THAT CAN-
- OBTAIN DATA RECORDS FROM SINGLE OR MULTIPLE INPUT FILES
- PERFORM CALCULATIONS ON DATA TAKEN FROM INPUT RECORDS OR RPG LITERALS
- WRITE PRINTED REPORTS
- USE TABLE LOOKUP
- EXIT TO A USERS' SUBROUTINE WRITTEN IN A LANGUAGE OTHER THAN RPG
- BRANCH WITHIN CALCULATIONS
- SEQUENCE-CHECK INPUT RECORDS
NOTE- THE DECIMAL ARITHMETIC FEATURE NO. 3237 IS REQUIRED BY RPG.

3608-SM-308 SORT/MERGE

THE SORT/MERGE PROGRAM THAT IS PROVIDED HERE, ENABLES THE USER TO SORT A FILE OF RECORDS INTO ONE SEQUENTIAL FILE. THE CONTROL DATA INFORMATION CAN BE CONTAINED IN AS MANY AS TWELVE FIELDS IN EACH RECORD. THE PROGRAM ASSUMES THAT INPUT RECORDS FOR SORT OPERATION ARE IN RANDOM SEQUENCE. RECORDS CAN BE SORTED ON ANY OF THE OUTPUT FILES CAN BE WRITTEN ON SEQUENCE, AND AN INDIVIDUAL SEQUENCE CAN BE SPECIFIED FOR EACH CONTROL-DATA FIELD. THE OUTPUT SEQUENCE FOR A MERGE-ONLY OPERATION MUST BE THE SAME AS THE INPUT SEQUENCE. FILES TO BE SORTED CAN BE READ BY THE PROGRAM FROM IBM 2311 DISK STORAGE /EXCEPT ISFMS/, IBM 2400-SERIES MAGNETIC TAPE, OR FROM CARDS READ THROUGH ANY OF THE CARD READERS LISTED UNDER MINIMUM MACHINE REQUIREMENTS. AN OPTION PROVIDED BY THE PROGRAM IS A LIST OF DISK STORAGE ADDRESSES THAT REFLECTS THE SORTED OUTPUT FILE. THE USER IS ALSO PERMITTED TO ENTER HIS OWN SUBROUTINE TO HANDLE ANY UNREADABLE TAPE BLOCKS FROM THE SORT OR MERGE INPUT FILE.

3608-SV-032 1070 PROCESS COMMUNICATION SUPERVISOR

THE PROGRAM CONSISTS OF THE FOLLOWING COMPONENTS -
- EXECUTIVE ROUTINE - WITH THE AID OF THE BOS SUPERVISOR IT CONTROLS THE HANDLING OF INTERRUPTS AND SCHEDULES LINE OPERATIONS ON A PRIORITY BASIS. IT SIMULATES A REAL-TIME CLOCK AND A SERIES OF INTERVAL TIMERS.
- FURTHER, IT INFORMS OF ERRORS DETECTED, RECORDS THE STATUS CAN BE THE LINE AND OF THE REMOTE TERMINALS AND PERFORMS AUTOMATIC CODE CONVERSION BETWEEN LINE CODE AND EBCDIC WITHIN THE SYSTEM/360 PROCESSOR. THE USER DERIVES THIS ROUTINE, TAILORED TO HIS CONFIGURATION BY ASSEMBLING THREE TYPES OF MACRO INSTRUCTIONS.
- CONVERSION SUBROUTINE - CALIBRATES THE ADC OF THE 1070 SYSTEMS AND CONVERTS ANALOG READINGS TO A STANDARD RANGE.
- DELTA LIMIT CHECK SUBROUTINE - PERFORMS LIMIT AND/OR DELTA CHECKS ON CONVERTED ANALOG READINGS.
- CONTACT SENSE SUBROUTINE - COMPARES CURRENT CONTACT SENSE READINGS WITH A MASTER MASK OR WITH PREVIOUS READINGS.
- THERMOCOUPLE SUBROUTINE - GENERATES TEMPERATURE VALUES FROM CONVERTED THERMOCOUPLE READINGS.
- PULSE COUNTER SUBROUTINE - PERFORMS BLANK, DELTA AND LIMIT CHECKS ON INCOMING READINGS FROM PULSE COUNTER INPUTS AT THE 1070 TERMINALS.
- BINARY TO DECIMAL STRING ROUTINE - CONVERTS A BINARY STRING INTO AN EBCDIC CHARACTER SEQUENCE, CONSISTING OF THE DIGITS 1 AND 2. THIS ROUTINE IS DESIGNED FOR ENTRY PRIOR TO PERFORMING A CONTACT OPERATE FUNCTION AT THE 1070 TERMINAL.
- DECIMAL TO BINARY SUBROUTINE - CONVERTS A SEQUENCE OF THREE-BYTE EBCDIC NUMBERS TO A SEQUENCE OF BINARY INTEGERS, EACH IN TWO BYTES. THIS ROUTINE IS FOR USE IN CONNECTION WITH INCOMING ADC READINGS FROM 1070 TERMINALS WHEN THE USER DOES NOT WANT TO USE THE CONVERSION ROUTINE, WHICH INCLUDES ITS OWN DECIMAL TO BINARY CONVERSION.
- DECIMAL TO BINARY STRING ROUTINE - CONVERTS A SERIES OF EBCDIC BYTES CONTAINING ONLY DIGITS 1 AND 2 INTO A BINARY STRING. THIS ROUTINE PERFORMS THE REVERSE PROCESS OF THE BINARY STRING TO DECIMAL ROUTINE AND IS FOR CONVERSION OF INCOMING READINGS FROM CONTACT SENSE POINTS IN 1070 TERMINALS WHEN THE USER DOES NOT WISH TO USE THE CONTACT SENSE ROUTINE, WHICH HAS ITS OWN DECIMAL TO BINARY STRING CONVERSION BUILT IN.
- DIAGNOSTIC WRITE ROUTINE - IS USED AS A SUBROUTINE BY SOME OF THE OTHER SUBROUTINES. IT PRINTS ERROR MESSAGES ON THE CONSOLE TYPEWRITER.

THE PCS MACRO DEFINITIONS ARE INSERTED IN THE BOS MACRO LIBRARY BY A MAINT RUN AND THE SUBROUTINES ARE INSERTED IN THE BOS RELOCATABLE LIBRARY BY A RMAINT RUN. THE PCS PROVIDES THE FACILITY TO COMMUNICATE WITH THE 1070 PROCESS COMMUNICATION TERMINALS, 1030 DATA COLLECTION TERMINALS AND 1050 DATA COMMUNICATIONS TERMINALS, THROUGH A 2701 DATA ADAPTER UNIT OR A 2702 TRANSMISSION CONTROL. IN ADDITION, ALL IOCS FACILITIES PROVIDED BY THE BASIC OPERATING SYSTEM MAY BE USED.

3608-AS-309 ASSEMBLER

THIS ASSEMBLER PROGRAM PROVIDES A CONVENIENT MEANS OF SOLVING PROBLEMS BY OFFERING THE FULL FLEXIBILITY OF THE POWERFUL SYSTEM/360 INSTRUCTION SET. THIS EASY-TO-USE SYMBOLIC LANGUAGE IS MACHINE ORIENTED AND APPLICABLE TO BOTH COMMERCIAL AND SCIENTIFIC PROBLEMS. THE ASSEMBLER LANGUAGE INCLUDES A COMPLETE SET OF MACRO INSTRUCTIONS FOR ALL I/O AND OTHER SUPERVISOR FUNCTIONS. ALSO, THE USER CAN DEFINE FREQUENTLY USED ROUTINES AS MACROS. THE ACTUAL PROBLEM CODING IS DONE WITH SYMBOLIC INSTRUCTIONS THAT ARE TRANSLATED, ONE FOR ONE, TO MACHINE INSTRUCTIONS. ALL STORAGE REFERENCES CAN BE MADE THROUGH SYMBOLIC NAMES. DATA CONSTANTS CAN BE DEFINED IN SEVERAL DIFFERENT WAYS, EITHER AS EXPLICIT CONSTANTS OR AS LITERALS CODED DIRECTLY INTO THE OPERAND OF AN INSTRUCTION. CONTAINS COMPILER TIME PUNCH CHECK KEYWORDING ROUTINES.

3608-IO-310 SYNCHRONOUS TRANSMITTER RECEIVER MACROS

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THESE MACROS PROVIDE PROGRAMMING SUPPORT FOR SYSTEM/360 MODELS 30, 40, 50, 65 AND 75 WITH THE 2701 DATA ADAPTER UNIT AND SYNCHRONOUS DATA ADAPTER TYPE I /NO. 7695 AND NO. 7696/, COMMUNICATING WITH SYNCHRONOUS TRANSMITTER RECEIVER DEVICES AS FOLLOWS--

- SYSTEM/360 MODEL 20 WITH THE COMMUNICATION ADAPTER, NO. 2073.
- SYSTEMS/360 MODELS 30, 40, 50, 65 OR 75 WITH A 2701 DATA ADAPTER UNIT EQUIPPED WITH THE SYNCHRONOUS DATA ADAPTER TYPE I /SDA-1/.
- 1978 PRINT-READ-PUNCH TERMINAL MODEL 1, 2 AND/OR 3.
- 1009 DATA TRANSMITTER UNIT.
- 1013 CARD TRANSMISSION TERMINAL.
- 7701 MAGNETIC TAPE TRANSMISSION TERMINAL.
- 7702 MAGNETIC TAPE TRANSMISSION TERMINAL.
- 7711 DATA COMMUNICATION UNIT.
- 1974 MODEL 2 DATA TRANSMISSION TERMINAL /RPO UNIT/.

NOTE-- STR WITH DIAL REQUIRES A 16K ENVIRONMENT. MOST APPLICATIONS WITHOUT DIAL WILL PROBABLY ALSO REQUIRE 16K, HOWEVER, UTILITY TYPE APPLICATIONS REQUIRING MINIMUM PROCESSING AND CODE CONVERSION ARE SUPPORTED IN AN 8K ENVIRONMENT.

MACROS ARE PROVIDED TO --

- HANDLE TRANSMISSION AND RECEPTION OF DATA IN THE SYNCHRONOUS TRANSMITTER RECEIVER /STR/ MODE.
- ASSIST THE PROGRAMMER IN THE PROCESSING OF STR RECORDS.

MINIMUM SYSTEM REQUIREMENTS -- 8,192 BYTES OF CORE STORAGE, MODEL 30, 40, 50, 65 OR 75 WITH THE 2701 DATA ADAPTER UNIT AND AUTOTEST PROGRAM, 3608-PT-306/... STANDARD INSTRUCTION SET. THE REPORT PROGRAM GENERATOR /RPG/ ALSO REQUIRES THE DECIMAL ARITHMETIC FEATURE NO. 3237... THE SYNCHRONOUS TRANSMITTER RECEIVER MACROS, 3608-IO-010 ALSO REQUIRES ONE 2701 DATA ADAPTER UNIT EQUIPPED WITH THE SYNCHRONOUS DATA ADAPTER TYPE I /NOT REQUIRED FOR ASSEMBLY/ AND ANY STR SUPPORTED TERMINAL PROCESSOR /NOT REQ. FOR ASSEMBLY/. EITHER ONE MULTIPLEXOR OR ONE SELECTOR CHANNEL... ONE 2311 DISK STORAGE DRIVE... ONE CARD READ-PUNCH /1442 NI OR 1442 NI AND 1442 N2, 2540, 2520 OR 2501 AND 2520... ONE 1403, 1404 OR 1443 PRINTER/... AT LEAST ONE OF THE FOLLOWING-- 2401 OR 2402 MAGNETIC TAPE UNIT, MODEL 4, 5 OR 6, AND 2803 OR 2804 TAPE CONTROL, MODEL 2 OR 2403 MAGNETIC TAPE UNIT AND CONTROL, MODEL 4, 5 OR 6 OR 2415 MAGNETIC TAPE UNIT AND CONTROL, MODEL 4, 5 OR 6, THE 2501 CARD READER, THE 2671 PAPER TAPE READER AND THE 800/1600 BPI DUAL DENSITY FEATURE ARE ALSO SUPPORTED. 1052 PRINTER KEYBOARD RECOMMENDED FOR EFFICIENT SYSTEM COMMUNICATION. THE EXECUTION OF THE PCS, 3608-SV-032 OBJECT PROGRAM REQUIRES 16K BYTES OF CORE STORAGE... STANDARD INSTRUCTION SET... INTERVAL TIMER... 1052 CONSOLE PRINTER... AND 2701 DATA ADAPTER UNIT AND/OR 2702 TRANSMISSION CONTROL.

WHEN ORDERING IBM SYSTEM/360 BASIC OPERATING SYSTEM FOR USE ON 7-TRACK TAPES, THE 2400 SERIES MAGNETIC TAPE UNIT REQUIRES THE DATA CONVERSION AND 7-TRACK COMPATIBILITY FEATURES.

BASIC PROGRAM MATERIAL --

DOCUMENTATION -- PROGRAM WRITE-UP... PROGRAM MATERIAL LIST... THE FOLLOWING PUBLICATIONS APPROPRIATE TO THE COMPONENT ORDERED --

SORT/MERGE SPECIFICATIONS	C24-3321
SPECIFICATIONS, ASSEMBLER WITH I/O MACROS	C24-3361
MACRO DEFINITION LANGUAGE	C24-3364
PROGRAMMING GUIDE	C24-3372
AUTOTEST SPECIFICATIONS	C24-3378
RPG SPECIFICATIONS	C24-3387
UTILITY PROGRAMS SPECIFICATIONS	C24-3409
CONTROL PROGRAMS AND ASSEMBLER OPERATING GUIDE	C24-3450
AUTOTEST OPERATING GUIDE	C24-3452
RPG OPERATING GUIDE	C24-3453
SORT/MERGE OPERATING GUIDE	C24-3454
UTILITY PROGRAMS OPERATING GUIDE	C24-3455
OPERATING GUIDE, OPERATOR MESSAGES	C24-5024
1070 PROCESS COMMUNICATION SUPERVISOR, OP GUIDE	C26-3627
1070 PROCESS COMMUNICATION SUPERVISOR	C26-5996

MACHINE READABLE --

WHEN ORDERING BOS/360 THE REQUESTOR WILL RECEIVE THE ENTIRE COLLECTION OF MACHINE READABLE PROGRAM COMPONENTS LISTED BELOW --

ASSEMBLER	3608-AS-309
BASIC CONTROL PROGRAM	3608-CL-302
CONSECUTIVE PROCESSING MACROS	3608-IO-303
IFMS -- INDEXED SEQ. FILE MGT. SYSTEM MACROS	3608-IO-304
DAM -- DIRECT ACCESS METHOD MACROS	3608-IO-305
SYNCHRONOUS TRANSMITTER RECEIVER MACROS	3608-IO-310
AUTOTEST	3608-PT-306
REPORT PROGRAM GENERATOR	3608-RG-307
SORT/MERGE	3608-SM-308
GROUP 1 UTILITIES	3608-UT-300
GROUP 2 UTILITIES	3608-UT-301

BOS/360 IS DISTRIBUTED ON ONE 2400 FOOT REEL OF MAGNETIC TAPE. 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ AT 800 CPI OR ONE 1316 DISK PACK.

BOS/360 MUST BE ORDERED ON THE IBM SYSTEM/360 OPERATING SYSTEMS ORDER FORM, FORM NUMBER, 120-1411.

EACH COMPONENT FOR WHICH DOCUMENTATION AND MAINTENANCE MATERIAL IS REQUIRED MUST APPEAR ON THE ORDER FORM.

WHEN ORDERING BOS/360 ON TAPE EITHER 9-TRACK OR 7-TRACK MUST BE SPECIFIED ON THE ORDER FORM. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE TAPE REQUIRED MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.

THE DUMPED DISK PACK DATA ON THE TAPE WILL BE PRECEDED BY AN INITIALIZE 2311 UTILITY PROGRAM AND A TAPE TO DISK PROGRAM. THE OPERATING INSTRUCTIONS FOR CREATING A SYSTEM PACK FROM THE TAPE ARE PROVIDED WITH THE MATERIAL LIST.

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1401-CB-701 COBOL LANGUAGE CONVERSION PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-1401-CB-70

IT AIDS IN THE TRANSITION TO SYSTEM/360 BY CONVERTING ACCEPTABLE CURRENT COBOL LANGUAGES TO EITHER SYSTEM/360 LEVEL E COBOL OR LEVEL F COBOL.

ACCEPTABLE LANGUAGES -- THE COBOL LCP WILL ACCEPT AS INPUT--

1401/1440/1460 COBOL	7070/7074 COBOL
1410 COBOL	7070/7074 FDS COBOL
1410/7010 COBOL	705/7080 COBOL
7040/7044 COBOL	7090/7094 COBOL

FEATURES--

- CARD OR TAPE INPUT -- BOTH THE LCP AND THE COBOL SOURCE PROGRAMS CAN BE READ FROM EITHER CARDS OR TAPE.
- SINGLE OR STACKED PROGRAM CONVERSION -- A SINGLE SOURCE PROGRAM CAN BE PROCESSED FROM ONE OF THE THREE TAPE UNITS NEEDED IN A MINIMUM CONFIGURATION. STACKED PROGRAMS CAN BE PROCESSED IF MORE THAN THREE TAPE UNITS ARE USED.
- REPLACING THE ENVIRONMENT DIVISION -- A CONTROL CARD OPTION ALLOWS THE USER TO REPLACE THE ORIGINAL ENVIRONMENT DIVISION WITH A NEW CUSTOMER-WRITTEN SYSTEM/360 ENVIRONMENT DIVISION.
- CARD-CODE CONVERSION FOR DUAL BCD CHARACTERS -- A CONTROL CARD OPTION PROVIDES AUTOMATIC CONVERSION FROM BCD INPUT CODE TO EBCDIC OUTPUT CODE, OR VICE VERSA. IN THIS WAY, THE LCP CAN CONVERT THE DUAL BCD CHARACTERS, FOR EXAMPLE, TWO CHARACTERS WITH THE SAME CARD CODE, INTO THE PROPER SYSTEM/360 CARD CODES.
- DOCUMENTED LISTING -- THE LCP PROVIDES A LISTING OF THE SOURCE AND CONVERTED PROGRAMS. THIS LISTING CONTAINS NUMERIC CODES THAT DOCUMENT CONVERSION ACTIONS AND FACILITATE ANALYSIS OF THE CONVERTED PROGRAM.
- OPTIONAL CARD OUTPUT -- WHEN SPECIFIED, THE LCP PRODUCES A PUNCHED-CARD DECK THAT CONTAINS THE CONVERTED PROGRAM.
- OPTIONAL OUTPUT ON TAPE -- THE USER CAN SPECIFY THAT PRINTED AND/OR PUNCHED OUTPUT ARE TO BE RECORDED ON TAPE.

CONVERSION SAVINGS-- THE COBOL LCP WILL REDUCE THE AMOUNT OF REPROGRAMMING NECESSARY TO CONVERT CURRENT COBOL PROGRAMS INTO SYSTEM/360 COBOL PROGRAMS. USE OF THE LCP WILL REDUCE TIME AND MONEY SPENT ON REWORKING, CLERICAL ACTIVITIES, AND PROGRAM DEBUGGING. ALTHOUGH THE SAVINGS TO BE REALIZED WILL VARY FOR THE INDIVIDUAL SOURCE PROGRAMS, THE TYPICAL SAVINGS WILL BE 50 PER CENT OF THE TOTAL COBOL PROGRAM CONVERSION EFFORT CONSISTING OF STATEMENT CONVERSION, COMPILATION, AND DEBUGGING.

MINIMUM SYSTEM REQUIREMENTS-- AN 8K 1401 SYSTEM WITH ... A 1402 CARD READ PUNCH ... A 1403 PRINTER MODEL 2 ... THREE TAPE UNITS ... THE ADVANCED PROGRAMMING FEATURE ... THE HIGH-LOW-EQUAL COMPARE FEATURE FOR AN 18K SYSTEM/360 WITH 1401 COMPATIBILITY AND CORRESPONDING FEATURES AND I/O DEVICES/.

BASIC PROGRAM MATERIAL --

DOCUMENTATION -- PROGRAM WRITE-UP... PROGRAM MATERIAL LIST... COBOL TRANSITION AIDS MANUAL.

MACHINE READABLE -- ONE REEL OF TAPE CONTAINING THE COBOL AND MONEY SPENT ON REWORKING, CLERICAL ACTIVITIES, AND PROGRAM DEBUGGING. ALTHOUGH THE SAVINGS TO BE REALIZED WILL VARY FOR THE INDIVIDUAL SOURCE PROGRAMS, THE TYPICAL SAVINGS WILL BE 50 PER CENT OF THE TOTAL COBOL PROGRAM CONVERSION EFFORT CONSISTING OF STATEMENT CONVERSION, COMPILATION, AND DEBUGGING.

MINIMUM SYSTEM REQUIREMENTS-- AN 8K 1401 SYSTEM WITH ... A 1402 CARD READ PUNCH ... A 1403 PRINTER MODEL 2 ... THREE TAPE UNITS ... THE ADVANCED PROGRAMMING FEATURE ... THE HIGH-LOW-EQUAL COMPARE FEATURE FOR AN 18K SYSTEM/360 WITH 1401 COMPATIBILITY AND CORRESPONDING FEATURES AND I/O DEVICES/.

360C-EU-074 1401/1460 EMULATOR PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-EU-074

THE 1401/1460 EMULATOR PROGRAM IS A STAND-ALONE PROGRAM THAT EXECUTES 1401/1460 PROGRAMS WHEN USED ON A SYSTEM/360 MODEL 40 EQUIPPED WITH THE 1401/1460 COMPATIBILITY FEATURE /NO. 4457/. THE COMPATIBILITY FEATURE, WHICH EXECUTES 1401 INSTRUCTIONS /EXCLUDING I/O AND EDIT INSTRUCTIONS/ AT AN AVERAGE INTERNAL SPEED OF APPROXIMATELY 4.5 TIMES THAT OF THE 1401, AND THE EMULATOR PROGRAM TOGETHER COMPRISE THE EMULATOR. CURRENTLY OPERATING, NON TIME-DEPENDENT 1401/1460 PROGRAMS CAN BE EXECUTED WITHOUT MODIFICATION, ALTHOUGH CERTAIN SPECIAL AND CUSTOM FEATURES ARE NOT EMULATED. BY ELIMINATING THE REQUIREMENT FOR AN 18K SYSTEM/360 PROGRAMS BEFORE INSTALLING SYSTEM/360, THE EMULATOR ALLOWS THE USER TO APPLY MOST OF HIS PROGRAMMING RESOURCES TOWARDS DEVELOPING NEW APPLICATIONS AND REDESIGNING EXISTING APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360 FACILITIES. USE OF THE EMULATOR ALSO ALLOWS IMMEDIATE PRODUCTION RUNS UPON INSTALLATION, ALLOWS TIME FOR USER EDUCATION IN SYSTEM/360 CONCEPTS, AND EASES THE PRESSURE OF PROGRAM TESTING.

THE BASIC 1401/1460 CONFIGURATION BEING EMULATED MAY INCLUDE SIX TAPE DRIVES, FIVE DISK STORAGE DRIVES, PUNCHED CARD DATA PROCESSING EQUIPMENT, AND THE 1407/1447 CONSOLE. THE EMULATOR MAKES THE MODEL 40 APPEAR TO THE 1401/1460 PROGRAM AS A 16K 1401/1460 WITH ALL BASIC FEATURES AND THE FOLLOWING OPTIONAL FEATURES-- ADVANCED PROGRAMMING /NO. 1060/... BIT TEST /NO. 1470/... COLUMN BINARY /NO. 1990/... EXPANDED PRINT-EDIT /NO. 3835/... HIGH-LOW-EQUAL COMPARE /NO. 4575/... MULTIPLY-DIVIDE /NO. 5275/... PRINT STORAGE /NO. 5585/... ADDITIONAL PRINT CONTROL /NO. 5540/... 51-COLUMN INTERCHANGEABLE READ FEED /NO. 4150/... PROCESSING OVERLAP /NO. 5730/... PUNCH-FEED READ /NO. 5890/... READ-PUNCH RELEASE /NO. 6040/... SPACE SUPPRESSION /NO. 7246/... SENSE SWITCHES /NO. 7600/... BINARY TRANSFER /1460/ /NO. 1468/... DIRECT SEEK /1311/ /NO. 3281, NO. 3282, NO. 3283/... TRACK-RECORD /1311/ /NO. 8011/... INDEXING AND STORE ADDRESS REGISTER /1460/ /NO. 4631/.

SYSTEM REQUIREMENTS FOR CARD/TAPE SYSTEMS-- 1401/1460 COMPATIBILITY FEATURE /NO. 4457/ WITH EC NO. 256221 OR EC NO. 256226... 32,768 BYTES OF MAIN STORAGE, MINIMUM /MODEL 4407... DECIMAL ARITHMETIC FEATURE /NO. 3237/... 1052 PRINTER-KEYBOARD AND 1052 ADAPTER /NO. 7920/... 4575... INITIAL PROGRAM LOAD DEVICE, EITHER 2540 CARD READ PUNCH, OR 2400-SERIES TAPE UNIT, EITHER 9-TRACK OR 7-TRACK, OR 2311 DISK STORAGE DRIVE.

IF THE EMULATOR PROGRAM IS TO BE LOADED FROM A 2400-SERIES TAPE UNIT EQUIPPED WITH THE 7-TRACK READ-WRITE HEAD /NO. 9557/, THE 7-TRACK COMPATIBILITY FEATURE /NOS. 7125, 7126, 7127/, AND THE DATA CONVERSION FEATURE /NOS. 3228 OR 3236/ MUST BE INSTALLED ON THE ASSOCIATED TAPE CONTROL UNIT. AFTER THE EMULATOR PROGRAM HAS BEEN LOADED, THE LOAD DEVICE IS AVAILABLE AS A 1401/1460 CORRESPONDING DEVICE. /SEE BELOW/

SYSTEM REQUIREMENTS FOR DISK SYSTEMS-- ALL OF THE ABOVE PLUS -- DISK COMPATIBILITY FEATURE /NO. 9710/... 65,536 BYTES OF MAIN STORAGE, MINIMUM /MODEL F407/.

INPUT/OUTPUT DEVICE CORRESPONDENCE IS AS FOLLOWS--

1401/1460 I/O DEVICE	SYSTEM/360 I/O DEVICE*
1402 CARD READ PUNCH, MODEL 1 OR 3.	2540 CARD READ PUNCH AND 2821 CONTROL UNIT WITH 1400 COMPATIBILITY FEATURE NO. 8065.
1403 PRINTER, MODEL 1, 2, OR 3.	1403 PRINTER, MODEL 2 OR NI, OR 1404 PRINTER, CONTINUOUS FORMS MODE ONLY.
729 II, IV, V, OR VI TAPE UNIT OR 7330 MAGNETIC TAPE UNIT.	2401, 2402, 2403, OR 2415 TAPE UNITS, MODEL 1, 2, 3, 4, 5, OR 6,, OR 2404 TAPE UNIT,

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1407/1447 CONSOLE INQUIRY STATION. MODELS 1-3. 1052 PRINTER-KEYBOARD, MODEL 7, WITH PTTG/EBCO CODE PRINTING ELEMENT. 2311 DISK STORAGE DRIVE** 1311 DISK STORAGE DRIVE, MODELS 1, 2, OR 4. *MAGNETIC TAPE UNITS AND DISK STORAGE DRIVES MUST BE ON SELECTOR CHANNEL 1 FOR EMULATION. ALL OTHER UNITS MUST BE ON THE MULTIPLEXOR CHANNEL. **THE 2311 DISK STORAGE DRIVE DOES NOT ACCEPT SOLID-HUB 1316 DISK PACKS.

INPUT/OUTPUT FEATURE CORRESPONDENCE IS AS FOLLOWS--
1401/1460 I/O FEATURES SYSTEM/360 I/O FEATURES

1402 PUNCH-FEED READ AND CONTROL UNIT, FEATURE NO. 5890 AND NO. 5895. 2540 PUNCH-FEED READ, FEATURE NO. 5890., PUNCH-FEED READ CONTROL, FEATURE NO. 5895, ON THE 2821 CONTROL UNIT.

COLUMN BINARY FEATURE NO. 1990, BINARY TRANSFER FEATURE NO. 1468. 2821 COLUMN BINARY FEATURE NO. 1990 MUST BE INSTALLED ON THE 2821 CONTROL UNIT.

1402 51-COLUMN INTERCHANGEABLE READ-FEED AND FEED ADAPTER FEATURE NO. 4150 AND 1013. 2540 51-COLUMN INTERCHANGEABLE READ-FEED*, FEATURE NO. 4151.

1403 PREFERRED CHARACTER SET AND ADAPTER, FEATURE NOS. 5523, 5524, 1416 INTERCHANGEABLE TRAIN CARTRIDGE, PREFERRED CHARACTER SET PRINT TRAIN. 1403 UNIVERSAL CHARACTER SET FEATURE NO. 8641 FOR MODEL 2, NO. 8640 FOR MODEL N1, WITH PREREQUISITE INTERCHANGEABLE CHAIN CARTRIDGE ADAPTER OR INTERCHANGEABLE TRAIN CARTRIDGE, AND THE APPROPRIATE UNIVERSAL CHARACTER SET ADAPTER ON THE 2821 CONTROL UNIT.

1311 SCAN DISK FEATURE NO. 6396. 2841 FILE SCAN FEATURE NO. 4385.

*THIS FEATURE REDUCES THE 2540 READ SPEED FROM 1000 CPM TO 800 CPM.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM OPERATING INSTRUCTIONS... 1401/1460 EMULATION MANUAL, C28-6561... OPERATING GUIDE FOR BASIC ASSEMBLER AND UTILITIES, C28-6557. MACHINE READER 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR CONTAINING THE SAMPLE PROBLEM DECK, ABSOLUTE LOADER, OBJECT DECK AND DISK LOADER OBJECT DECK. FOR DISK SYSTEMS, A DISK INITIALIZATION PROGRAM IS REQUIRED AND MUST BE ORDERED SEPARATELY. A SUITABLE INITIALIZATION PROGRAM IS THE INITIALIZE DISK /2311/ PROGRAM, 360P-UT-069. THE EMULATOR DECKS MAY ALSO BE OBTAINED IN CARD FORM.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE, 9-TRACK OR 7-TRACK MUST BE INDICATED ON THE REQUEST CARD. IF NOT SPECIFIED, 9-TRACK WILL BE SUPPLIED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

097 TAPE OVERLAP EMULATOR FOR THE SYSTEM/360 MODEL 30 ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360C-EU-097

THE TAPE OVERLAP EMULATOR PROGRAM ALLOWS OVERLAP OF SELECTOR CHANNEL MAGNETIC TAPE OPERATIONS WITH PROCESSING OF 1401/1440/1460 PROGRAMS BY A SYSTEM/360 MODEL 30 EQUIPPED WITH THE 1401/1440/1460 COMPATIBILITY FEATURE. AFTER RECEIVING CONTROL VIA THE PROGRAMMED MODE SWITCH FEATURE, THE TAPE OVERLAP EMULATOR INTERPRETS THE TAPE INPUT, OUTPUT, AND CONTROL REQUIREMENTS OF A 1400 PROGRAM, INITIATES ANY REQUIRED OPERATION, THEN RETURNS CONTROL TO THE 1400 PROGRAM. A BUFFER TRANSFER TECHNIQUE IS EMPLOYED FOR TRANSFER OF DATA BETWEEN THE EMULATOR PROGRAM AND THE 1400 PROGRAM, ALLOWING TAPE OPERATIONS TO TAKE PLACE SIMULTANEOUSLY WITH EXECUTION OF THE 1400 PROGRAM BY THE COMPATIBILITY FEATURE.

FEATURES--
- USE OF THE INPUT/OUTPUT AND EXTERNAL INTERRUPTION FACILITIES OF SYSTEM/360 TO OPTIMIZE CHANNEL USE.
- SUPPORT OF UP TO SEVEN SELECTOR CHANNELS.
- SUPPORT OF UP TO SIX 2400-SERIES TAPE UNITS.
- OVERLAP OF A SINGLE TAPE OPERATION WITH 1400-SERIES PROCESSING ON SINGLE SELECTOR CHANNEL CONFIGURATIONS.
- OVERLAP OF TWO SIMULTANEOUS TAPE OPERATIONS WITH 1400-SERIES PROCESSING ON DUAL SELECTOR CHANNEL CONFIGURATIONS.
- USE OF EITHER 7-TRACK, 9-TRACK, OR A COMBINATION OF 7-TRACK AND 9-TRACK TAPES.
- USE OF AN OPTIONAL INITIALIZATION FEATURE.
- PROCESSING OF FIXED OR VARIABLE LENGTH BLOCKED TAPE FILES IN EITHER MOVE OR LOAD MODE, AND IN EITHER BINARY OR BCD FORMAT.
- USE OF A BLOCKED TAPE OPTION., FOR TAPE FILES CONTAINING FIXED OR VARIABLE LENGTH PHYSICAL RECORDS, AND INTEGRAL MULTIPLE ORIGINAL BLOCK SIZE CAN BE SPECIFIED AS THE BLOCKING FACTOR.

PERFORMANCE- THE THROUGHPUT IMPROVEMENT THAT CAN BE EXPECTED WHEN USING THE TAPE OVERLAP EMULATOR PROGRAM VARIES WITH THE RATIO OF TAPE INPUT/OUTPUT OPERATIONS TO PROCESSING OPERATIONS IN A 1400 PROGRAM AND WITH THE DATA RATE CHARACTERISTICS OF THE SYSTEM. THE AMOUNT OF OVERLAP ACHIEVED BY THE TAPE OVERLAP EMULATOR PROGRAM DIMINISHES CONSIDERABLY AT DATA RATES IN EXCESS OF 60,000 BYTES PER SECOND. SIGNIFICANT THROUGHPUT IMPROVEMENTS CAN BE EXPECTED FOR 1400 PROGRAMS WHICH HAVE A RELATIVELY LARGE PERCENTAGE OF MAGNETIC TAPE OPERATIONS, AND WHICH USE EITHER TWO-SELECTOR CHANNEL CONFIGURATIONS OR SINGLE-CHANNEL CONFIGURATIONS USING THE BLOCKED TAPE OPTION OF THE TAPE OVERLAP EMULATOR PROGRAM. ON SINGLE-CHANNEL CONFIGURATIONS, THE GREATEST THROUGHPUT IMPROVEMENTS CAN BE EXPECTED FOR 1400 PROGRAMS HAVING A BALANCE BETWEEN TAPE INPUT/OUTPUT AND PROCESSING REQUIREMENTS. A REDUCTION IN THE AMOUNT OF OVERLAP AND BLOCKING POSSIBLE, AND THUS LESS IMPROVEMENT IN THROUGHPUT, IS TO BE EXPECTED FOR 1400 PROGRAMS WHICH READ AND/OR WRITE LARGE IAP RECORDS SUCH AS CHECKPOINT RECORDS. IF RECORD SIZE PRECLUDES USE OF THE TAPE OVERLAP EMULATOR PROGRAM BUFFERS, THE FILE CONTAINING THAT RECORD MUST BE DEFINED AS UNBLOCKED AND THE READ OR WRITE FOR THE LONG RECORD WILL BE NONOVERLAPPED.

THE AMOUNT OF OVERALL DEGRADATION IN THROUGHPUT DEPENDS UPON HOW OFTEN THE UNBLOCKED FILES MUST BE ACCESSED.

CONFIGURATION REQUIREMENTS- THE MINIMUM MACHINE CONFIGURATION REQUIRED TO SUPPORT THE TAPE OVERLAP EMULATOR PROGRAM ALSO SUPPORTS A 1400-SERIES PROGRAM USING UP TO 8,000 BYTES OF COMPATIBILITY STORAGE AND ADDITIONAL MAIN STORAGE OF UP TO 2,001 BYTES THAT IS USED FOR THE COMBINATION OF TAPE OVERLAP EMULATOR PROGRAM INPUT/OUTPUT BUFFER AREAS AND OTHER USER-PROVIDED SUBROUTINES. THE MINIMUM MACHINE CONFIGURATION IS AS FOLLOWS--
- A SYSTEM/360 MODEL 30 WITH A 2030 PROCESSING UNIT MODEL D30 /16384 BYTES OF MAIN STORAGE/
- AN ON-LINE CARD READER /NECESSARY FOR READING CONTROL CARDS AND USER SUBROUTINES/.
- AN ON-LINE PRINTER /REQUIRED FOR INITIAL CONTROL-CARD DIAGNOSTICS/.
- ONE SELECTOR CHANNEL WITH SINGLE CHANNEL TAPE CONTROL.
- UP TO A MAXIMUM OF SIX 2400-SERIES TAPE UNITS- 2401, 2402, 2403, AND 2415 MAGNETIC TAPE UNITS AND CONTROL MODELS 1-6., MODEL 6 OF 2401, 2402, AND 2403 TAPE UNITS CAN ONLY BE USED IN SYSTEM/360 /2030/ MODE OPERATIONS., THEY CANNOT BE USED IN COMPATIBILITY MODE OPERATIONS. IF 7-TRACK TAPES ARE USED THEY MUST BE EQUIPPED WITH THE 7-TRACK COMPATIBILITY FEATURE AND 7-TRACK READ/WRITE HEADS. ONE 2400-SERIES TAPE UNIT MUST BE ASSIGNED FOR EACH 729 OR 730 TAPE UNIT BEING EMULATED.
- THE 1401/1440/1460 BASIC COMPATIBILITY FEATURE FOR THE SYSTEM/360 MODEL 30 /NO. 4456/.
- THE PROGRAMMED MODE SWITCH FEATURE FOR THE SYSTEM/360 MODEL 30 /NO. 5856/.
- THE MAGNETIC TAPE COMPATIBILITY FEATURE FOR THE SYSTEM/360 MODEL 30 /NO. 4468/.
- ANY ADDITIONAL COMPATIBILITY FEATURES AND ASSOCIATED INPUT/OUTPUT DEVICES REQUIRED BY THE 1400-SERIES PROGRAMS TO BE EXECUTED.

IN ADDITION TO THE MINIMUM CONFIGURATION SHOWN ABOVE, THE FOLLOWING COMPONENTS MAY ALSO BE USED IN CONJUNCTION WITH THE TAPE OVERLAP EMULATOR PROGRAM--
- SYSTEM/360 MODEL 30, WITH 2030 PROCESSING UNIT MODELS E30 AND F30 FOR OPERATIONS REQUIRING ADDITIONAL MAIN STORAGE. PROGRAMS WHICH DO NOT FALL WITHIN THE RESTRICTIONS INDICATED IN THE FIRST PARAGRAPH OF THE CONFIGURATION REQUIREMENTS SECTION WILL REQUIRE AT LEAST A SYSTEM/360 MODEL E30 /32K/.
- AN ADDITIONAL SELECTOR CHANNEL WITH SINGLE-CHANNEL TAPE CONTROL.
- TWO SELECTOR CHANNELS WITH A 2404/2804 /READ-WHILE-WRITE/ SHARED TAPE CONTROL UNIT.

ENGINEERING CHANGE LEVEL REQUIREMENTS- THE FOLLOWING ENGINEERING CHANGES ARE PREREQUISITES FOR THE PROPER FUNCTIONING OF THE TAPE OVERLAP EMULATOR PROGRAM FOR ONE AND TWO SELECTOR-CHANNEL CONFIGURATIONS AND FOR TWO SELECTOR-CHANNEL CONFIGURATIONS WITH 2404 OR 2804 TAPE CONTROL UNIT /SIMULTANEOUS READ-WHILE-WRITE/
2030 MICROPROGRAM LEVEL 128060
1400 COMPATIBILITY FEATURE MICROPROGRAM LEVEL 128120
2030 HARDWARE LOGIC LEVEL 126751

BASIC PROGRAM MATERIAL - DOCUMENTATION - SPECIFICATIONS AND OPERATING GUIDE, C26-3566... SAMPLE PROBLEMS MANUAL, C27-6929. MACHINE READER 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. LOADER DECK AND SAMPLE PROBLEM DECK ARE AVAILABLE ON ONE 9-TRACK OR ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE- THE REQUESTOR MUST SPECIFY WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

360C-EU-725 7074 EMULATOR PROGRAM ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360C-EU-725

THE 7074 EMULATOR PROGRAM IS A STAND-ALONE PROGRAM THAT EXECUTES 7074 AND 7070 PROGRAMS THAT ARE 7074 COMPATIBLE, WHEN USED ON SYSTEM/360 MODELS 50 AND 65 EQUIPPED WITH 7070/7074 COMPATIBILITY FEATURE /NO. 7117/. THE EMULATOR PROGRAM AND THE COMPATIBILITY FEATURE TOGETHER CONSTITUTE THE EMULATOR. CURRENTLY OPERATING NON TIME-DEPENDENT 7070/7074 PROGRAMS CAN BE EXECUTED WITHOUT MODIFICATION, ALTHOUGH CERTAIN SPECIAL AND CUSTOM FEATURES ARE NOT EMULATED. BY ELIMINATING THE REQUIREMENT FOR 7070/7074 PROGRAMS BEFORE INSTALLING SYSTEM/360, THE EMULATOR ALLOWS THE USER TO APPLY MOST OF HIS PROGRAMMING RESOURCES TOWARD DEVELOPING NEW APPLICATIONS AND REDESIGNING EXISTING APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360 FACILITIES. USE OF THE EMULATOR ALSO EASES THE PRESSURE OF PROGRAM TESTING.

INTERNAL PERFORMANCE OF THE EMULATOR WITH RESPECT TO THE 7074 RANGES FROM .5 TIMES 7074 CPU SPEED /SYSTEM/360 MODEL 50/ TO 1.8 TIMES 7074 CPU SPEED /SYSTEM/360 MODEL 65/. INTERNAL PERFORMANCE WITH RESPECT TO THE 7070 RANGES FROM 2.4 TIMES CPU SPEED /SYSTEM/360 MODEL 50/ TO 8.4 TIMES 7070 CPU SPEED /SYSTEM/360 MODEL 65/. TIMING INFORMATION WHICH MAY BE USED TO ESTIMATE THROUGHPUT IS PRESENTED IN THE SRC PUBLICATION, SYSTEM/360 CONVERSION AIDS- THE 7074 EMULATOR PROGRAM FOR SYSTEM/360 MODELS 50 AND 65, C27-6908. THE BASIC 7070/7074 CONFIGURATION BEING EMULATED MAY INCLUDE 10 TAPE UNITS ON EACH OF FOUR CHANNELS ON SYSTEM/360 MODEL 65 OR THREE CHANNELS ON SYSTEM/360 MODEL 50, UNIT RECORD EQUIPMENT, AND THE 7150 CONSOLE TYPEWRITER.

MINIMUM SYSTEM REQUIREMENTS- IN ADDITION TO THE 7070/7074 COMPATIBILITY FEATURE, SYSTEM/360 REQUIREMENTS ARE- AT LEAST 262K BYTES OF MAIN STORAGE /MODEL H/... ONE 1052 PRINTER-KEYBOARD... ONE SELECTOR CHANNEL FOR EACH TAPE CHANNEL OF THE SYSTEM BEING EMULATED... ONE 2401 OR 2402 MAGNETIC TAPE UNIT, MODELS 1-6., 2403 OR 2415 MAGNETIC TAPE UNIT AND CONTROL, MODELS 1-6., OR ONE 2404 MAGNETIC TAPE UNIT AND CONTROL, MODELS 1-3 FOR EACH 729 TAPE UNIT TO BE EMULATED. /THE 2415 MAGNETIC TAPE UNIT AND CONTROL IS NOT SUPPORTED WITH SYSTEM/360 MODEL 65/. IF THE EMULATOR PROGRAM IS TO BE LOADED FROM A MAGNETIC TAPE UNIT EQUIPPED WITH THE 7-TRACK READ WRITE HEAD /NO. 9557/, THE 7-TRACK COMPATIBILITY FEATURE /NO. 7125, NO. 7127/, AND THE DATA CONVERSION FEATURE /NO. 3228 OR NO. 3236/ MUST BE INSTALLED ON THE ASSOCIATED TAPE AND CONTROL. MODELS 1-3 FOR EACH 729 TAPE UNIT TO BE LOADED. THE LOAD DEVICE IS AVAILABLE AS A 7070/7074 CORRESPONDING DEVICE.

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INPUT/OUTPUT DEVICE CORRESPONDENCE IS AS FOLLOWS--
I/O DEVICE CORRESPONDENCE TABLE FOR 7074 EMULATOR

7070/7074 DEVICE	SYSTEM/360 DEVICE
7500 CARD READER	1442 CARD READ PUNCH OR 2501 CARD READER
7501 CONSOLE CARD READER	2520 CARD READ PUNCH OR 1442 CARD READ PUNCH
7550 CARD PUNCH	2520 CARD READ PUNCH OR 2540 CARD READ PUNCH
7400 PRINTER	2540 CARD READ PUNCH 1443 PRINTER OR 1403 PRINTER
7150 CONSOLE TYPEWRITER	1052 PRINTER-KEYBOARD
729 SERIES MAGNETIC TAPE UNITS	2401, 2402, OR 2403 MAGNETIC TAPE UNITS, MODELS 1-6, OR 2415* MAGNETIC TAPE UNIT AND CONTROL, MODELS 1-6 OR 2404 MAGNETIC TAPE UNIT AND CONTROL, MODELS 1-3.

*2415 ON MODEL 50 ONLY.

BASIC PROGRAM MATERIAL

DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM OPERATING INSTRUCTIONS... CONVERSION AIDS MANUAL, C27-6908.

MACHINE READABLE - SAMPLE PROBLEM CARD DECK... ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR CONTAINING THE 7074 EMULATOR OBJECT DECK.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360C-EU-726 MODEL 50 1410/7010 EMULATOR PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-EU-726

THE 1410/7010 EMULATOR PROGRAM IS A STAND-ALONE PROGRAM WHICH, WITH THE 1410/7010 COMPATIBILITY FEATURE /NO. 4478/, EXECUTES 1410/7010 PROGRAMS ON A SYSTEM/360 MODEL 50. THE EMULATOR PROGRAM IS AN INTERPRETER SIMULATOR THAT USES BOTH STANDARD SYSTEM/360 INSTRUCTIONS AND SPECIAL INSTRUCTIONS PROVIDED BY THE COMPATIBILITY FEATURE. COMBINED, THE EMULATOR PROGRAM AND THE COMPATIBILITY FEATURE ARE REFERRED TO AS AN EMULATOR. CURRENTLY OPERATING NON-TIME-DEPENDENT 1410/7010 PROGRAMS CAN BE EXECUTED BY THE EMULATOR WITHOUT MODIFICATION, ALTHOUGH CERTAIN SPECIAL AND CUSTOM FEATURES ARE NOT EMULATED. BY ELIMINATING THE REQUIREMENT TO CONVERT ALL 1410/7010 PROGRAMS BEFORE INSTALLING SYSTEM/360, THE EMULATOR ALLOWS THE USER TO APPLY MOST OF HIS PROGRAMMING RESOURCES TOWARDS DEVELOPING NEW APPLICATIONS AND REDESIGNING EXISTING APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360 FACILITIES. USE OF THE EMULATOR ALSO ALLOWS IMMEDIATE PRODUCTION RUNS UPON INSTALLATION, ALLOWS TIME FOR USER EDUCATION IN SYSTEM/360 CONCEPTS, AND EASES THE PRESSURE OF PROGRAM TESTING.

THE AVERAGE INTERNAL SPEED OF THE EMULATOR /EXCLUDING I/O AND EDIT INSTRUCTIONS/ IS APPROXIMATELY 3 TIMES THAT OF THE 1410. THROUGHPUT PERFORMANCE DEPENDS ON THE MIXTURE OF INSTRUCTIONS AND THE COMPARATIVE PERFORMANCE OF I/O DEVICES. WITH EQUIVALENT I/O DEVICES, THROUGHPUT FOR MOST JOBS WHICH ARE NOT I/O BOUND WILL BE APPROXIMATELY THAT OF THE 7010 SYSTEM OR UP TO 2 TIMES 1410 SYSTEM THROUGHPUT. I/O BOUND JOBS WILL RUN AT APPROXIMATELY THE SAME SPEED AS ON THE EMULATED SYSTEM. TIMING INFORMATION WHICH MAY BE USED TO ESTIMATE THROUGHPUT IN THE SRL PUBLICATION, SYSTEM/360 CONVERSION AIDS- THE 1410/7010 EMULATOR PROGRAM FOR SYSTEM/360 MODEL 50, C28-6568.

NOTE- THE SPECIFIED PERFORMANCE CAN BE ATTAINED FOR DISK SYSTEMS ONLY IF EC413140 IS INSTALLED ON 2841 STORAGE CONTROL UNITS. THROUGHPUT WITH LOWER LEVEL 2841/S MAY BE REDUCED BY AS MUCH AS TWO-THIRDS. THE BASIC 1410/7010 CONFIGURATION BEING EMULATED MAY INCLUDE TEN DISK MODULES ON EACH OF THREE CHANNELS, TEN TAPE UNITS ON EACH OF THREE CHANNELS, UNIT RECORD EQUIPMENT ON CHANNEL 1, AND THE 1415 CONSOLE PRINTER. THE EMULATOR APPEARS TO THE 1410/7010 PROGRAM AS A 1410/7010 OF ANY STANDARD MEMORY SIZE WITH THE FOLLOWING FEATURES- 1410/7010 PROCESSING OVERLAP AND PRIORITY PROCESSING... 1410 DUAL SYNCHRONIZER ADAPTER... 7010 SECOND AND THIRD CHANNELS AND STORE AND RESTORE STATUS INSTRUCTIONS.

IN ADDITION TO THE 1410/7010 COMPATIBILITY FEATURE /NO. 4478/, THE SYSTEM/360 REQUIREMENTS ARE-

- MODEL 50F FOR UP TO 40,000 POSITIONS OF 1410/7010 CORE STORAGE, OR
- MODEL 50G OR LARGER FOR UP TO 100,000 POSITIONS OF 1410/7010 CORE STORAGE.
- ONE 1052 PRINTER-KEYBOARD, MODEL 7, AND 1052 ADAPTER /NO. 7920/.
- ONE PROGRAM-LOAD DEVICE WHICH MAY BE ANY OF THE FOLLOWING-
 - . 2540 CARD READ PUNCH.
 - . 1442 NI CARD READ PUNCH.
 - . 2501 B1 OR B2 CARD READER.
 - . 2520 B1 CARD READ PUNCH.
 - . 2400-SERIES MAGNETIC TAPE UNIT.
 - . 2302 DISK STORAGE.
 - . 2311 DISK STORAGE DRIVE.

THE PROGRAM IS AVAILABLE IN CARD-IMAGE FORM ON A 7- OR 9-TRACK DISTRIBUTION TAPE REEL. LOADING OF THE EMULATOR PROGRAM, AS DISTRIBUTED BY PID, MUST BE FROM CARD OR TAPE. SUBSEQUENT LOADING CAN BE FROM CARD, TAPE, OR DISK.

IF THE EMULATOR PROGRAM IS TO BE LOADED FROM A MAGNETIC TAPE UNIT EQUIPPED WITH THE 7-TRACK READ-WRITE HEAD /NO. 9557/, THE 7-TRACK COMPATIBILITY FEATURE /NOS. 7125, 7126, 7127/, AND THE DATA CONVERSION FEATURE /NO. 3228 OR NO. 3236/ MUST BE INSTALLED ON THE ASSOCIATED TAPE CONTROL UNIT. AFTER THE EMULATOR PROGRAM HAS BEEN LOADED, THE LOAD DEVICE, EXCEPT FOR THE 2311, IS AVAILABLE AS A 1410/7010 CORRESPONDING DEVICE. /SEE BELOW/.

CONTINUED FROM PRIOR COLUMN--

INPUT/OUTPUT UNIT CORRESPONDENCE IS AS FOLLOWS--

1410/7010 I/O UNITS	EQUIVALENT SYSTEM/360 MODEL 50 I/O UNITS
1402 CARD READ PUNCH MODEL 2*	2540 CARD READ PUNCH.
1442 CARD READER, MODEL 3*	1442 CARD READ PUNCH, MODEL N1. 2501 CARD READER, MODEL B1 OR B2. 2520 CARD READ PUNCH, MODEL B1.
1403 PRINTER, MODEL 1, 2, OR 3*	1403 PRINTER, MODEL 2 OR N1. 1404 PRINTER, MODEL 2.
729 II, IV, V, AND VI MAGNETIC TAPE UNITS	2401, 2402, 2403, OR 2415 MAGNETIC TAPE UNITS, MODELS 1, 2, 3, 4, 5, OR 6, OR 2404 TAPE UNITS, MODELS 1, 2, OR 3, 7- OR 9-TRACK.
7330 MAGNETIC TAPE UNIT	SAME AS FOR THE 729 MAGNETIC TAPE UNITS.
1415 CONSOLE PRINTER	1052 PRINTER-KEYBOARD, MODEL 7 WITH PRINTING ELEMENT NO. 9572.
1301 DISK STORAGE	2302 DISK STORAGE.

*EMULATED PUNCHED CARD DATA PROCESSING EQUIPMENT MUST PREVIOUSLY HAVE BEEN ASSIGNED TO 1410/7010 CHANNEL 1.

INPUT/OUTPUT FEATURE CORRESPONDENCE IS AS FOLLOWS -

1410/7010 FEATURE	MODEL 50 FEATURE
1402 51-COLUMN INTERCHANGEABLE READ FEED, FEATURE NOS. 1013, 4150.	2540 51-COLUMN INTERCHANGEABLE READ FEED, FEATURE NO. 4151.

ENGINEERING CHANGE LEVELS- THE FOLLOWING EC LEVELS ARE REQUIRED FOR PROPER FUNCTIONING OF THE SYSTEM/360 MODEL 50 1410/7010 EMULATOR PROGRAM - EC 257246 ON THE 1410/7010 COMPATIBILITY FEATURE... EC730969 ON THE 2803 TAPE CONTROL UNIT MODEL 2... EC730966 ON THE 2804 TAPE CONTROL UNIT MODEL 2... EC730969 ON THE 2403 MODELS 4, 5 AND 6.

BASIC PROGRAM MATERIAL -

DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM OPERATING INSTRUCTIONS... OPERATING GUIDE, C28-6557... EMULATION MANUAL, C28-6568.

MACHINE READABLE - ABSOLUTE LOADER, EMULATOR OBJECT DECK, SAMPLE PROBLEM AND DISK LOADER ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

360C-EU-727 7080 EMULATOR PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-EU-727

THE 7080 EMULATOR PROGRAM IS A STAND-ALONE PROGRAM THAT, WITH THE 7080 COMPATIBILITY FEATURE /NO. 7118/, EXECUTES CURRENTLY-OPERATING 7080 PROGRAMS ON A SYSTEM/360 MODEL 65. THE COMBINATION OF EMULATOR PROGRAM AND COMPATIBILITY FEATURE IS REFERRED TO AS AN EMULATOR. PROGRAMS FOR 705 I/II AND 705 III CAN ALSO BE RUN BY THE EMULATOR, IF THEY ARE COMPATIBLE WITH THE 7080. THIS USUALLY REQUIRES RUNNING THESE PROGRAMS IN CONJUNCTION WITH INT580., HOWEVER, 705 III PROGRAMS THAT CAN BE RUN WITHOUT MODIFICATION ON THE 7080 WILL RUN ON THE EMULATOR. BY ELIMINATING THE REQUIREMENT TO CONVERT ALL 7080 PROGRAMS BEFORE INSTALLING THE SYSTEM/360, THE EMULATOR ALLOWS THE USER TO APPLY MOST OF HIS PROGRAMMING RESOURCES TOWARD DEVELOPING NEW APPLICATIONS AND REDESIGNING EXISTING APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360 FACILITIES. USE OF THE EMULATOR ALSO EASES THE PRESSURE OF PROGRAM TESTING.

THE AVERAGE INTERNAL SPEED OF THE EMULATOR ON SYSTEM/360 MODEL 65 IS EQUAL TO THAT OF THE 7080. TIMING INFORMATION IS PRESENTED IN THE SRL PUBLICATION, SYSTEM/360 CONVERSION AIDS- THE 7080 EMULATOR PROGRAM FOR SYSTEM/360 MODEL 65, C27-6911. THE 7080 CONFIGURATION BEING EMULATED MAY INCLUDE 10 TAPE UNITS ON EACH OF FOUR COMMUNICATION CHANNELS, A 7153 CONSOLE, AND A 7502 CONSOLE CARD READER.

MINIMUM SYSTEM REQUIREMENTS- IN ADDITION TO THE COMPATIBILITY FEATURE, SYSTEM/360 REQUIREMENTS ARE- AT LEAST 262,144 BYTES OF MAIN STORAGE /MODEL H/ FOR THE EMULATION OF A 7080 WITH 80,000 CHARACTERS OF MEMORY. 524,288 BYTES OF MAIN STORAGE /MODEL I/ IS THE MINIMUM REQUIREMENT TO EMULATE A 7080 WITH A 160,000 CHARACTER MEMORY... ONE 1052 PRINTER-KEYBOARD... ONE SELECTOR CHANNEL FOR EACH COMMUNICATION CHANNEL OF THE 7080 BEING EMULATED... ONE 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODEL 1-6, OR ONE 2404 MAGNETIC TAPE UNIT, MODEL 1-3 FOR EACH 729 TAPE UNIT TO BE EMULATED. IF THE EMULATOR PROGRAM IS TO BE LOADED FROM A MAGNETIC TAPE UNIT EQUIPPED WITH THE 7-TRACK READ WRITE HEAD /NO. 9557/ AND THE 7-TRACK COMPATIBILITY FEATURE /NOS. 7125, 7126, OR 7127/, THE DATA CONVERSION FEATURE /NO. 3228 OR NO. 3236/ MUST BE INSTALLED ON THE ASSOCIATED TAPE CONTROL UNIT. AFTER THE PROGRAM HAS BEEN LOADED, THE LOAD DEVICE IS AVAILABLE AS 7080 CORRESPONDING DEVICE /SEE BELOW/.

INPUT/OUTPUT DEVICE CORRESPONDENCE IS AS FOLLOWS--
I/O DEVICE CORRESPONDENCE TABLE FOR 7080 EMULATOR

7080 DEVICE	SYSTEM/360 DEVICE
7153 CONSOLE	1052 PRINTER-KEYBOARD
7502 CONSOLE CARD READER	1442 NI CARD READ PUNCH 2501 B1 CARD READER 2501 B2 CARD READER 2520 B1 CARD READ PUNCH 2540 CARD READ PUNCH
729 SERIES MAGNETIC TAPE UNITS	2401, 2402, OR 2403 MAGNETIC TAPE UNITS, MODEL 1-6, OR 2404 MAGNETIC TAPE UNITS, MODEL 1-3.

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BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
OPERATING INSTRUCTIONS... CONVERSION AIDS
MANUAL, C27-6911.
MACHINE READABLE - ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
FEATURE REQUIRED/ DTR CONTAINING THE SELF-LOADING
EMULATOR PROGRAM FOLLOWED BY THE SAMPLE PROGRAM.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS
REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.
DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -
NO TAPE SUBMITTAL IS REQUIRED.

CONVERSION FEATURE REQUIRED/. CONTAINING THE EMULATOR
OBJECT PROGRAM, ABSOLUTE LOADER, SAMPLE PROGRAM AND
DISK LOADER.

IF THE TRACK REQUIREMENT IS NOT SPECIFIED, A 9-TRACK TAPE
WILL BE SUPPLIED.

THE DTR /DISTRIBUTION TAPE REEL/ WILL BE SUPPLIED BY
THE PROGRAM INFORMATION DEPARTMENT- NO TAPE SUBMITTAL IS
REQUIRED.

360C-EU-729 MODEL 65 EMULATOR PROGRAM
FOR 709/7090/7094

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-EU-729

-728 S/360 MOD 40 1410/7010
PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-EU-728

THIS IS A STAND-ALONE PROGRAM THAT EXECUTES 1410/7010 PROGRAMS
WHEN USED ON A SYSTEM/360 MODEL 40 EQUIPPED WITH THE 1410/7010
COMPATIBILITY FEATURE /NO. 4478/. THE EMULATOR PROGRAM USES BOTH
STANDARD S/360 INSTRUCTIONS AND SPECIAL INSTRUCTIONS PROVIDED BY
THE COMPATIBILITY FEATURE. THE EMULATOR CONSISTS OF THE
COMPATIBILITY FEATURE AND THE EMULATOR PROGRAM. CURRENTLY
OPERATING NON TIME-DEPENDENT 1410/7010 PROGRAMS CAN BE EXECUTED
WITHOUT MODIFICATION, ALTHOUGH CERTAIN SPECIAL AND CUSTOM
FEATURES ARE NOT EMULATED.

BY ELIMINATING THE REQUIREMENT TO CONVERT ALL THE USERS
1410/7010 PROGRAMS BEFORE INSTALLING THE SYSTEM/360,
THE EMULATOR ALLOWS THE USER TO APPLY MOST OF HIS PROGRAMMING
RESOURCES TOWARDS DEVELOPING NEW APPLICATIONS AND REDESIGNING
EXISTING APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360
FACILITIES. THE USER ALSO ALLOWS THE PRODUCTION
RUNS UPON INSTALLATION, ALLOWS TIME FOR USER EDUCATION IN
SYSTEM/360 CONCEPTS, AND EASES THE PRESSURE OF PROGRAM TESTING.

THE AVERAGE INTERNAL SPEED OF THE EMULATOR /EXCLUDING I/O AND
EDIT INSTRUCTIONS/ IS APPROXIMATELY TWICE THAT OF THE 1410.
PERFORMANCE DEPENDS ON THE MIXTURE OF INSTRUCTIONS AND THE
COMPARATIVE PERFORMANCE OF EQUIVALENT I/O DEVICES. HOWEVER,
THROUGHPUT TIME FOR MOST JOBS WILL BE EQUAL TO OR BETTER
THAN THE JOB TIME ON 1410 SYSTEMS. TIMING INFORMATION
WHICH MAY BE USED TO ESTIMATE THROUGHPUT IS PRESENTED IN THE
SRL PUBLICATION, IBM SYSTEM/360, MODEL 40, EMULATION OF THE
IBM 1410/7010 DATA PROCESSING SYSTEMS, C28-6563.

NOTE- THE SPECIFIED PERFORMANCE CAN BE ATTAINED FOR DISK SYSTEMS
ONLY IF ENGINEERING CHANGE LEVEL 413140 IS INSTALLED ON
2841 STORAGE CONTROL UNITS. THROUGHPUT WITH LOWER LEVEL 2841/S
MAY BE REDUCED BY AS MUCH AS TWO-THIRDS.

THE BASIC 1410/7010 CONFIGURATION BEING EMULATED CAN INCLUDE TEN
DISK MODULES ON EACH OF TWO CHANNELS, TEN TAPE UNITS ON EACH OF
TWO CHANNELS, PUNCHED CARD DATA PROCESSING ON CHANNEL 1, AND THE
1415 CONSOLE PRINTER. THE EMULATOR MAKES THE MODEL 40 APPEAR
TO THE 1410/7010 PROGRAM AS A 40K OR 80K 1410/7010 WITH THE
FOLLOWING FEATURES: 1410/7010 PROCESSING OVERLAP...
WITH THE FOLLOWING FEATURES- 1410/7010 PROCESSING OVERLAP...
1410/7010 PRIORITY... 1410 DUAL SYNCHRONIZER ADAPTER...
7010 SECOND DATA CHANNEL... 7010 STORE AND RESTORE STATUS
INSTRUCTIONS.

IN ADDITION TO THE 1410/7010 COMPATIBILITY FEATURE /NO. 4478/
THE SYSTEM/360 REQUIREMENTS ARE- MODEL 40F FOR A 40K 1410/7010,
OR MODEL 40G OR LARGER FOR AN 80K 1410/7010... DECIMAL
ARITHMETIC FEATURE /NO. 3237/... ONE 1052 - MODEL 7, AND 1052
ADAPTER /NO. 7920/... ONE PROGRAM-LOAD UNIT WHICH MAY BE ANY OF
THE FOLLOWING- 2540 CARD READ PUNCH, 1442 NI CARD READ PUNCH,
2501 B1 OR B2 CARD READER, 2520 B1 CARD READ PUNCH, 2400 SERIES
MAGNETIC TAPE UNIT, 2302 DISK STORAGE, 2311 DISK STORAGE DRIVE.
IF THE EMULATOR PROGRAM IS TO BE LOADED FROM A MAGNETIC TAPE UNIT
EQUIPPED WITH THE SEVEN-TRACK READ-WRITE HEAD /NO. 9557/ AND
THE SEVEN-TRACK COMPATIBILITY FEATURE /NO. 7125, 7126, 7127/,
THE DATA CONVERSION FEATURE /NO. 3228 OR 3236/ MUST BE INSTALLED
ON THE ASSOCIATED TAPE CONTROL UNIT. AFTER THE EMULATOR
PROGRAM HAS BEEN LOADED, THE LOAD DEVICE, EXCEPT FOR THE 2311,
IS AVAILABLE AS A 1410/7010 CORRESPONDING DEVICE.

INPUT/OUTPUT DEVICE CORRESPONDENCE IS AS FOLLOWS-
EQUIVALENT SYSTEM/360, MODEL 40
1410/7010 I/O DEVICES INPUT/OUTPUT DEVICES

IBM 1402 CARD READ PUNCH, MODEL 2*	IBM 2540 CARD READ PUNCH
IBM 1442 CARD READER, MODEL 3*	IBM 1442 CARD READ PUNCH, MODEL N1 IBM 2501 CARD READER, MODEL B1 OR B2 IBM 2520 CARD READ PUNCH, MODEL B1
IBM 1403 PRINTER, MODEL 1, 2, OR 3*	IBM 1403 PRINTER, MODEL 2 OR N1 IBM 1404 PRINTER, MODEL 2.
IBM 729 II, IV, V AND VI MAGNETIC TAPE UNITS	IBM 2401, 2402, 2403, OR 2415 MAGNETIC TAPE UNITS, MODEL 1, 2, 3, 4, 5, OR 6** OR 2404 TAPE UNITS, MODELS 1, 2, OR 3, 7- OR 9-TRACK.
IBM 7330 MAGNETIC TAPE UNITS	SAME AS FOR THE IBM 729 MAGNETIC TAPE UNITS
IBM 1415 CONSOLE PRINTER*	IBM 1052 PRINTER KEYBOARD, MODEL 7 WITH PRINTING ELEMENT NO. 9572.
IBM 1301 DISK STORAGE MODEL CORRESPONDENCE AS FOLLOWS-	IBM 2302 DISK STORAGE
TWO MODEL 1	ONE MODEL 3
ONE MODEL 2	ONE MODEL 3
FOUR MODEL 1	ONE MODEL 4
TWO MODEL 2	ONE MODEL 4
TWO MODEL 1 AND ONE MDL 2	ONE MODEL 4

* EMULATED UNIT RECORD EQUIPMENT MUST PREVIOUSLY HAVE BEEN
ASSIGNED TO 1410/7010 CHANNEL 1.
** 2401/2402/2403 MODEL 6/S MAY BE USED ON EITHER SELECTOR
CHANNEL 1 OR 2, BUT NOT BOTH SIMULTANEOUSLY.

INPUT/OUTPUT FEATURE CORRESPONDENCE IS AS FOLLOWS-
1410/7010 FEATURE MODEL 40 FEATURE

IBM 1402 51-COLUMN INTERCHANGEABLE READ FEED, FEATURE CODES 1015, 4150	IBM 2540 51-COLUMN INTERCHANGEABLE READ FEED, FEATURE CODE 4151
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BASIC PROGRAM MATERIAL-
DOCUMENTATION - PROGRAM MATERIAL LIST... OPERATING
INSTRUCTIONS FOR SAMPLE PROBLEM- 1410/7010 EMULATOR
MANUAL, C28-6563. OPERATING GUIDE, C28-6557.
MACHINE READABLE - ONE DTR, EITHER 9-TRACK OR 7-TRACK /DATA

THE 709/7090/7094/7094II EMULATOR PROGRAM IS A STAND-ALONE
PROGRAM THAT EXECUTES 7090 SERIES PROGRAMS ON A 512K SYSTEM/360
MODEL 65 EQUIPPED WITH THE 7090 COMPATIBILITY FEATURE /NO. 7119/.
THE EMULATOR PROGRAM USES STANDARD SYSTEM/360 INSTRUCTIONS AND
THE SPECIAL INSTRUCTIONS PROVIDED BY THE COMPATIBILITY FEATURE.
THE COMPATIBILITY FEATURE IS THE HARDWARE THAT IS ADDED TO
A SYSTEM/360 MODEL 65 TO PERMIT THE EXECUTION OF 7090 SERIES
PROGRAMS. THE EMULATOR PROGRAM AND THE COMPATIBILITY FEATURE
COMBINED ARE KNOWN AS THE EMULATOR. THE EMULATOR PROVIDES
AN EFFICIENT MEANS OF CONVERTING TO SYSTEM/360 BY ELIMINATING
THE NECESSITY OF CONVERTING ALL 7090 SERIES PROGRAMS BEFORE
INSTALLING SYSTEM/360. THE EMULATOR ALLOWS THE USER TO BETTER
ALLOCATE HIS PROGRAMMING RESOURCES TOWARD DEVELOPING NEW
APPLICATIONS AND REDESIGNING EXISTING APPLICATIONS TO TAKE
FULL ADVANTAGE OF SYSTEM/360 FACILITIES. MOST CURRENTLY
OPERATING, NON-TIME-DEPENDENT, 7090 SERIES PROGRAMS CAN BE
EXECUTED WITHOUT MODIFICATION, ALTHOUGH CERTAIN SPECIAL AND
CUSTOM FEATURES ARE NOT EMULATED. THE PERFORMANCE OF THE
EMULATOR WILL VARY ACCORDING TO THE INSTRUCTIONS USED AND
THE I/O ACTIVITY OF THE EMULATED 7090 SERIES PROGRAM.

A STUDY OF THE PERFORMANCE OF THE EMULATOR PROGRAM RUNS ON A 7090 INDICATES THAT THE AVERAGE INTERNAL SPEED OF THE
EMULATOR, WHEN EXECUTING NON-I/O INSTRUCTIONS, IS APPROXIMATELY
TWICE THAT OF THE 7090. THROUGHPUT PERFORMANCE IS, OF COURSE,
HIGHLY DEPENDENT UPON THE MIXTURE OF INSTRUCTIONS AND THE
COMPARATIVE PERFORMANCE OF EQUIVALENT I/O DEVICES USED IN A
GIVEN APPLICATION. HOWEVER, EXPERIENCE TO DATE INDICATES
THROUGHPUT TIME FOR MOST JOBS WILL BE APPROXIMATELY EQUAL
TO THE JOB TIME ON THE 7090 MODEL 1. TIMING INFORMATION
THAT MAY BE USED TO ESTIMATE THROUGHPUT IS PRESENTED IN THE
PUBLICATION, SYSTEM/360 CONVERSION AIDS- THE 709/7090/7094/7094II
EMULATOR PROGRAM FOR THE SYSTEM/360 MODEL 65, C28-6565.

THE BASIC MACHINE REQUIREMENT FOR USING THE EMULATOR IS A
SYSTEM/360 MODEL 65 EQUIPPED WITH- AT LEAST 524,288 BYTES OF
MAIN STORAGE... THE 7090 COMPATIBILITY FEATURE... A 1052 MODEL 7
PRINTER-KEYBOARD WITH 1052 ADAPTER /NO. 7920/ OR WITH 2150
CONSOLE... A 2400 SERIES MAGNETIC TAPE UNIT /9-TRACK OR 7-TRACK
WITH THE DATA CONVERSION FEATURE/... TWO ADDITIONAL 2400 SERIES
MAGNETIC TAPE UNITS /OR ONE 2400 UNIT AND ONE OF THE
FOLLOWING - 2501 CARD READER, 1442 CARD READ PUNCH,
2520 CARD READ PUNCH, OR 2540 CARD READ PUNCH/ FOR INITIALIZATION
PURPOSES. IF A 7-TRACK 2400 SERIES MAGNETIC TAPE UNIT IS USED
TO CONTAIN THE EDIT FILE THE TAPE CONTROL UNIT MUST BE
EQUIPPED WITH THE DATA CONVERSION FEATURE AND 7-TRACK
COMPATIBILITY FEATURE. A VARIETY OF S/360 INPUT/OUTPUT
DEVICES MAY BE USED TO EMULATE THE 7090 SERIES DEVICES.
THERE ARE CERTAIN REQUIREMENTS FOR THE SYSTEM/360 DEVICES.
ALL CARD READ PUNCH UNITS MUST BE EQUIPPED WITH THE CARD
IMAGE FEATURE AND ALL TAPE DRIVES USED FOR 7-TRACK TAPES MUST
CONTAIN THE EDIT FILE THE TAPE CONTROL UNIT MUST BE
EQUIPPED WITH THE DATA CONVERSION FEATURE AND 7-TRACK
COMPATIBILITY FEATURE. A VARIETY OF S/360 INPUT/OUTPUT
DEVICES MAY BE USED TO EMULATE THE 7090 SERIES DEVICES.
THERE ARE CERTAIN REQUIREMENTS FOR THE SYSTEM/360 DEVICES.
ALL CARD READ PUNCH UNITS MUST BE EQUIPPED WITH THE CARD
IMAGE FEATURE AND ALL TAPE DRIVES USED FOR 7-TRACK TAPES MUST
CONTAIN THE EDIT FILE THE TAPE CONTROL UNIT MUST BE
EQUIPPED WITH THE DATA CONVERSION FEATURE AND 7-TRACK
COMPATIBILITY FEATURE.

AS ASSEMBLED AND DISTRIBUTED THE EMULATOR SUPPORTS 7090
CHANNELS A THROUGH D. TAPES ON THE 2870 MULTIPLEXER CHANNEL MUST
BE CONNECTED THROUGH SELECTOR SUBCHANNELS. THE MAXIMUM COMBINED
RATE FOR TAPES ATTACHED TO THE MULTIPLEXER CHANNEL IS 360 KC.
ALL EMULATED 7090 UNIT-RECORD DEVICES MUST HAVE THE SAME 7090
CHANNEL ADDRESS /NORMALLY, THIS IS CHANNEL A/. THIS REQUIREMENT
DOES NOT, HOWEVER, PRECLUDE USING SEPARATE S/360 CHANNELS FOR
THE EMULATION OF THESE DEVICES.
BELOW SHOWS THE SYSTEM/360 DEVICES THAT MAY BE USED TO EMULATE
7090-SERIES DEVICES.

7090-SERIES DEVICES	SYSTEM/360 DEVICES
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729 TAPE UNIT	2400-SERIES MAGNETIC TAPE UNIT**
711 CARD READER	2540 CARD READ PUNCH 1442 CARD READ PUNCH* 2501 CARD READER 2520 CARD READ PUNCH*

716 PRINTER	2400-SERIES MAGNETIC TAPE UNIT** 1052 PRINTER-KEYBOARD 1403 PRINTER 1443 PRINTER
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721 CARD PUNCH	2400-SERIES MAGNETIC TAPE UNIT** 2540 CARD READ PUNCH 1442 CARD READ PUNCH* 1442 CARD PUNCH 2520 CARD READ PUNCH*
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*THE 1442 AND THE 2520 CAN BE USED TO EMULATE EITHER THE 711 OR
THE 721, BUT NOT BOTH AT THE SAME TIME.
**2415 MAGNETIC TAPE UNIT IS NOT SUPPORTED.

INPUT/OUTPUT DEVICES ARE REQUIRED FOR EMULATOR-PROGRAM
RESIDENCE, CONTROL-INFORMATION INPUT, MESSAGE OUTPUT AND CONSOLE
FUNCTIONS. BELOW SHOWS S/360 DEVICES THAT MAY BE USED FOR EACH
OF THE ABOVE MENTIONED FUNCTIONS.

EMULATOR FUNCTION	SYSTEM/360 DEVICE
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EMULATOR PROGRAM	2400-SERIES MAGNETIC TAPE UNIT*
RESIDENCE	
CONTROL-INFORMATION	1052 PRINTER-KEYBOARD
INPUT	2400-SERIES MAGNETIC TAPE UNIT* 2540 CARD READ PUNCH 1442 CARD READ PUNCH 2501 CARD READER 2520 CARD READ PUNCH

MESSAGE OUTPUT	1052 PRINTER-KEYBOARD 1403 PRINTER 1443 PRINTER
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CONSOLE FUNCTIONS	2400-SERIES MAGNETIC TAPE UNIT* 1052 PRINTER-KEYBOARD
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*IF 7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED.
NOTE- THE INDICATED DEVICES NEED NOT BE IN ADDITION TO THE
DEVICES SHOWN ABOVE. ALSO, THE 1052 MAY CONCURRENTLY PERFORM
MORE THAN ONE EMULATOR FUNCTION.

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BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
MANUAL C27-6929... CONVERSION AIDS MANUAL, C28-6565.
MACHINE READABLE - INITIALIZATION DECK... THE OBJECT PROGRAM
AND THE SAMPLE PROGRAM ARE AVAILABLE ON A 7- OR 9-TRACK
DTR. THE DATA CONVERSION FEATURE IS REQUIRED TO USE THE
7-TRACK TAPE.
IF 7-TRACK IS NOT SPECIFICALLY REQUESTED A 9-TRACK DTR
WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY
PROGRAM INFORMATION - NO TAPE SUBMITTAL IS REQUIRED.

360C-EU-731 1620 EMULATOR PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-EU-731

THIS IS A STAND-ALONE PROGRAM THAT PROVIDES COMPATIBILITY
WITH 1620 INPUT/OUTPUT OPERATIONS AND WORKS IN CONJUNCTION
WITH THE 1620 COMPATIBILITY FEATURE /NO. 7190/ TO PROVIDE 1620
SYSTEM COMPATIBILITY. THE 1620 COMPATIBILITY FEATURE AND
THE EMULATOR PROGRAM TOGETHER COMPRISE THE SYSTEM/360 MODEL 30
1620 EMULATOR. THE 1620 EMULATOR, USING THE FACILITIES OF THE
2030 AND ASSOCIATED I/O DEVICES, EXPEDITES THE TRANSFER OF
1620 APPLICATIONS TO THE SYSTEM/360 MODEL 30. THIS ALLOWS
PROGRAMMING EFFORT TO BE DIRECTED TOWARD DEVELOPING NEW
APPLICATIONS FOR SYSTEM/360 RATHER THAN IMMEDIATE CONVERSION
OF EXISTING 1620 PROGRAMS. THE FOLLOWING SYSTEM/360 MODEL 30
FACILITIES ARE REQUIRED TO EMULATE THE 1620--
1620 SYSTEM/360 MODEL 30

STORAGE	
20,000 CHARACTERS	16,384 BYTES /2030D/
40,000 CHARACTERS	32,768 BYTES /2030E/
60,000 CHARACTERS	65,536 BYTES /2030F/
CONSOLE TYPEWRITER	1052 PRINTER-KEYBOARD WITH 1051 CONTROL UNIT

1621 MODELS 1 & 2 /READ FUNCTIONALLY/ PAPER TAPE 1622 READ PUNCH	2671 PAPER TAPE READER WITH 2822 CONTROL UNIT 2540 CARD READ PUNCH WITH 2821 CONTROL UNIT 1442-N1 CARD READ PUNCH 1442-N2 CARD PUNCH 2501 B1, B2 CARD READER 2520 B1 CARD READ PUNCH 2520 B2, B3 CARD PUNCH
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NOTE- SEPARATE PATHS FOR CARD READING AND CARD PUNCHING MUST
BE PROVIDED.

1311 DISK STORAGE DRIVE	2311 DISK STORAGE DRIVE WITH 2841 CONTROL UNIT
1443 PRINTER	1443-N1 PRINTER 1403-2, 3, 7, N1 PRINTER WITH 2821 CONTROL UNIT

THESE I/O DEVICES CAN BE ATTACHED TO ANY SYSTEM/360 MODEL 30
CHANNEL. EVERY SYSTEM/360 MODEL 30 WITH THE 1620 COMPATIBILITY
FEATURE MUST HAVE A 1052/1051 AND CARD READER.

THE 1620 COMPATIBILITY FEATURE INCLUDES THE FOLLOWING 1620
FUNCTIONS AND FEATURES- ALL STANDARD 1620 OPERATIONS AND
INSTRUCTIONS... ADDITIONAL INSTRUCTIONS /TRANSFER NUMERIC STRIP,
TRANSFER NUMERIC FILL, MOVE FLAG/ /1620-1/. AUTOMATIC DIVIDE
/1620-1/. AUTOMATIC FLOATING POINT OPERATIONS. BINARY
CAPABILITIES /1620-2/. INDEX REGISTERS /1620-2/.
INDIRECT ADDRESSING /1620-1/.
INTERNAL PERFORMANCE- THE INTERNAL PERFORMANCE OF THE 1620
EMULATOR SHOULD BE AT LEAST EQUAL TO THAT OF A 1620 MODEL 2.
INPUT/OUTPUT OPERATIONS- INPUT/OUTPUT OPERATIONS ARE DEPENDENT
ON THE SPEEDS OF THE I/O DEVICES. WITH DEVICES THE EQUIVALENT
OF THOSE ON THE 1620, INPUT/OUTPUT OPERATIONS WILL TAKE
APPROXIMATELY THE SAME TIME.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
OPERATING INSTRUCTIONS... 1620 COMPATIBILITY FEATURE
MANUAL A24-3365.
MACHINE READABLE - THE FOLLOWING OBJECT DECKS IN CARD FORM
OR ON A 7- OR 9-TRACK DTR - INITIALIZATION AND I/O
CONTROL... DISK FORMAT 1... DISK FORMAT 2... ABSOLUTE
LOADER... SAMPLE PROBLEM.
IF TRACK REQUIREMENT IS NOT SPECIFIED A 9-TRACK DTR WILL BE
SUPPLIED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION
DEPARTMENT-NO TAPE SUBMITTAL IS REQUIRED.

360C-EU-733 7040/7044 EMULATOR PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-EU-733

THE 7040 SERIES EMULATOR PROGRAM IS A STAND ALONE PROGRAM
THAT EXECUTES 7040 SERIES PROGRAMS ON A SYSTEM/360 MODEL 65
EQUIPPED WITH THE COMPATIBILITY FEATURE /NO. 7119/.
THE EMULATOR PROGRAM USES STANDARD SYSTEM/360 INSTRUCTIONS
AND THE SPECIAL INSTRUCTIONS PROVIDED BY THE COMPATIBILITY
FEATURE. THE COMPATIBILITY FEATURE IS THE FEATURE THAT IS
ADDED TO A SYSTEM/360 MODEL 65 TO PERMIT THE EXECUTION OF 7040
SERIES PROGRAMS. THE EMULATOR PROGRAM AND THE COMPATIBILITY
FEATURE COMBINED ARE KNOWN AS THE EMULATOR. REFER TO THE
"ENGINEERING CHANGE CONSIDERATIONS," SECTION FOR A LIST OF
EGCS THAT ARE PREREQUISITES FOR USE WITH THE 7040/7044
EMULATOR PROGRAM.

THE EMULATOR PROVIDES AN EFFICIENT MEANS OF CONVERTING TO
SYSTEM/360 BY ELIMINATING THE NECESSITY OF CONVERTING ALL
7040 SERIES PROGRAMS BEFORE INSTALLING SYSTEM/360. THE EMULATOR
ALLOWS THE USER TO APPLY MOST OF HIS PROGRAMMING RESOURCES
TOWARD DEVELOPING NEW APPLICATIONS AND REDESIGNING EXISTING
APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360 FACILITIES.
A 32K 7040/7044 SYSTEM WITH BASIC INSTRUCTION SET, EXTENDED
PERFORMANCE SET, SINGLE-PRECISION FLOATING-POINT,
DOUBLE-PRECISION FLOATING-POINT, AND INPUT/OUTPUT INSTRUCTIONS
IS EMULATED. STORAGE PROTECTION AND THE INTERVAL TIMER ARE
OPTIONALLY SUPPORTED. MOST CURRENTLY OPERATING,
NON-TIME-DEPENDENT, 7040 SERIES PROGRAMS CAN BE EXECUTED WITHOUT
MODIFICATION, ALTHOUGH CERTAIN SPECIAL AND CUSTOM FEATURES
ARE NOT EMULATED.

THE PERFORMANCE OF THE EMULATOR WILL VARY ACCORDING TO
THE INSTRUCTIONS USED AND THE I/O ACTIVITY OF THE EMULATED
7040 SERIES PROGRAM. THE AVERAGE INTERNAL SPEED OF THE
EMULATOR, WHEN EXECUTING NON-I/O INSTRUCTIONS, IS APPROXIMATELY
1.4 TIMES THAT OF THE 7044.
THROUGHPUT PERFORMANCE DEPENDS ON THE MIXTURE OF INSTRUCTIONS
AND THE COMPARATIVE PERFORMANCE OF EQUIVALENT I/O DEVICES.

CONTINUED FROM PRIOR COLUMN--

HOWEVER, THROUGHPUT TIME FOR MOST JOBS WILL BE APPROXIMATELY
EQUAL TO THE THROUGHPUT TIME ON THE 7044. TIMING INFORMATION
THAT MAY BE USED TO ESTIMATE THROUGHPUT IS PRESENTED IN THE
PUBLICATION, SYSTEM/360 CONVERSION AIDS- THE 7040/7044
EMULATOR PROGRAM FOR THE SYSTEM/360 MODEL 65, C28-6585.

THE BASIC MACHINE REQUIREMENT FOR USING THE EMULATOR IS A
SYSTEM/360 MODEL 65 EQUIPPED WITH--
- AT LEAST 524,288 BYTES OF MAIN STORAGE.
- THE 7040 COMPATIBILITY FEATURE /NO. 7119/.
- A 1052 PRINTER-KEYBOARD MODEL 7 WITH 1052 ADAPTER /NO. 7920/
OR WITH 2150 CONSOLE.
- A 2400 SERIES MAGNETIC TAPE UNIT /9-TRACK, OR 7-TRACK
WITH THE DATA CONVERSION FEATURE/.
- TWO ADDITIONAL UNITS FOR INITIALIZATION PURPOSES FROM THE
FOLLOWING - 2400 SERIES MAGNETIC TAPE UNIT, 1442 CARD READ
PUNCH, 2501 CARD READER, 2520 CARD READ PUNCH OR 2540 CARD
READ PUNCH. HOWEVER, CARD READ PUNCH FACILITIES MUST BE
AVAILABLE EITHER ON- OR OFF-LINE. IF A 7-TRACK 2400 SERIES
MAGNETIC TAPE UNIT IS USED TO CONTAIN THE EDIT FILE, THE UNIT
MUST BE EQUIPPED WITH THE DATA CONVERSION FEATURE.

A VARIETY OF SYSTEM/360 INPUT/OUTPUT DEVICES MAY BE USED
TO EMULATE THE 7040 SERIES DEVICES IF THE SYSTEM/360 DEVICES
SATISFY CERTAIN REQUIREMENTS. SYSTEM/360 CARD READ-PUNCH
UNITS MUST BE EQUIPPED WITH THE CARD IMAGE FEATURE IF THE
EQUIVALENT 7040 DEVICE HAS THE COLUMN BINARY FEATURE.
ALL TAPE DRIVES USED FOR 7-TRACK TAPES MUST BE EQUIPPED WITH
THE 7-TRACK COMPATIBILITY FEATURE.

AS ASSEMBLED AND DISTRIBUTED, THE EMULATOR SUPPORTS 7040
CHANNELS A THROUGH E. TAPES ON THE 2870 MULTIPLEXER CHANNEL MUST
BE CONNECTED THROUGH SELECTOR SUBCHANNELS. THE MAXIMUM COMBINED
RATE FOR TAPES ATTACHED TO THE MULTIPLEXER CHANNEL IS 360 KC.
BELOW SHOWS THE S/360 DEVICES THAT MAY BE USED TO EMULATE
7040-SERIES DEVICES.

7040 UNITS	SYSTEM/360 UNITS
729 TAPE UNIT	2400 SERIES TAPE UNIT***
7330 TAPE UNIT	
1402 CARD READER	2540 CARD READ PUNCH 1442 CARD READ PUNCH* 2501 CARD READER 2520 CARD READ PUNCH*
1403 PRINTER CONSOLE TYPEWRITER	1052 PRINTER-KEYBOARD** 1403 PRINTER** 1443 PRINTER**
1402 CARD PUNCH	2540 CARD READ PUNCH 1442 CARD READ PUNCH*
1622 CARD PUNCH	1442 CARD PUNCH 2520 CARD READ PUNCH*

*THE 1442 AND THE 2520 CAN BE USED TO EMULATE EITHER THE
1402 READER OR PUNCH, BUT NOT BOTH AT THE SAME TIME.
**THE 1052, 1403, AND THE 1443 CAN BE USED TO EMULATE
THE PRINTER OR THE TYPEWRITER, BUT NOT BOTH AT THE SAME TIME.
***2415 MAGNETIC TAPE UNIT AND CONTROL IS NOT SUPPORTED.

INPUT/OUTPUT DEVICES ARE REQUIRED FOR EMULATOR-PROGRAM
RESIDENCE, CONTROL-INFORMATION INPUT, MESSAGE OUTPUT, AND
CONSOLE FUNCTIONS. FOLLOWING ARE THE SYSTEM/360 UNITS THAT
MAY BE USED FOR EACH OF THE ABOVE-MENTIONED FUNCTIONS.

EMULATOR FUNCTION	UNITS
EMULATOR-PROGRAM RESIDENCE	2400 SERIES TAPE UNITS*
CONTROL-INFORMATION INPUT	1052 PRINTER-KEYBOARD 2400 SERIES TAPE UNIT* 2540 CARD READ PUNCH 1442 CARD READ PUNCH 2501 CARD READER 2520 CARD READ PUNCH
MESSAGE OUTPUT	1052 PRINTER-KEYBOARD 1403 PRINTER 1443 PRINTER 2400 SERIES TAPE UNIT
CONSOLE FUNCTIONS	1052 PRINTER-KEYBOARD

*IF 7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED.
NOTE- THESE UNITS NEED NOT BE IN ADDITION TO THE UNITS
PREVIOUSLY MENTIONED ABOVE. ALSO, THE 1052 MAY CONCURRENTLY
PERFORM MORE THAN ONE EMULATOR FUNCTION.

ENGINEERING CHANGE CONSIDERATIONS--
1. ENGINEERING CHANGE NUMBER 705256 WITH REQUESTS FOR
ENGINEERING ACTION NUMBER 14492 IS A PREREQUISITE FOR
USE WITH THE 7040/7044 EMULATOR PROGRAM.
2. THE INTERVAL TIME UPDATING ACCURACY MAY BE AFFECTED UNLESS
ENGINEERING CHANGE NUMBER 705234 IS INSTALLED.

RESTRICTION- IN MOST CASES, MEMORY PROTECT TRAPS ARE
DELAYED FOR ONE 7040 INSTRUCTION CYCLE. THIS RESTRICTION WILL
BE REMOVED AT A LATER DATE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... 7040/7044 EMULATOR
PROGRAM FOR THE SYSTEM/360 MODEL 65, C28-6585...
SAMPLE PROBLEMS MANUAL, C27-6929.
MACHINE READABLE - EMULATOR OBJECT PROGRAM, INITIALIZATION
DECK, SAMPLE PROGRAM AND THE EMULATOR INITIALIZATION
OBJECT PROGRAM MAY BE OBTAINED ON ONE 9-TRACK OR ON ONE
7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE
WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT INDICATED
9-TRACK WILL BE FORWARDED.
THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -
NO TAPE SUBMITTAL IS REQUIRED.

1401-RG-700 IBM 1400 RPG TO SYSTEM/360 TRANSLATOR

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 1401-RG-700

THIS PROGRAM OPERATES ON A 1401 OR 1460 DATA PROCESSING SYSTEM.
THE PROGRAM IS PLACED IN THIS SECTION OF THE SYSTEM/360 CATALOG
TO ASSIST YOU IN CONVERTING YOUR DATA PROCESSING INSTALLATION.
ORDER THE PROGRAM BY THE FILE NUMBER -- 1401-RG-700 --

THE TRANSLATOR CONVERTS SOURCE PROGRAMS WRITTEN FOR ANY OF THE
PROCESSORS LISTED BELOW TO SIMILAR SOURCE PROGRAMS
ACCEPTABLE TO SYSTEM/360 MODEL 20 RPG, SYSTEM/360 BASIC
PROGRAMMING SUPPORT RPG, BASIC OPERATING SYSTEM/360 RPG, OR
OPERATING SYSTEM/360 RPG. 1400 RPG PROCESSORS TO

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- BE TRANSLATED INCLUDE—
- 1. 1401 RPG /2K/
- 2. 1401 BASIC RPG /4K/
- 3. 1401 RPG
- 4. 1401/1460 RPG /ON DISK/
- 5. 1440 RPG /2K/
- 6. 1440 BASIC RPG /4K/
- 7. 1440 RPG /ON DISK/
- 8. 1440 STERLING BASIC RPG /4K/
- 9. 1440 STERLING RPG /1311/

THE 1401 RPG PROCESSOR WILL BE HANDLED AFTER THE PROGRAM HAS FIRST BEEN TRANSLATED TO 1401/1460 RPG /ON DISK/ USING THE 1401 RPG TRANSLATOR PROGRAM. PROGRAM INPUT IS 1400 SERIES RPG SOURCE PROGRAM CARDS. OUTPUT IS SYSTEM/360 RPG SOURCE PROGRAM CARDS FOR INPUT, CALCULATION, AND OUTPUT SPECIFICATIONS. NON-TRANSLATABLE CONDITIONS WILL BE FLAGGED AS THEY ARE DETECTED BY THE TRANSLATOR. MINIMUM SYSTEM REQUIREMENTS— AN 8K 1401 OR 1460 WITH 1402 CARD READ PUNCH... 1403 PRINTER, MODEL 2 OR MODEL 3 /ON 1460/... THREE 7330 OR 729 TAPE UNITS OR ONE 1311 DISK STORAGE DRIVE OR ONE 1301 DISK STORAGE UNIT /ON 1460/... ADVANCED PROGRAMMING AND HIGH-LOW-EQUAL COMPARE SPECIAL FEATURES /ON 1401/ OR INDEXING AND STORE ADDRESS REGISTER FEATURE /ON 1460/.

BASIC PROGRAM MATERIAL —

DOCUMENTATION — PROGRAM WRITE-UP...PROGRAM MATERIAL LIST... SAMPLE PROGRAM TRANSLATION LISTING...SYSTEM/360 RPG TRANSFORMER...LOGIC MANUAL. MACHINE READABLE — CARD DECKS FOR TRANSLATOR OBJECT PROGRAM, SAMPLE PROGRAM 1400/RPG SOURCE, SAMPLE PROGRAM SYSTEM/360 RPG SOURCE.

OPTIONAL PROGRAM MATERIAL — ONE REEL OF MAGNETIC TAPE CONTAINING THE TRANSLATOR SOURCE PROGRAM.

OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD. THE NUMBER OF TAPES NECESSARY TO OBTAIN THE PROGRAM MATERIAL MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPES SHOULD BE 2400 FEET IN LENGTH.

750 7090/7094 SIMULATOR PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-SI-750

THE 7090/7094 SIMULATOR IS A STAND-ALONE SYSTEM/360 PROGRAM THAT USES SYSTEM/360 COMPONENTS AND LOGIC TO REPRESENT THE SIMULATED SYSTEM. BY INTERPRETING 7090/7094 PROGRAMS AND DATA, THE SIMULATOR REPRODUCES THE RESULTS THAT WOULD BE OBTAINED ON THE ORIGINAL SYSTEM. ALL STANDARD 7090/7094 INSTRUCTIONS AND FEATURES ARE SIMULATED, AND IN ADDITION TO 7090/7094 PROGRAMS THE SIMULATOR EXECUTES 7090 PROGRAMS AND 704 PROGRAMS DESIGNED FOR 14K RUNNING UNDER THE 7090/7094 INPUT/OUTPUT COMPATIBILITY PROGRAM. THE FUNCTIONS OF 7090/7094 INPUT/OUTPUT DEVICES ARE PERFORMED BY CORRESPONDING SYSTEM/360 DEVICES.

/NOTE— SIMULATION OF THE 704-709 I/O COMPATIBILITY PROGRAM IS PROVIDED TO THE USERS WHO RETAINED AN OPERATIONAL COPY. THIS PROGRAM IS WITHDRAWN AND WILL NOT BE PROVIDED./

THE SIMULATOR USES THE SYSTEM/360 STANDARD INSTRUCTION SET, FLOATING POINT ARITHMETIC, AND THE INTERVAL TIMER. IT ALSO REQUIRES—

- A MINIMUM OF 262,144 BYTES OF MAIN STORAGE /MODEL H/.
- ONE 1052 PRINTER-KEYBOARD.
- ONE DEVICE FOR THE INPUT OF THE 7090/7094 PROGRAM.
- ONE DEVICE FOR SIMULATOR CONTROL INFORMATION INPUT.
- FOR EACH DEVICE SIMULATED, ONE OF THE DEVICES SHOWN FOR IT IN THE FOLLOWING TABLE—

7090/7094 DEVICE	SYSTEM/360 DEVICE
7151 CONSOLE	1052 PRINTER-KEYBOARD, ANY MODEL COMPATIBLE WITH THE SYSTEM.
711 CARD READER	1442 CARD READ PUNCH, MODEL N1, EQUIPPED WITH CARD-IMAGE OPTION., OR 2540 CARD READ PUNCH., OR 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODEL 1, 2, AND 3 /7- OR 9-TRACK/.
721 CARD PUNCH	2501 CARD READER, MODEL B1 OR B2. 2520 CARD READ PUNCH, MODEL B1. 1442 CARD READ PUNCH, MODEL N1, EQUIPPED WITH CARD-IMAGE OPTION., OR 2540 CARD READ PUNCH., OR 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODEL 1, 2, AND 3 /7- OR 9-TRACK/.
716 PRINTER	1442 CARD PUNCH, MODEL N2. 2520 CARD READ PUNCH, MODEL B1. 2520 CARD PUNCH, MODEL B2 OR B3. 1443 PRINTER, MODEL N1 OR 1403 PRINTER., OR 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODEL 1, 2, AND 3 /7- OR 9-TRACK/.
729 MAGNETIC TAPE UNIT /ANY MODEL/	OR 1052 PRINTER-KEYBOARD, MODEL 1. 2401, 2402, OR 2403 MAGNETIC TAPE UNITS, MODEL 1, 2, AND 3 /7- OR 9-TRACK/.

/NOTE THAT MODELS 4, 5, AND 6 OF 2400-SERIES MAGNETIC TAPE UNITS CANNOT BE USED./
CARD READ PUNCH DEVICES MUST BE EQUIPPED WITH THE CARD IMAGE FEATURE /1442/ AND THE COLUMN BINARY FEATURE /2540/, NO. 1932, OR WITH DATA MODE 2 /2501, 2520/. IN SOME CASES, THE PROGRAM INPUT, CONTROL INFORMATION INPUT, AND SIMULATED-DEVICE FUNCTIONS CAN BE HANDLED BY THE SAME DEVICE.
THE SIMULATOR PRODUCES CORRECT OUTPUT ONLY FOR PROGRAMS THAT WORK PROPERLY ON THE ORIGINAL SYSTEM, BUT MAY PRODUCE INCORRECT OUTPUT FOR TIME-DEPENDENT PROGRAMS.
INFORMATION ON SIMULATION LIMITATIONS AND PERFORMANCE UNDER SIMULATION CAN BE FOUND IN THE SRL PUBLICATION, SYSTEM/360 CONVERSION AIDS— THE 7090/7094 SIMULATOR FOR SYSTEM/360, C28-6532.

PERFORMANCE UNDER SIMULATION DEPENDS LARGELY ON THE BALANCE OF CPU AND I/O OPERATIONS. ESTIMATES OF PERFORMANCE UNDER SIMULATION ARE SHOWN AS RANGES OF THROUGHPUT RATIOS FOR A NUMBER OF TYPICAL PROGRAMS. A RATIO GREATER THAN 1.0 MEANS THAT SIMULATION ON SYSTEM/360 IS FASTER THAN EXECUTION ON THE ORIGINAL SYSTEM. THESE ESTIMATES ARE BASED ON THE FOLLOWING ASSUMPTIONS—

- THE TAPE UNITS USED FOR SIMULATION HAVE AT LEAST THE SAME DATA TRANSFER RATE IN BYTES AS THOSE OF THE SIMULATED SYSTEM IN CHARACTERS.
- THE TERMINATION CONDITIONS OF TAPE READ/WRITE OPERATIONS ARE NORMAL.

THE THROUGHPUT RATIOS ARE—

CONTINUED FROM PRIOR COLUMN—

CURRENT SYSTEM	SYSTEM/360 MODEL 50	SYSTEM/360 MODEL 65	SYSTEM/360 MODEL 75
7090	0.07 - 0.30	0.25 - 0.75	0.30 - 0.80
7094/1	0.05 - 0.20	0.20 - 0.55	0.25 - 0.60

FACTORS THAT INCREASE SIMULATION THROUGHPUT—

- PROGRAMS THAT ARE I/O BOUND.
- I/O DATA IN 9-TRACK SIMULATOR INTERNAL FORMAT.

FACTORS THAT DECREASE SIMULATION THROUGHPUT—

- PROGRAMS THAT ARE PROCESS BOUND.

BASIC PROGRAM MATERIAL —

DOCUMENTATION — PROGRAM MATERIAL LIST... THE 7090/7094 SIMULATOR FOR SYSTEM/360 MANUAL, C28-6532. MACHINE READABLE — OBJECT DECK CONTAINING COMMON PROGRAMS, PREP 90, UPDATE 90, SIM 90, SYSINEND AND SAMPLE PROGRAM AVAILABLE ON A 9-TRACK DTR.

NOTE— THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT — NO TAPE SUBMITTAL IS REQUIRED.

360C-SI-751 IBM SYSTEM/360 7080 SIMULATOR

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-SI-751

THE 7080 SIMULATOR IS A STAND-ALONE SYSTEM/360 PROGRAM THAT, WITHOUT ADDITIONAL HARDWARE, ENABLES PROGRAMS THAT HAVE BEEN OPERATING ON A 7080 TO BE EXECUTED ON ANY SYSTEM/360 HAVING A SUITABLE CONFIGURATION. PROGRAMS FOR 705 MODELS I, II, AND III CAN BE RUN IF THEY ARE COMPATIBLE WITH THE 7080. THIS USUALLY REQUIRES RUNNING THE PROGRAMS IN CONJUNCTION WITH INT580. HOWEVER, 705 MODEL III PROGRAMS THAT CAN BE RUN WITHOUT INT580 ON THE 7080 WILL RUN ON THE SIMULATOR WITHIN THE RESTRAINTS OF THE SIMULATOR SUPPORT. THE SIMULATOR PRODUCES CORRECT RESULTS ONLY FOR PROGRAMS THAT WORK PROPERLY ON THE ORIGINAL SYSTEM, AND MAY PRODUCE INCORRECT RESULTS FOR TIME-DEPENDENT PROGRAMS. BY ELIMINATING THE REQUIREMENT TO CONVERT ALL 7080 PROGRAMS, THE SIMULATOR ALLOWS THE USER TO APPLY MOST OF HIS REPROGRAMMING RESOURCES TOWARD DEVELOPING NEW APPLICATIONS AND REDESIGNING EXISTING APPLICATIONS TO TAKE FULL ADVANTAGE OF SYSTEM/360 FACILITIES. USE OF THE SIMULATOR ALSO EASES THE PRESSURE OF PROGRAM TESTING. THE USEFULNESS OF THE SIMULATOR CAN BE EXTENDED INDEFINITELY, SINCE SIMULATION MAY PROVE TO BE MORE ECONOMICAL THAN REPROGRAMMING FOR PROGRAMS WHICH ARE RUN INFREQUENTLY. THE REPROGRAMMING TASK IS EASED BY ALLOWING ITS DEFERMENT UNTIL SYSTEM INSTALLATION AND TESTING ARE COMPLETE.

MINIMUM SYSTEM REQUIREMENTS— THE SIMULATOR OPERATES WITH THE STANDARD INSTRUCTION SET AND THE DECIMAL ARITHMETIC OPTION. MAIN STORAGE REQUIREMENTS DEPEND ON THE 7080 MEMORY BEING SIMULATED, AS FOLLOWS —

7080 MEMORY /CHARACTERS/	SYSTEM/360 MAIN STORAGE /BYTES/
80,000	131,072 /MODEL G/
160,000	262,144 /MODEL H/

THE SYSTEM/360 MUST BE EQUIPPED WITH THE DEVICES NEEDED TO SERVICE THE SIMULATOR, AS WELL AS THOSE REQUIRED TO PROVIDE A CONFIGURATION CORRESPONDING TO THAT OF THE ORIGINAL SYSTEM. THE SIMULATOR REQUIRES—

- ONE 1052 PRINTER-KEYBOARD.
- ONE SYSTEM/360 DEVICE FOR PROGRAM INPUT.
- ONE SYSTEM/360 DEVICE FOR SIMULATOR CONTROL INFORMATION INPUT.
- ONE CORRESPONDING SYSTEM/360 DEVICE FOR EACH SIMULATED 7080 DEVICE.

IF THE SIMULATOR PROGRAM IS TO BE LOADED FROM A MAGNETIC TAPE UNIT EQUIPPED WITH THE 7-TRACK READ WRITE HEAD /NO. 9557/, THE 7-TRACK COMPATIBILITY FEATURE /NO. 7125/ AND THE DATA CONVERSION FEATURE /NO. 3228 OR NO. 3236/ MUST BE INSTALLED ON THE ASSOCIATED DEVICE CONTROL UNIT. AFTER THE PROGRAM HAS BEEN LOADED, THIS SYSTEM/360 DEVICE IS AVAILABLE FOR SIMULATING A 7080 CORRESPONDING DEVICE. /SEE BELOW/. FOR EACH 7080 DEVICE SIMULATED, ONE OF THE SYSTEM/360 DEVICES SHOWN IN THE FOLLOWING TABLE IS ALSO REQUIRED. IN SOME CASES, THE PROGRAM INPUT, CONTROL INFORMATION INPUT, AND SIMULATED 7080 DEVICE FUNCTIONS CAN BE HANDLED BY THE SAME SYSTEM/360 DEVICE.

7080 DEVICE	SYSTEM/360 DEVICE
7153 CONSOLE	1052 PRINTER-KEYBOARD /ANY MODEL UNIT, MODEL 1. COMPATIBLE WITH THE SYSTEM/.
7502 CONSOLE CARD READER, MODEL 1.	2540 CARD READ PUNCH, MODEL 1. 1442 CARD READ PUNCH, MODEL N1. 2501 CARD READER, MODEL B1 AND B2. 2520 CARD READ PUNCH, MODEL B1.
729 MAGNETIC TAPE UNITS /ANY MODEL/.	2401, 2402, 2403 MAGNETIC TAPE UNITS, MODEL 1, 2, OR 3 /7- OR 9-TRACK/.

/NOTE THAT MODELS 4, 5, AND 6 OF THE 2400 SERIES TAPE UNITS CANNOT BE USED./

BASIC PROGRAM MATERIAL —

DOCUMENTATION — PROGRAM MATERIAL LIST... IBM SYSTEM/360 CONVERSION AIDS — THE 7080 SIMULATOR FOR IBM SYSTEM/360 MANUAL, C28-6531. MACHINE READABLE — 7080 SIMULATOR OBJECT PROGRAM CONTAINING — COMMON PROGRAMS, SIM 80, PREP 80, UPDATE 80, SYSINEND AND THE SAMPLE PROGRAM MAY BE OBTAINED ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE — WHEN ORDERING, THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED, 9-TRACK DTR WILL BE FORWARDED. DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT — NO TAPE SUBMITTAL IS REQUIRED.

360C-SI-752 1620 SIMULATOR PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-SI-752

THE 1620 SIMULATOR IS A STAND-ALONE SYSTEM/360 PROGRAM THAT USES SYSTEM/360 COMPONENTS AND LOGIC TO REPRESENT THE SIMULATED SYSTEM. BY INTERPRETING 1620 PROGRAMS AND DATA, THE SIMULATOR REPRODUCES THE OUTPUT THAT WOULD BE OBTAINED ON THE ORIGINAL SYSTEM. 1620 CORE STORAGE CAPACITIES FROM 20,000 TO 60,000 DECIMAL DIGITS ARE SIMULATED, AS WELL AS ALL STANDARD FEATURES AND THE FOLLOWING OPTIONAL FEATURES—

- ADDITIONAL INSTRUCTIONS FOR 1620, MODEL 1 /NO. 1021/.
- AUTOMATIC DIVIDE FOR 1620, MODEL 1 /NO. 1285/.
- AUTOMATIC FLOATING POINT /NOS. 1288, 1289/.
- INDIRECT ADDRESSING /NO. 4650/.
- INDEX REGISTERS FOR 1620, MODEL 2 /NO. 4627/.
- ADDITIONAL CORE STORAGE — 20K AND 40K.
- 1443 PRINTER.

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- 1311 DISK STORAGE DRIVE, MODELS 2 AND 3.

THE SIMULATOR USES THE SYSTEM/360 STANDARD INSTRUCTION SET. IT ALSO REQUIRES-

- MAIN STORAGE -- 32,768 BYTES /MODEL E/ IF SIMULATED SYSTEM IS 20K... 65,536 BYTES /MODEL F/ IF SIMULATED SYSTEM IS 40K... 131,072 BYTES /MODEL G/ IF SIMULATED SYSTEM IS 60K.
- ONE 1052 PRINTER-KEYBOARD.
- ONE DEVICE FOR INPUT OF THE 1620 PROGRAM.
- ONE DEVICE FOR SIMULATOR CONTROL INFORMATION INPUT.
- FOR EACH DEVICE SIMULATED, ONE OF THE DEVICES SHOWN FOR IT IN THE FOLLOWING TABLE.

1620 DEVICE	SYSTEM/360 DEVICE
1620 CONSOLE	1052 PRINTER-KEYBOARD WITH 1051 CONTROL UNIT FOR MODEL 30.
1622 CARD READ PUNCH	2540 CARD READ PUNCH WITH 2821 CONTROL UNIT.
1621 PAPER TAPE READER	1442 CARD READ PUNCH, MODEL N1. 2520 CARD READ PUNCH, MODEL B1 OR B2. 1442 CARD PUNCH, MODEL N2. 2520 CARD PUNCH, MODEL B2 OR B3. 2671 PAPER TAPE READER WITH 2822 PAPER TAPE CONTROL UNIT. 2540 CARD READ PUNCH WITH 2821 CONTROL UNIT. 1442 CARD READ PUNCH, MODEL N1. 2520 CARD READ PUNCH, MODEL B1.
1621 PAPER TAPE PUNCH	2501 CARD READER, MODEL B1 OR B2. 2540 CARD READ PUNCH WITH 2821 CONTROL UNIT. 1442 CARD READ PUNCH, MODEL N1. 1442 CARD PUNCH, MODEL N2. 2520 CARD READ PUNCH, MODEL B1. 2520 CARD PUNCH, MODEL B2 OR B3. 1443 PRINTER, MODEL N1., OR 1403 PRINTER, MODEL 2., OR N1 WITH 2821 CONTROL UNIT.
1443 PRINTER, MODEL 2	2841 CONTROL UNIT.
1311 DISK STORAGE DRIVE, MODEL 2 OR 3	

IN SOME CASES, THE PROGRAM INPUT, CONTROL INFORMATION INPUT, AND SIMULATED-DEVICE FUNCTIONS CAN BE HANDLED BY THE SAME DEVICE. THE SIMULATOR PRODUCES CORRECT OUTPUT ONLY FOR PROGRAMS THAT WORK PROPERLY ON THE ORIGINAL SYSTEM, AND MAY PRODUCE INCORRECT RESULTS FOR TIME-DEPENDENT PROGRAMS. INFORMATION ON SIMULATION LIMITATIONS AND PERFORMANCE UNDER SIMULATION CAN BE FOUND IN THE SRL PUBLICATION, SYSTEM/360 CONVERSION AIDS-- THE 1620 SIMULATOR FOR SYSTEM/360, C28-6529.

PERFORMANCE UNDER SIMULATION DEPENDS LARGELY ON THE BALANCE OF CPU AND I/O OPERATIONS. ESTIMATES OF PERFORMANCE UNDER SIMULATION ARE SHOWN AS RANGES OF THROUGHPUT RATIOS FOR A NUMBER OF TYPICAL PROGRAMS. A RATIO GREATER THAN 1.0 MEANS THAT SIMULATION ON SYSTEM/360 IS FASTER THAN EXECUTION ON THE ORIGINAL SYSTEM. THESE ESTIMATES ARE BASED ON THE FOLLOWING ASSUMPTIONS--

- THE TAPE UNITS USED FOR SIMULATION HAVE AT LEAST THE SAME DATA RATE IN BYTES AS THOSE OF THE SIMULATED SYSTEM IN CHARACTERS.
- THE TERMINATION CONDITIONS OF TAPE READ/WRITE OPERATIONS ARE NORMAL.

THE THROUGHPUT RATIOS ARE--

1620 CONFIGURATION	SYSTEM/360 MODEL 30	SYSTEM/360 MODEL 40
MODEL 1, PAPER TAPE	.20 - 2.85	.55 - 2.85
MODEL 1, CARDS	.20 - 1.05	.55 - 1.90
MODEL 2, CARDS	.05 - .55	.15 - 1.90
MODEL 2, PAPER TAPE	.05 - 2.85	.15 - 2.85

- FACTORS THAT INCREASE SIMULATION THROUGHPUT--
- PROGRAMS THAT ARE I/O BOUND.
- FACTORS THAT DECREASE SIMULATION THROUGHPUT--
- PROGRAMS THAT ARE PROCESS BOUND.
- PROGRAMS USING DISK OPERATIONS IN ,,TRACK MODE,,.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... THE 1620 SIMULATOR FOR SYSTEM/360 MANUAL, C28-6529. MACHINE READABLE - THE 1620 SIMULATOR OBJECT DECKS WHICH INCLUDE ALL SIMULATOR FUNCTIONS IN ASSEMBLED FORM, PLUS SAMPLE PROGRAM DECKS ARE AVAILABLE IN CARD FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THIS TAPE MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE MUST BE 2400 FEET IN LENGTH.

360C-SI-753 7070/7074 SIMULATOR PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-SI-753

THE 7070/7074 SIMULATOR IS A STAND-ALONE SYSTEM/360 PROGRAM THAT USES SYSTEM/360 COMPONENTS AND LOGIC TO REPRESENT THE SIMULATED SYSTEM. BY INTERPRETING 7070/7074 PROGRAMS AND DATA, THE SIMULATOR REPRODUCES THE OUTPUT THAT WOULD BE OBTAINED ON THE ORIGINAL SYSTEM. 7070/7074 CORE STORAGE CAPACITIES FROM 5,000 TO 30,000 WORDS ARE SIMULATED, AS WELL AS ALL STANDARD FEATURES, FLOATING DECIMAL POINT /OPTION NO. 4420/, AND ADDITIONAL STORAGE /OPTION NO. 1017/. THE FUNCTIONS OF 7070/7074 INPUT/OUTPUT DEVICES ARE PERFORMED BY CORRESPONDING SYSTEM/360 DEVICES.

THE SIMULATOR USES THE SYSTEM/360 STANDARD INSTRUCTION SET AND THE DECIMAL ARITHMETIC OPTION. IT ALSO REQUIRES--

- MAIN STORAGE -- 131,072 BYTES /MODEL G/ IF SIMULATED SYSTEM IS 5K OR 10K... 262,144 BYTES /MODEL H/ IF SIMULATED SYSTEM IS 15K TO 30K.
- ONE 1052 PRINTER-KEYBOARD.
- ONE DEVICE FOR INPUT OF THE 7070/7074 PROGRAM.
- ONE DEVICE FOR SIMULATOR CONTROL INFORMATION INPUT.
- FOR EACH DEVICE SIMULATED, ONE OF THE DEVICES SHOWN FOR IT IN THE FOLLOWING TABLE--

7070/7074 DEVICE	SYSTEM/360 DEVICE
7150 CONSOLE	1052 PRINTER-KEYBOARD, ANY MODEL COMPATIBLE WITH THE SYSTEM.

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CONTINUED FROM PRIOR COLUMN--

7500 CARD READER	2540 CARD READ PUNCH,, OR 1442 CARD READ PUNCH, MODEL N1., OR 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODELS 1, 2, AND 3 /9-TRACK ONLY/.
7501 CONSOLE READER	2501 CARD READER, MODEL B1 OR B2. 2520 CARD READ PUNCH, MODEL B1. 2540 CARD READ PUNCH,, OR 1442 CARD READ PUNCH, MODEL N1.
7550 CARD PUNCH	2501 CARD READER, MODEL B1 OR B2. 2520 CARD READ PUNCH, MODEL B1. 2540 CARD READ PUNCH,, OR 1442 CARD READ PUNCH, MODEL N1., OR 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODELS 1, 2, AND 3 /9-TRACK ONLY/.
7400 PRINTER	2520 CARD READ PUNCH, MODEL B1. 1442 CARD PUNCH, MODEL N2. 2520 CARD PUNCH, MODEL B2 OR B3. 1403 PRINTER, MODEL 2., OR 1443 PRINTER, MODEL N1. 2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODELS 1, 2, AND 3 /9-TRACK ONLY/.
729 MAGNETIC TAPE UNIT /ANY MODEL/	2401, 2402, OR 2403 MAGNETIC TAPE UNIT, MODELS 1, 2, AND 3 /7-TRACK OR 9-TRACK/.

/NOTE THAT MODELS 4, 5, AND 6 OF THE 2400-SERIES TAPE UNITS CANNOT BE USED/. IN SOME CASES, THE PROGRAM INPUT, CONTROL INFORMATION INPUT, AND SIMULATED-DEVICE FUNCTIONS CAN BE HANDLED BY THE SAME DEVICE. THE SIMULATOR PRODUCES CORRECT OUTPUT ONLY FOR PROGRAMS THAT WORK PROPERLY ON THE ORIGINAL SYSTEM, AND MAY PRODUCE INCORRECT OUTPUT FOR TIME-DEPENDENT PROGRAMS. INFORMATION ON SIMULATION LIMITATIONS AND PERFORMANCE UNDER SIMULATION CAN BE FOUND IN THE SRL PUBLICATION, SYSTEM/360 CONVERSION AIDS-- 7070/7074 SIMULATOR FOR SYSTEM/360, C28-6530.

PERFORMANCE UNDER SIMULATION DEPENDS LARGELY ON THE BALANCE OF CPU AND I/O OPERATIONS. ESTIMATES OF PERFORMANCE UNDER SIMULATION ARE SHOWN BELOW AS RANGES OF THROUGHPUT RATIOS FOR A NUMBER OF TYPICAL PROGRAMS. A RATIO GREATER THAN 1.0 MEANS THAT SIMULATION ON SYSTEM/360 IS FASTER THAN EXECUTION ON THE ORIGINAL SYSTEM. THESE ESTIMATES ARE BASED ON THE FOLLOWING ASSUMPTIONS--

- THE TAPE UNITS USED FOR SIMULATION HAVE AT LEAST THE SAME DATA RATE IN BYTES AS THOSE OF THE SIMULATED SYSTEM IN CHARACTERS.
- THE TERMINATION CONDITIONS OF TAPE READ/WRITE OPERATIONS ARE NORMAL.

THE THROUGHPUT RATIOS ARE--

CURRENT SYSTEM	SYSTEM/360 MODEL 50	SYSTEM/360 MODEL 65
7070	0.3 - 0.8	0.8 - 1.7
7074	0.2 - 0.4	0.7 - 1.2

NOTE- INPUT AND OUTPUT ARE ASSUMED TO BE 9-TRACK AND IN SIMULATOR INTERNAL FORMAT.

- FACTORS THAT INCREASE SIMULATION THROUGHPUT--
- USE OF THE ADDITIONAL STORAGE MODE.
- PROGRAMS THAT ARE I/O BOUND /EXCEPT 7070 ON MODEL 65/.
- FACTORS THAT DECREASE SIMULATION THROUGHPUT--
- I/O DATA NOT IN SIMULATOR INTERNAL FORMAT.
- PROGRAMS THAT ARE PROCESS BOUND /EXCEPT 7070 ON MODEL 65/.
- IN 7074 PROGRAMS, A HIGH PERCENTAGE OF FLOATING POINT OPERATIONS.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... CONVERSION AIDS FOR THE 7070/7074 SIMULATOR MANUAL, C28-6530. MACHINE READABLE - THE OBJECT PROGRAMS /ALL SIMULATOR FUNCTIONS AND SUPPORTING FUNCTIONS/ AND THE SAMPLE PROGRAM MAY BE OBTAINED ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360C-SI-754 IBM SYSTEM/360 1410/7010 SIMULATOR PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360C-SI-754

THE 1410/7010 SIMULATOR PROGRAM IS A STAND-ALONE SYSTEM/360 PROGRAM THAT ENABLES PROGRAMS THAT HAVE BEEN OPERATING ON A 1410/7010 TO BE EXECUTED ON A SYSTEM/360 HAVING A SUITABLE CONFIGURATION. BY PROVIDING PROGRAM ,,COMPATIBILITY,, THE SIMULATOR RELIEVES REPROGRAMMING SCHEDULES, AND CAN ELIMINATE THE NEED TO CONVERT INFREQUENTLY USED PROGRAMS. THE SIMULATOR PRODUCES CORRECT RESULTS ONLY FOR PROGRAMS THAT WORK PROPERLY ON THE ORIGINAL SYSTEM, AND MAY PRODUCE INCORRECT RESULTS FOR TIME-DEPENDENT PROGRAMS. THE SYSTEM/360 MUST BE EQUIPPED WITH THE DEVICES NEEDED TO SERVICE THE SIMULATOR, AS WELL AS THOSE REQUIRED TO PROVIDE A CONFIGURATION CORRESPONDING TO THAT OF THE ORIGINAL SYSTEM. THE SIMULATOR REQUIRES--

- ONE 1052 PRINTER-KEYBOARD.
- ONE DEVICE FOR PROGRAM INPUT.
- ONE DEVICE FOR SIMULATOR CONTROL INFORMATION INPUT.
- ONE CORRESPONDING DEVICE FOR EACH SIMULATED DEVICE.

IN SOME CASES, THE PROGRAM INPUT, CONTROL, AND SIMULATED-DEVICE FUNCTIONS CAN BE HANDLED BY THE SAME DEVICE. PERFORMANCE UNDER SIMULATION DEPENDS LARGELY ON THE BALANCE OF CPU AND I/O OPERATIONS.

THROUGHPUT- ESTIMATES OF PERFORMANCE UNDER SIMULATION ARE SHOWN BELOW AS RANGES OF THROUGHPUT RATIOS FOR A NUMBER OF TYPICAL PROGRAMS. A RATIO GREATER THAN 1.0 MEANS THAT SIMULATION ON SYSTEM/360 IS ESTIMATED TO BE FASTER THAN EXECUTION ON THE ORIGINAL SYSTEM. THESE ESTIMATES ARE BASED ON THE FOLLOWING ASSUMPTIONS--

- THE TAPE UNITS USED FOR SIMULATION HAVE AT LEAST THE SAME DATA TRANSFER RATE IN BYTES AS THOSE OF THE SIMULATED SYSTEM IN CHARACTERS.
- THE TERMINATION CONDITIONS OF TAPE READ/WRITE OPERATIONS ARE NORMAL.

THE THROUGHPUT RATIOS ARE--

CURRENT SYSTEM	SYSTEM/360 MODEL 40	SYSTEM/360 MODEL 50	SYSTEM/360 MODEL 65
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INUED FROM PRIOR PAGE--

CONTINUED FROM PRIOR COLUMN--

1410 .20-.35 .40-.70
7010 .25-.50 .55-.85

FACTORS THAT INCREASE SIMULATION THROUGHPUT--
- PROGRAMS WHICH ARE I/O BOUND ON 1410/7010,
- I/O DATA IN SIMULATOR INTERNAL FORMAT WITH ODD PARITY
ALTERNATE MODE.

FACTORS THAT DECREASE SIMULATION THROUGHPUT--
- PROGRAMS WHICH ARE PROCESS BOUND ON 1410/7010,
- I/O DATA NOT IN SIMULATOR INTERNAL FORMAT.

THE 1410/7010 SIMULATOR HANDLES ALL STANDARD FEATURES AND THE
FOLLOWING OPTIONAL FEATURES OF THE SIMULATED SYSTEM--

- FLOATING POINT ARITHMETIC.
- PROCESSING OVERLAP /NO. 5730/.
- PRIORITY PROCESSING /NO. 5620/.
- INVERTED PRINT-EDIT /COMMA-PERIOD/.
- ONE TO FOUR CHANNELS.

THE MAIN RESTRICTIONS AND LIMITATIONS ARE THE FOLLOWING--

- 1401 COMPATIBILITY IS NOT SIMULATED.
- PROGRAMS WHICH RELY ON 1410/7010 INTERNAL MACHINE TIMING
TO OVERLAP I/O AND CPU OPERATIONS MAY PRODUCE INCORRECT
RESULTS.
- NO MORE THAN 25 I/O DEVICES CAN BE SIMULATED SIMULTANEOUSLY.
- ONLY THE MAIN CONSOLE FUNCTIONS ARE SIMULATED.
- THE LENGTH OF RECORDS IS LIMITED TO THE SIZE OF THE
I/O BUFFERS /5K TO 120K CHARACTERS, DEPENDING ON THE MAIN
STORAGE CAPACITY OF THE SYSTEM/360 AND ON THAT OF THE
1410/7010 AND THE NUMBER OF CHANNELS SIMULATED/.

SYSTEM REQUIREMENTS-- THE SIMULATOR OPERATES WITH THE
STANDARD INSTRUCTION SET AND THE DECIMAL ARITHMETIC OPTION.
MAIN STORAGE REQUIREMENTS DEPEND ON THE 1410 OR 7010 CORE
STORAGE BEING SIMULATED AS FOLLOWS--

1410 CORE STORAGE /CHARACTERS/	7010 CORE STORAGE /CHARACTERS/	SYSTEM/360 MAIN STORAGE /BYTES/
10,000		65,536 /MODEL F/
20,000		65,536 /MODEL F/
40,000	40,000	131,072 /MODEL G/
60,000	60,000	131,072 /MODEL G/
80,000	80,000	131,072 /MODEL G/
	/2 CHANNELS/	
	80,000	262,144 /MODEL H/
	/4 CHANNELS/	
	100,000	262,144 /MODEL H/

A SYSTEM/360 DEVICE CORRESPONDING TO EACH 1410/7010 DEVICE TO
BE SIMULATED IS REQUIRED AS FOLLOWS--

1410/7010 DEVICE	SYSTEM/360 DEVICE
1415 CONSOLE	1052 PRINTER-KEYBOARD, ANY MODEL COMPATIBLE WITH THE SYSTEM/360 CONFIGURATION.
1402 CARD READ PUNCH MODEL 2	2540 CARD READ PUNCH.
1442 CARD READER, MODEL 3	1442 CARD READ PUNCH, MODEL N1. 2501 CARD READER, MODEL B1 OR B2. 2520 CARD READ PUNCH, MODEL B1.
1403 PRINTER, MODEL 1, 2, OR 3	1403 PRINTER, MODEL 2. 1443 PRINTER, MODEL N1.
729 MAGNETIC TAPE UNIT MODELS II, IV, V, VI	2401, 2402, 2403 MAGNETIC TAPE MODELS 1, 2, OR 3.

7330 MAGNETIC TAPE UNIT
NOTE-- 2400 SERIES UNITS MODELS 4, 5, AND 6 CANNOT BE USED.
SIMULATION OF THE 1402 CARD READ PUNCH, MODEL 2, WITH
51-COLUMN INTERCHANGEABLE READ FEED FEATURE /NO. 4150/
REQUIRES A 2540 CARD READ PUNCH WITH 51-COLUMN INTERCHANGEABLE
READ FEED FEATURE /NO. 4151/.

SIMULATION OF THE 1402 CARD READ PUNCH, MODEL 2, WITH READ
AND PUNCH COLUMN BINARY FEATURE /NO. 6025/ REQUIRES A COLUMN
BINARY - DATA MODE 2 FEATURE ON THE 2821 CONTROL UNIT /NO. 1990/.
ANY 2400-SERIES MAGNETIC TAPE UNIT USED TO READ OR WRITE
7-TRACK TAPES MUST BE EQUIPPED WITH THE 7-TRACK COMPATIBILITY
FEATURE /NO. 7125/ AND A 7-TRACK READ/WRITE HEAD /NO. 9557/.
THE 7-TRACK COMPATIBILITY FEATURE MUST BE INSTALLED ON THE
ASSOCIATED TAPE CONTROL UNIT. INFORMATION ON SIMULATION
LIMITATIONS AND PERFORMANCES UNDER SIMULATION CAN BE FOUND
IN THE SRL PUBLICATION, IBM SYSTEM/360 CONVERSION AIDS--
THE 1410/7010 SIMULATOR FOR THE IBM SYSTEM/360, C28-6528.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... IBM SYSTEM/360
CONVERSION AIDS - 1410/7010 SIMULATOR FOR IBM SYSTEM/360
MANUAL, C28-6528.

MACHINE READABLE - 9-TRACK OR 7-TRACK /DATA CONVERSION
FEATURE REQUIRED. DTR CONTAINING COMMON PROGRAMS,
SIM 10, PREP 10, UPDATE 10, SYNSEMD AND SAMPLE PROGRAM.
NOTE - WHEN ORDERING THIS PROGRAM, THE REQUESTOR MUST INDICATE
WHETHER A 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
9-TRACK DTR WILL BE SUPPLIED. DTR WILL BE SUPPLIED BY THE PROGRAM
INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

1401-F0-702 FORTRAN II LANGUAGE

CONVERSION PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 1401-F0-702

THE FORTRAN II LANGUAGE CONVERSION PROGRAM AIDS IN THE
TRANSITION TO SYSTEM/360 BY CONVERTING ACCEPTABLE CURRENT
FORTRAN II SOURCE PROGRAMS INTO FORTRAN IV SOURCE PROGRAMS FOR
THE SYSTEM/360. THE FORTRAN II LCP ACCEPTS AS INPUT--

1401 FORTRAN,
1410 FORTRAN II,
1620 GOTRAN,
1620 FORTRAN II,
1620 FORTRAN WITH FORMAT,
1620 MONITOR I FORTRAN II-D,
1620 MONITOR II FORTRAN II-D,
1620 FORTRAN II FOR AUTOMATIC FLOATING POINT,
7070 SERIES FORTRAN /BASIC AND FULL/,
7070 FOS FORTRAN,
0705 FORTRAN,
7060 PROCESSOR FORTRAN AND
7090/7094 FORTRAN II

THE SOURCE PROGRAMS CAN BE CONVERTED TO ANY OF THE FOLLOWING

LEVELS OF SYSTEM/360 FORTRAN --
OPERATING SYSTEM/360 FORTRAN IV /LEVEL H/,
OPERATING SYSTEM/360 FORTRAN IV /E LEVEL SUBSET/ AND
SYSTEM/360 BASIC PROGRAMMING SUPPORT FORTRAN IV /TAPE/
SYSTEM/360 BASIC PROGRAMMING SUPPORT FORTRAN IV /CARD/
BASIC OPERATING SYSTEM/360 WITH D05/360
BASIC OPERATING SYSTEM/360 WITH T05/360

FEATURES -- THE FORTRAN LCP HAS--
- CARD OR TAPE INPUT -- BOTH THE LCP AND THE FORTRAN II SOURCE
PROGRAMS CAN BE READ FROM EITHER CARDS OR TAPE.
- SINGLE OR STACKED PROGRAM CONVERSION -- A SINGLE SOURCE PROG.
CAN BE PROCESSED FROM ONE OF THE THREE TAPE UNITS NEEDED IN
A MINIMUM CONFIGURATION. STACKED PROGRAMS CAN BE PROCESSED
IF MORE THAN THREE TAPE UNITS ARE USED.
- CARD-CODE CONVERSION FOR DUAL BCD CHARACTERS -- A CONTROL
CARD OPTION PROVIDES AUTOMATIC CONVERSION FROM BCD INPUT CODE TO
EBCDIC OUTPUT CODE, OR VICE VERSA. IN THIS WAY, THE LCP CAN
CONVERT THE DUAL BCD CHARACTERS, I.E., TWO CHARACTERS WITH THE
SAME CARD CODE, INTO THE PROPER SYSTEM/360 CARD CODES. THE
DUAL CHARACTERS ARE-- PLUS AND AMPERSAND... EQUAL SIGN AND POUND
SIGN... APOSTROPHE AND THE COMMERCIAL AT SIGN... LEFT PARENTHESIS
AND PERCENT SIGN... RIGHT PARENTHESIS AND THE DZEMGE.
- DOCUMENTED LISTING -- THE LCP PROVIDES A LISTING OF THE
CONVERTED PROGRAM. THIS LISTING CONTAINS MESSAGE CODES AND
TABLES THAT DOCUMENT CONVERSION ACTIONS AND FACILITATE ANALYSIS
OF THE CONVERTED PROGRAM. A LISTING OF THE SOURCE PROGRAM IS
OPTIONAL.

- OPTIONAL CARD OUTPUT -- WHEN SPECIFIED, THE LCP PRODUCES A
PUNCHED-CARD DECK THAT CONTAINS THE CONVERTED PROGRAM.
- OPTIONAL OUTPUT ON TAPE -- THE USER CAN SPECIFY THAT PRINTED
AND/OR PUNCHED OUTPUT ARE TO BE RECORDED ON TAPE.
- REPLACEMENT OF TAPE REFER. -- THE USER CAN SPECIFY THAT TAPE
CONSTANTS IN INPUT/OUTPUT STATEMENTS ARE TO BE REPLACED BY A
VARIABLE NAME OR ANOTHER TAPE CONSTANT.
- RESOLUTION OF COMMON-EQUIVALENCE INTERACTION -- THE USER CAN
SPECIFY THAT VARIABLES IN COMMON STATEMENTS ARE TO BE
REORDERED SO THAT A SYSTEM/360 COMPILER WILL ALLOCATE COMMON
STORAGE AND ESTABLISH EQUIVALENCIES IN THE SAME MANNER AS THE
CURRENT FORTRAN II COMPILER.

THE FORTRAN II LCP WILL REDUCE THE AMOUNT OF REPROGRAMMING
NECESSARY TO CONVERT CURRENT FORTRAN II PROGRAMS INTO
SYSTEM/360 FORTRAN IV PROGRAMS. USE OF THE LCP WILL REDUCE TIME
AND MONEY SPENT ON RECODING, CLEANING ACTIVITIES, AND PROGRAM
DEBUGGING. ALTHOUGH THE SAVINGS TO BE REALIZED FOR A SINGLE
PROGRAM MAY BE AS GREAT AS 65 PER CENT, THE OVERALL SAVINGS
TO A CUSTOMER MUST BE DETERMINED ON AN INDIVIDUAL BASIS.

MINIMUM SYSTEM REQUIREMENTS-- AN 8K 1401 SYSTEM WITH... A
1402 CARD READ PUNCH... A 1403 PRINTER MODEL 2... THREE TAPE
UNITS... THE ADVANCED PROGRAMMING FEATURE... THE HIGH-LOW-EQUAL
COMPARE FEATURE FOR AN IBM SYSTEM/360 WITH 1401 COMPATIBILITY
AND CORRESPONDING FEATURES AND I/O DEVICES/.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... FORTRAN II LANGUAGE
CONVERSION MANUAL.
MACHINE READABLE - DTR CONTAINING LCP OBJECT DECK.

OPTIONAL PROGRAM MATERIAL - LCP SOURCE DECKS ON ONE REEL OF
MAGNETIC TAPE.

OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.
THE NUMBER OF TAPES NECESSARY TO OBTAIN THE PROGRAM MATERIAL
MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE
TAPES SHOULD BE 240 FEET IN LENGTH.

THE DTR /DISTRIBUTION TAPE WILL BE SUPPLIED BY
THE PROGRAM INFORMATION DEPARTMENT-- NO TAPE SUBMITTAL IS
REQUIRED.

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360F SYSTEM/360 MODEL 44

PROGRAMMING SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
USE PS/MOD 44 ORDER FORM NO. 120-1411.

THE MODEL 44 PROGRAMMING SYSTEM PROVIDES FORTRAN AND
ASSEMBLER LANGUAGE PROCESSING AND PROGRAM EXECUTION IN A
MONITORED ENVIRONMENT WITH AUTOMATIC JOB-TO-JOB TRANSITION,
INTERRUPTION HANDLING, AND INPUT/OUTPUT SUPERVISION.
THE SYSTEM HAS FACILITIES FOR THE CREATION AND MAINTENANCE
OF LIBRARIES AND THE MANIPULATION OF THEIR CONTENTS. IT ALSO
PROVIDES EXTENSIVE JOB CONTROL AND MODULAR PROGRAMMING
CAPABILITIES FOR FLEXIBILITY AND VERSATILITY IN THE
PREPARATION OF PROGRAMS FOR EXECUTION. IT WILL UTILIZE ALL
AVAILABLE STORAGE OF PROGRAMS UTILIZING DIRECT DATA
CHANNEL, DIRECT WORD, OR PRIORITY INTERRUPTION FEATURES
CANNOT BE EXECUTED UNDER THE SUPERVISOR.

THE SYSTEM RESIDES ON A 2315 DISK CARTRIDGE MOUNTED ON THE
MODEL 44 SINGLE DISK STORAGE DRIVE. IT INCLUDES A SUPERVISOR,
A SET OF SUPPORT PROGRAMS THAT PERFORM SYSTEM-RELATED AND
UTILITY FUNCTIONS, AND TWO LANGUAGE PROCESSORS-- A FULL
FORTRAN IV COMPILER AND AN ASSEMBLER. IT ALSO INCLUDES
SIX STAND-ALONE /I.E., NOT OPERATING UNDER SYSTEM CONTROL/
PROGRAMS THAT ARE NOT RESIDENT ON THE 2315 DISK CARTRIDGE--
A PROGRAM TO CONSTRUCT THE EXECUTABLE PROGRAMMING SYSTEM FROM
THE DISTRIBUTED CARD DECKS., A LOADER FOR LOADING
SYSTEM-PRODUCED PROGRAMS THAT ARE IN ABSOLUTE FORM., AND ARE
TO BE EXECUTED INDEPENDENTLY OF SYSTEM CONTROL., TWO DISK
INITIALIZATION PROGRAMS /2315 AND 1316/, A SAVE/RESTORE
PROGRAM FOR SAVING THE CONTENTS OF A DISK ON TAPE AND LATER
RESTORING THE DISK., AND A SPECIAL PURPOSE PRINT/PUNCH
PROGRAM FOR PRINTING OR PUNCHING SELECTED FILES OF THE TAPE
CONTAINING THE IBM-DISTRIBUTED SYSTEM. THE SYSTEM REQUIRES
16,896 BYTES TO BE PERMANENTLY RESIDENT IN CORE STORAGE AND
104 TRACKS /APPROXIMATELY 290,000 BYTES/ FOR THE ENTIRE
SYSTEM RESIDENCE ON THE SINGLE DISK STORAGE DRIVE /SDSO/.
ADDITIONAL SPACE MUST BE RESERVED ON THE SDSD WHEN THE
SYSTEM IS INITIALLY CREATED FOR SYSTEM SCRATCH AREAS AND
USER ADDITIONS TO THE PHASE AND MODULE LIBRARIES.

SUPERVISOR - 360F-10-613.

THE SUPERVISOR CONTROLS THE ENTIRE SYSTEM AND PROVIDES A
COMMON INTERFACE TO ALL PROCESSING PROGRAMS, INCLUDING THE
FORTRAN COMPILER, THE ASSEMBLER, THE SYSTEM SUPPORT PROGRAMS,
AND USER-WRITTEN PROGRAMS. SPECIFICALLY, THE SUPERVISOR--

- MANAGES THE USE OF SYSTEM RESOURCES.
- LOADS THE APPROPRIATE EXECUTION PHASES FROM THE PHASE
LIBRARY /I.E., THE LIBRARY OF PROGRAMS IN ABSOLUTE FORM,
READY FOR EXECUTION/.
- HANDLES ALL STANDARD LABEL CHECKING, INPUT/OUTPUT
SUPPORTS, AND INPUT/OUTPUT ERROR RECOVERY PROCEDURES.
- SERVICES INTERRUPTIONS AND PASSES CONTROL TO THE
APPROPRIATE SYSTEM OR USER ROUTINE FOR INTERRUPTION
PROCESSING.
- SCHEDULES CHANNEL USE TO EFFECT OVERLAP OF PROCESSING WITH

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- INPUT/OUTPUT OPERATIONS.
- PROVIDES FOR COMMUNICATION WITH THE CONSOLE OPERATOR.

ASSEMBLER - 360F-AS-616.

THE ASSEMBLER TRANSLATES SYSTEM/360 ASSEMBLER LANGUAGE PROGRAMS TO RELOCATABLE OBJECT PROGRAM MODULES. THE ASSEMBLER LANGUAGE CONSISTS OF ALL SYSTEM/360 MODEL 44 INSTRUCTION MNEMONICS, LITERALS, AND A SET OF ASSEMBLER INSTRUCTIONS THAT DIRECT THE ASSEMBLY PROCESS. IT INCLUDES AN OPTIONAL UPDATE FACILITY. OBSERVING THE QUALIFICATIONS LISTED BELOW, PROGRAMS WRITTEN FOR THE MODEL 44 ASSEMBLER MAY BE ASSEMBLED BY THE TOS/DOS ASSEMBLERS AND THE OS/360 ASSEMBLER. SIMILARLY, PROGRAMS WRITTEN FOR THE BPS ASSEMBLERS MAY BE ASSEMBLED BY THE MODEL 44 ASSEMBLER.

- THE MODEL 44 ASSEMBLER WILL ONLY ASSEMBLE INSTRUCTIONS INCLUDED IN THE MODEL 44 INSTRUCTION SET. THERE ARE FOUR SPECIAL INSTRUCTIONS UNIQUE TO THE MODEL 44 THAT CANNOT BE ASSEMBLED ON OTHER SYSTEM/360 ASSEMBLERS.
- THE ASSEMBLERS UPDATE INSTRUCTIONS ARE UNIQUE TO THE MODEL 44 AND CANNOT BE PROCESSED BY ANY OTHER ASSEMBLER.
- IF VARIABLE SYMBOLS ARE USED, CARE MUST BE TAKEN PRIOR TO ASSEMBLY IN OTHER SYSTEMS TO ENSURE THAT LCLA DECLARATION EXISTS FOR ALL VARIABLE SYMBOLS.
- THE USER MUST ENSURE THAT EACH PROGRAM OBSERVES THE SUBROUTINE LINKAGES AND SUPERVISOR CALLS APPROPRIATE TO THE SYSTEM THAT THE PROGRAM WILL RUN UNDER.

FORTRAN IV - 360F-FO-618.

THE FORTRAN IV COMPILER TRANSLATES PROGRAMS WRITTEN IN THE FORTRAN LANGUAGE TO RELOCATABLE OBJECT PROGRAM MODULES. THE COMPILER ACCEPTS PROGRAMS WRITTEN IN THE FULL FORTRAN IV LANGUAGE. NO DEBUG FACILITIES ARE AVAILABLE HOWEVER. PROGRAMS MAY BE WRITTEN IN EITHER BCD OR EBCDIC. THE COMPILER TESTS FOR USAGES OF OFFICIAL FORTRAN LIBRARY ROUTINE NAMES TO ENSURE CORRESPONDENCE WITH RESPECT TO THE NUMBER AND TYPE OF ARGUMENTS USED. THE FORTRAN LANGUAGE MANUAL WARNS AGAINST THE DECLARATION OF COMMON AND EQUIVALENCE DATA IN SUCH A WAY AS TO CAUSE DATA TO BE IMPROPERLY ALIGNED, E.G., DOUBLE PRECISION DATA NOT ON DOUBLE WORD BOUNDARIES. IF SUCH A CONDITION IS DETECTED, A WARNING MESSAGE WILL BE PRINTED AT COMPILE TIME BUT EXECUTION WILL BE ALLOWED TO BEGIN. IF A SPECIFICATION CONDITION OCCURS AT EXECUTION TIME, A FIX-UP ROUTINE WILL BE LOADED AUTOMATICALLY INTO MAIN STORAGE AND THE DATA ADJUSTED SO THAT EXECUTION CAN CONTINUE. A FACILITY IS PROVIDED IN THE FORTRAN LIBRARY FOR CALLING THE FETCH AND LOAD SUPERVISOR FACILITIES OF THE 44 PS. THE MODEL 44 FORTRAN IV IS COMPATIBLE WITH AND ENCOMPASSES THE STANDARD /OS/ FORTRAN. PROGRAMS WRITTEN IN BPS, TOS, DOS FORTRAN OR OS E LEVEL FORTRAN MAY BE COMPILED BY THE MODEL 44 FORTRAN IV. OS/360 FORTRAN IV G AND H ARE COMPATIBLE WITH MODEL 44 FORTRAN IV.

FORTRAN IV LIBRARY - 360F-LM-619.

THE FORTRAN LIBRARY CONTAINS SUBPROGRAMS WHICH CAN BE CALLED BY FORTRAN OBJECT PROGRAMS.

JOB CONTROL - 360F-CL-614.

THE SYSTEMS JOB CONTROL PROCESSOR IS LOADED BEFORE EACH JOB STEP. IT READS AND INTERPRETS THE PROBLEM PROGRAMS JOB CONTROL STATEMENTS AND PROVIDES REQUESTED SERVICES AND FACILITIES. THE STATEMENTS, IN GENERAL, DESCRIBE THE MACHINE AND SYSTEM RESOURCES THAT WILL BE REQUIRED TO EXECUTE THE PROGRAM. THEY INDICATE WHICH OPTIONAL SYSTEM FEATURES WILL BE DESIRED, AND THEY SPECIFY ADMINISTRATIVE FUNCTIONS THAT SHOULD BE PERFORMED. WHEN THE JOB CONTROL PROCESSOR FINISHES PROCESSING CONTROL STATEMENTS, IT CAUSES LOADING OF THE REQUIRED INTO MAIN STORAGE FROM THE PHASE LIBRARY AND INITIATES EXECUTION OF THE JOB STEP. AT THE END OF THE JOB, THE JOB CONTROL PROCESSOR PROVIDES REQUESTED END-OF-JOB SERVICES AND RESTORES THE SYSTEM TO ITS STATUS AS OF THE BEGINNING OF THE JOB. IT THEN BEGINS PROCESSING CONTROL STATEMENTS FOR THE NEXT JOB.

LINKAGE EDITOR - 360F-ED-615.

THE SYSTEMS LINKAGE EDITOR PROGRAM CONVERTS ASSEMBLER AND COMPILER OUTPUT MODULES INTO A FORM SUITABLE FOR LOADING AND EXECUTION. ALL PROGRAMS TO BE EXECUTED UNDER SYSTEM CONTROL MUST FIRST BE PROCESSED BY THE LINKAGE EDITOR. A PROBLEM PROGRAM MAY CONSIST OF ONE LANGUAGE PROCESSOR OUTPUT MODULE, OR IT MAY BE MADE UP OF SEVERAL MODULES, INCLUDING SOME FROM PREVIOUSLY EXECUTED JOBS, THAT MUST BE COMBINED WITH NEW MODULES. A MODULE MAY BE INDEPENDENT AND SELF-CONTAINED, OR THERE MAY BE NUMEROUS CROSS-REFERENCES BETWEEN MODULES AND BETWEEN CONTROL SECTIONS WITHIN MODULES. IN PROCESSING A PROBLEM PROGRAM, THE LINKAGE EDITOR CONVERTS INPUT MODULES INTO ONE OR MORE PHASES. A PHASE IS A SEGMENT OF MACHINE-LANGUAGE CODE THAT IS LOADED INTO MAIN STORAGE BY A SINGLE FETCH OR LOAD SUPERVISOR CALL. IT MAY CONTAIN ONE OR MORE OF THE MODULES THAT WERE INPUT TO THE LINKAGE EDITOR. ITS SIZE AND COMPOSITION ARE DETERMINED BY THE PROGRAMMER. MORE THAN ONE PHASE MAY BE RESIDENT IN MAIN STORAGE AT A TIME, AND A PROGRAM MAY BE DESIGNED SO THAT ONE PHASE IS NOT LOADED UNTIL EXECUTION OF ANOTHER PHASE IN THE SAME PROGRAM HAS BEEN COMPLETED.

UTILITIES - 360F-UT-617.

THE SYSTEMS UTILITY ROUTINES HANDLE MANY OF THE ROUTINE TASKS THAT ARE COMMON TO ALL COMPUTER INSTALLATIONS. THESE INCLUDE INITIALIZATION OF DISKS AND MAGNETIC TAPES, LISTING THE CONTENTS OF STORAGE VOLUMES AND TRANSFERRING DATA FROM ONE TYPE OF STORAGE TO ANOTHER, SUCH AS FROM CARDS TO TAPE.

STAND-ALONE PROGRAMS.

IN ADDITION TO THE MODEL 44 PROGRAMMING SYSTEM, SIX STAND-ALONE PROGRAMS ARE PROVIDED. THEY OPERATE INDEPENDENTLY OF SYSTEM CONTROL. THEY ARE STAND-ALONE BECAUSE THEY ARE REQUIRED TO CONSTRUCT THE SYSTEM AND ARE ALSO USED TO MODIFY IT.

2315 DISK INITIALIZATION - 360F-UT-607.

THE 2315 DISK INITIALIZATION PROGRAM PREPARES A DISK FOR PROGRAM USE, ASSIGNING AN ALTERNATE TRACK TO ANY TRACK THAT THE DISK INITIALIZATION PROGRAM HAS RECOGNIZED AS DEFECTIVE. IT ALSO ASSIGNS AN ALTERNATE TRACK FOR A TRACK RECOGNIZED AS DEFECTIVE DURING NORMAL SYSTEM OPERATION.

CONTINUED FROM PRIOR COLUMN--

2311 DISK INITIALIZATION - 360F-UT-608.

THE 2311 DISK INITIALIZATION PROGRAM PREPARES A DISK FOR PROGRAM USE, ASSIGNING AN ALTERNATE TRACK TO ANY TRACK THAT THE DISK INITIALIZATION PROGRAM HAS RECOGNIZED AS DEFECTIVE. IT ALSO ASSIGNS AN ALTERNATE TRACK FOR A TRACK RECOGNIZED AS DEFECTIVE DURING NORMAL SYSTEM OPERATION.

SYSTEM CONSTRUCTION - 360F-UT-612.

THIS PROGRAM CONSTRUCTS AN IBM MODEL 44 PROGRAMMING SYSTEM RESIDENCE VOLUME /ON A 2315 DISK CARTRIDGE/ FROM PUNCHED CARDS.

ABSOLUTE LOADER - 360F-UT-611.

THIS PROGRAM LOADS CARD DECKS THAT ARE TO BE EXECUTED INDEPENDENTLY OF SYSTEM CONTROL.

SAVE/RESTORE - 360F-UT-609.

THIS PROGRAM COPIES ON TAPE THE CONTENTS OF A 2315 DISK CARTRIDGE OR 1316 DISK PACK AND COPIES ONTO A 2315 DISK CARTRIDGE OR 1316 DISK PACK THE DATA PREVIOUSLY SAVED ON TAPE.

PRINT/PUNCH - 360F-UT-610.

THIS PROGRAM PUNCHES THE TEXT OF THE DISTRIBUTED TAPE REEL /DTS/ AND PRINTS THE TABLE OF CONTENTS AND ANY OTHER EBCDIC FILE THAT IS ON THE DTR.

MINIMUM MACHINE CONFIGURATION--

- 2044 PROCESSING UNIT WITH ITS CONSOLE PRINTER-KEYBOARD, SINGLE DISK STORAGE DRIVE, AND AT LEAST 65,536 BYTES OF MAIN STORAGE.
- ONE MULTIPLEXOR CHANNEL /NO. 5248 OR NO. 4598/.
- ONE 2315 DISK CARTRIDGE /USED FOR SYSTEMS RESIDENCE/.
- ONE OF THE FOLLOWING INPUT UNITS- 1442 MDL N1 CARD READ/PUNCH... 2501 MDL B1 OR B2 CARD READER... 2520 MDL B1 CARD READ/PUNCH... 2540 MDL 1 CARD READ/PUNCH... 2401 OR 2402 MDL 1, 2, 3, 4, 5, OR 6 MAGNETIC TAPE UNIT... 2403 MDL 1, 2, 3, 4, 5, OR 6 MAGNETIC TAPE UNIT CONTROL... 2404 MDL 1, 2, OR 3 MAGNETIC TAPE UNIT AND CONTROL... 2311 DISK STORAGE DRIVE.
- ONE OF THE FOLLOWING OUTPUT LISTING UNITS- 1403 MDL 2, 3, 7 OR N1 PRINTER... 1443 MDL N1 PRINTER... ANY OF THE MAGNETIC TAPE UNITS LISTED ABOVE... 2311 DISK STORAGE DRIVE.
- ONE OF THE FOLLOWING OUTPUT PUNCHING UNITS- 1442 MDL N2 PUNCH... 2520 MDL B2 OR B3 PUNCH... ANY OF THE CARD READ/PUNCHES LISTED ABOVE... ANY OF THE MAGNETIC TAPE UNITS LISTED ABOVE... 2311 DISK STORAGE DRIVE.

NOTES ON CONFIGURATIONS--

- IN ADDITION TO THE ABOVE REQUIREMENTS, THE SYSTEM SUPPORTS* THE ATTACHMENT OF -- A SECOND SINGLE DISK STORAGE DRIVE /WITH 2315 CARTRIDGE/, WHICH, ALTERNATIVELY, MAY BE USED FOR SYSTEMS RESIDENCE... ADDITIONAL 2311 DISK STORAGE DRIVES /WITH 1316 DISK PACK/... ADDITIONAL MAGNETIC TAPE UNITS /ANY OF THE MODULES LISTED ABOVE/... ADDITIONAL MULTIPLEXOR CHANNELS TO A MAXIMUM OF 3.
- A SYSTEM-RESIDENCE 2315 DISK CARTRIDGE CAN BE CREATED USING THE MINIMUM MACHINE CONFIGURATION, PROVIDED THE INPUT DEVICE IS A CARD READER. ASSEMBLY IS NOT REQUIRED IN THIS PROCEDURE. HOWEVER, IF IT IS DESIRED TO ASSEMBLE THE SOURCE LANGUAGE VERSION OF THE IBM-SUPPLIED COMPONENTS OF THE SYSTEM, AT LEAST ONE MAGNETIC TAPE DRIVE IS REQUIRED. IF RE-ASSEMBLY IS DESIRED, A SECOND SINGLE DISK STORAGE DRIVE AND A SECOND MAGNETIC TAPE DRIVE SHOULD BE INCLUDED FOR OPTIMUM SYSTEM EDITING.
- IF MORE THAN 65,536 BYTES OF MAIN STORAGE ARE AVAILABLE, THE SYSTEM WILL TAKE ADVANTAGE OF THEIR AVAILABILITY.
- THE FORTRAN COMPILER REQUIRES THAT THE 2044 BE EQUIPPED WITH THE FLOATING-POINT ARITHMETIC FEATURE /NO. 4427/. THE ASSEMBLER ALSO REQUIRES THIS FEATURE IF IT IS DESIRED TO ASSEMBLE FLOATING-POINT CONSTANTS.
- THE USER MAY MODIFY THE SUPERVISOR TO INCLUDE INPUT/OUTPUT ROUTINES FOR ADDITIONAL DEVICES /PROVIDED THESE DEVICES HAVE START, DEVICE END, AND CHANNEL END CHARACTERISTICS SIMILAR TO THOSE OF THE SUPPORTED DEVICES/. THESE CHARACTERISTICS ARE DETAILED IN SYSTEM/360 PRINCIPLES OF OPERATION, A27-2, AND THE APPROPRIATE UNIT MANUALS.
- THE READ-BACKWARD FEATURE OF THE 2400 SERIES MAGNETIC TAPE UNITS IS NOT SUPPORTED.

EC LEVEL REQUIREMENTS--

THE FOLLOWING ENGINEERING CHANGE LEVELS ARE REQUISITE FOR PROPER FUNCTIONING OF THE MODEL 44 PROGRAMMING SYSTEM.

UNIT		E.C.
2044*	PROCESSING UNIT	390110
2821	CONTROL UNIT FOR UNIT RECORD DEVICES	125628
1403	PRINTER	125746
2520*	CARD READ PUNCH	812321
2540	CARD READ PUNCH	812356
1442	CARD READ PUNCH	812198
1443	PRINTER	305531
2841	CONTROL UNIT FOR 2311	413173
2311	DISK STORAGE DEVICE	411189
2803	TAPE CONTROL UNIT MODEL 1 FOR 2401 AND/OR 2402 MODELS 1, 2, 3	730033
2803	TAPE CONTROL UNIT MODEL 2 FOR 2401 AND/OR 2402 MODELS 4, 5, 6	730097
2401	MAGNETIC TAPE UNIT - MODELS 1, 2, 3	730172
2402	MAGNETIC TAPE UNIT - MODELS 1, 2, 3	730172
2402	MAGNETIC TAPE UNIT - MODELS 4, 5, 6	730174

*IF THE 2520 IS ATTACHED TO THE HIGH-SPEED MULTIPLEXOR CHANNEL, THE EC LEVEL REQUIRED FOR THE 2044 IS 257555 OR REA NO. 83-131. THE EC LEVEL REQUIRED FOR THE MODEL 44 PROGRAMMING SYSTEM WILL NOT, IN GENERAL, BE ABLE TO READ DATA SETS ON DIRECT ACCESS DEVICES PRODUCED BY BOS/TOS/DOS. THIS RESTRICTION WILL BE REMOVED AT A LATER DATE.

BASIC PROGRAM MATERIAL

DOCUMENTATION - PROGRAM MATERIAL LIST... GUIDE TO SYSTEM USE, C28-6812... FORTRAN PROGRAMMERS GUIDE, C28-6813... SYSTEMS PROGRAMMERS GUIDE, C28-6814... OPERATORS GUIDE, C28-6815.

MACHINE READABLE - THE SYSTEM IS AVAILABLE IN CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

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NOTES-- THE SYSTEM MUST BE ORDERED ON THE SYSTEM/360 OPERATING SYSTEM ORDER FORM, FORM NUMBER 120-1411, SPECIFYING THE PROGRAM NUMBER FOR EACH COMPONENT ORDERED.
WHEN ORDERING THE SYSTEM ON DTR THE REQUESTOR WILL RECEIVE THE ENTIRE COLLECTION OF PROGRAM COMPONENTS. WHEN ORDERING IN CARD FORM ONLY THOSE COMPONENTS LISTED ON THE ORDER FORM WILL BE SHIPPED. MAINTENANCE WILL BE PROVIDED ONLY FOR THOSE COMPONENTS SPECIFIED ON THE ORDER FORM.
DTR ORDERS NOT SPECIFYING TRACK REQUIREMENT WILL BE SUPPLIED AT 9-TRACK. DTR WILL BE PROVIDED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

360F-603 MODEL 44 BPS BASIC ASSEMBLER
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360F-AS-603

THE BASIC ASSEMBLER IS A TWO-PHASE, ONE-FOR-ONE ASSEMBLY PROGRAM WHICH TRANSLATES SOURCE PROGRAMS WRITTEN IN THE SYSTEM/360 BASIC ASSEMBLER LANGUAGE INTO MACHINE LANGUAGE OBJECT PROGRAMS. A PROGRAM LISTING WITH ERROR INDICATORS IS ALSO PROVIDED. IF AVAILABLE, FROM ONE TO FIVE MAGNETIC TAPE UNITS MAY BE UTILIZED TO SPEED THE ASSEMBLY PROCESS.

MINIMUM SYSTEM REQUIREMENTS - THIS PROGRAM WILL OPERATE ON A SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET ON THE STANDARD INSTRUCTION SET... 32,768 OR MORE BYTES OF MAIN STORAGE... CONSOLE PRINTER-KEYBOARD... 2540 OR 1402 OR 1442 CARD READ PUNCH. OPTIONAL DEVICES INCLUDE THE 1403 OR 1443 PRINTER AND 1 TO 5 2400 SERIES TAPE UNITS.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM OPERATING INSTRUCTIONS... OPERATING GUIDE, C28-6621.
MACHINE READABLE - THE OBJECT DECKS FOR PHASE I AND PHASE II AND THE SAMPLE PROGRAM DECK ARE AVAILABLE IN CARD FORM.

360F-604 MODEL 44 BPS FORTRAN IV COMPILER
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360F-F0-604

THE SYSTEM/360 MODEL 44 BASIC PROGRAMMING SUPPORT FORTRAN IV /TAPE/ SYSTEM COMPRISES A COMPILER /INCLUDING LIBRARY SUBROUTINES/, A LOADER, AND AN EDITOR.

BPS FORTRAN IV /TAPE/ COMPILER -- THE COMPILER IS A SEVEN-PHASE PROGRAM WHICH TRANSLATES PROGRAMS WRITTEN IN THE FORTRAN IV LANGUAGE INTO RELOCATABLE OBJECT PROGRAMS. A SOURCE PROGRAM LISTING ALONG WITH ERROR INDICATORS AND A STORAGE MAP OF THE VARIABLES, EXTERNAL REFERENCES, AND CONSTANTS ARE PROVIDED ON REQUEST. A COMPILER-AND-GO FEATURE IS PROVIDED. THE JOB TO BE PERFORMED MAY CONSIST OF SOURCE PROGRAMS/, PREVIOUSLY ASSEMBLED OR COMPILED OBJECT PROGRAMS/, OR A COMBINATION OF THESE. ALSO PROVIDED ARE CONTROL CARD CAPABILITIES WHICH ENABLE THE USER TO CHANGE DEVICE ASSIGNMENTS AT EDIT, COMPILER OR OBJECT TIME.

LOADER -- THE FORTRAN LOADER IS A TWO-PASS RELOCATING LOADER THAT CREATELY SEPARATELY PROGRAMS INTO STORAGE AND COMPLETE THE LINKAGES BETWEEN THEM. IT PROVIDES AN AUTOMATIC LIBRARY SEARCH FOR MATHEMATICAL AND INPUT/OUTPUT CONVERSION SUBROUTINES. THIS LOADER WILL ALSO LOAD INPUT ACCEPTABLE TO THE BPS BASIC UTILITIES RELOCATING LOADER /360F-UT-605/.

EDITOR -- THE FORTRAN EDITOR ENABLES LIBRARY SUBROUTINES TO BE DELETED, ADDED, OR CHANGED, AS WELL AS PROPRIETARY CHANGES TO THE COMPILER AND THE EDITOR ITSELF.

MINIMUM SYSTEM REQUIREMENTS--
THE COMPILER WILL OPERATE ON A SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET OF THE STANDARD INSTRUCTION SET...
THE CONSOLE PRINTER-KEYBOARD... THE FLOATING POINT OPTION...
32,768 OR MORE BYTES OF MAIN STORAGE... 2540, 1402, OR 1442 CARD READ PUNCH FOR INPUT AND/OR OUTPUT, WHICH MAY BE REPLACED BY ONE OR TWO OPTIONAL 2400 SERIES MAGNETIC TAPE UNITS...
1403 OR 1443 PRINTER, WHICH MAY BE REPLACED BY AN OPTIONAL 2400 SERIES MAGNETIC TAPE UNIT... THREE 2400 SERIES MAGNETIC TAPE UNITS, EITHER 9-TRACK OR 7-TRACK WITH THE DATA CONVERSION FEATURE. /THE 7-TRACK COMPATIBILITY FEATURE IS REQUIRED ONLY WHEN 7-TRACK SYMBOLIC TAPE IS ORDERED./... AN OPTIONAL 2400 SERIES MAGNETIC TAPE UNIT FOR COMPILER-AND-GO.

	SYSIN PUNCH	PRINT	COMPILER WORK FILES	GO FILE	OBJECT PROGRAM WORK FILES
2540	X	X			X
1402	X	X			X
1442	X	X			X
1403		X			X
1443		X			X
CONSOLE PRINTER-KEYBOARD		X			X
2400**	X	X	X	X	X

**NEW 1600 BPI TAPE DRIVES ARE NOT SUPPORTED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... REBLOCK OPERATING INSTRUCTIONS... SAMPLE PROGRAM OPERATING INSTRUCTIONS... ATTACHMENT... BPS FORTRAN IV PROGRAMMERS GUIDE, C28-6622.
MACHINE READABLE - THE DEBLOCKED SYSTEM TAPE CONTAINING THE FORTRAN IV COMPILER MAY BE OBTAINED ON ONE 9-TRACK OR ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. THE SAMPLE PROGRAM DECK IS AVAILABLE IN CARD FORM.

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360F-602 MODEL 44 BPS INPUT/OUTPUT
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360F-IO-602

INPUT/OUTPUT ROUTINES IS A MODULAR SET OF BASIC ASSEMBLER LANGUAGE SUBROUTINES WHICH PROVIDE THE USER WITH STANDARD, TESTED I/O SUPPORT. THE DESIRED FUNCTIONS ARE SELECTED BY THE USER AND EITHER COMBINED WITH HIS SOURCE PROGRAM AS INPUT TO THE BASIC ASSEMBLER, OR ARE PRE-ASSEMBLED INTO RELOCATABLE TEXT AND COMBINED WITH THE RELOCATABLE TEXT OF INDEPENDENT ASSEMBLIES FOR LOADING BY THE RELOCATING LOADER.

MINIMUM SYSTEM REQUIREMENTS - THIS PROGRAM WILL OPERATE ON A SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET OF THE STANDARD INSTRUCTION SET... 32,768 OR MORE BYTES OF MAIN STORAGE... CONSOLE PRINTER-KEYBOARD. SINCE THE I/O SUBROUTINES MAY BE LOADED INTO STORAGE WITH A USERS PROGRAM THE INPUT DEVICES ARE NOT SPECIFIED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROGRAM OPERATING INSTRUCTIONS... ATTACHMENT... OPERATING GUIDE, C28-6621... BPS BASIC UTILITIES MANUAL, C28-6619.
MACHINE READABLE - THE SYMBOLIC DECK FOR INPUT/OUTPUT SUPPORT AND THE SAMPLE PROGRAM DECK ARE AVAILABLE IN CARD FORM.

360F-UT-600 MODEL 44 BPS ABSOLUTE PROGRAM LOADER
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360F-UT-600

THE ABSOLUTE LOADER LOADS ASSEMBLED PROGRAMS INTO THE STORAGE LOCATIONS ASSIGNED BY THE ASSEMBLER. FACILITIES FOR MAKING CORRECTIONS OR REPLACEMENTS TO THE ASSEMBLED PROGRAM AT LOAD TIME ARE ALSO PROVIDED. THE FUNCTIONS OF THE ABSOLUTE LOADER ARE ALSO PROVIDED BY THE RELOCATING LOADER.

MINIMUM SYSTEM REQUIREMENTS - THIS PROGRAM WILL OPERATE ON A SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET OF THE STANDARD INSTRUCTION SET... 32,768 OR MORE BYTES OF MAIN STORAGE... CONSOLE PRINTER-KEYBOARD... 2540 OR 1402 OR 1442 CARD READ PUNCH. OPTIONAL DEVICES INCLUDE THE 1403 OR 1443 PRINTER AND ONE 2400 SERIES TAPE UNIT.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROGRAM OPERATING INSTRUCTIONS... ATTACHMENT... OPERATING GUIDE, C28-6621... BPS BASIC UTILITIES MANUAL, C28-6619.
MACHINE READABLE - THE OBJECT DECKS FOR THE LOW CORE AND HIGH CORE LOADERS AND THE SAMPLE PROBLEM DECK ARE AVAILABLE IN CARD FORM.

360F-UT-601 MODEL 44 BPS DUMP ROUTINE
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360F-UT-601

DUMP ROUTINE PROVIDES THE FACILITY TO PRINT THE CONTENTS OF ALL OR A PORTION OF MAIN STORAGE AND THE GENERAL AND FLOATING POINT REGISTERS AT SELECTED POINTS DURING OBJECT PROGRAM EXECUTION. THE OUTPUT WILL BE SUPPRESSED IF THE OBJECT TIME REQUEST NUMBER DOES NOT MATCH THAT SPECIFIED WITH A CONTROL CARD AT LOAD TIME, THUS PROVIDING THE FACILITY FOR SELECTIVE STORAGE DUMPING.

MINIMUM SYSTEM REQUIREMENTS - THIS PROGRAM WILL OPERATE ON A SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET OF THE STANDARD INSTRUCTION SET... 32,768 OR MORE BYTES OF MAIN STORAGE... CONSOLE PRINTER-KEYBOARD. SINCE THE DUMP ROUTINE MAY BE LOADED INTO STORAGE WITH A USERS PROGRAM, THE INPUT DEVICES ARE NOT SPECIFIED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROGRAM OPERATING INSTRUCTIONS... ATTACHMENT... OPERATING GUIDE, C28-6621... BPS BASIC UTILITIES MANUAL, C28-6619.
MACHINE READABLE - THE OBJECT DECKS FOR THE DUMP ROUTINE AND SELF LOADING DUMP AND THE SAMPLE PROGRAM DECK ARE AVAILABLE IN CARD FORM.

360F-UT-605 MODEL 44 BPS RELOCATING PROGRAM LOADER
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360F-UT-605

THE DISTINGUISHING FEATURE OF THE RELOCATING LOADER IS ITS ABILITY TO RELOCATE SEPARATE ASSEMBLIES AND TO COMPLETE THE LINKAGE BETWEEN THEM. THE FUNCTIONS OF THE ABSOLUTE LOADER ARE ALSO PROVIDED BY THE RELOCATING LOADER. IN ADDITION, THE RELOCATING LOADER CAN LIST THE STORAGE LOCATIONS OF THE SEPARATE ASSEMBLIES WHICH IT LOADS.

MINIMUM SYSTEM REQUIREMENTS - THIS PROGRAM WILL OPERATE ON A SYSTEM/360 MODEL 44 WITH THE SCIENTIFIC SUBSET OF THE STANDARD INSTRUCTION SET... 32,768 OR MORE BYTES OF MAIN STORAGE... CONSOLE PRINTER-KEYBOARD... 2540 OR 1402 OR 1442 CARD READ PUNCH. OPTIONAL DEVICES INCLUDE THE 1403 OR 1443 PRINTER AND ONE 2400 SERIES TAPE UNIT.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROGRAM OPERATING INSTRUCTIONS... ATTACHMENT... OPERATING GUIDE, C28-6621... BPS BASIC UTILITIES MANUAL, C28-6619.
MACHINE READABLE - THE OBJECT DECKS FOR THE LOW CORE AND HIGH CORE LOADERS AND THE SAMPLE PROBLEM DECK ARE AVAILABLE IN CARD FORM.

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360M IBM SYSTEM/360 BASIC OPERATING SYSTEM /TAPE/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
USE TOS/360 ORDER FORM NO. 120-1411.

WITH THE IBM BASIC OPERATING SYSTEM/360 /TAPE/, USERS MAY TAILOR THE SYSTEM ACCORDING TO THEIR INSTALLATION CONFIGURATION AND PROCESSING REQUIREMENTS.

THE FOLLOWING COMPONENTS OF TOS/360 ARE DESCRIBED TO AID IN DETERMINING THE PROPER GROUP TO MEET INSTALLATION REQUIREMENTS. ALL COMPONENTS ARE OPTIONAL WITH THE EXCEPTION OF THE SYSTEM CONTROL PROGRAM AND ONE OF THE TWO AVAILABLE SUPERVISORS WHICH MUST BE INCLUDED WHEN ORDERING ANY OF THE

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CONTINUED FROM PRIOR PAGE--
OTHER COMPONENTS.

CONTINUED FROM PRIOR COLUMN--

360M-CL-405 SYSTEM CONTROL PROGRAM

SYSTEM CONTROL, 360M-CL-405 -- A PREREQUISITE TO ANY COMPONENT IN TOS/360. THE PROGRAM FORMS THE NUCLEUS OF THE SYSTEM AND PROVIDES THE FUNCTIONS OF SYSTEM CONTROL, GENERATION AND EDITING. CONTROL PROGRAM INPUT/OUTPUT ASSIGNMENTS ARE-- SYSTEM RESIDENCE -- SYSTEM RESIDENCE UNIT... SYSTEM READER -- UNIT USED FOR JOB CONTROL CARDS... SYSTEM INPUT -- MAIN SYSTEM INPUT UNIT FOR CONTROL PROGRAMS... SYSTEM LIST -- SYSTEM PRINTER UNIT FOR CONTROL PROGRAMS... SYSTEM PUNCH -- SYSTEM OUTPUT UNIT FOR CONTROL PROGRAMS... SYSTEM COMMUNICATION -- MEDIUM USED FOR OPERATOR COMMUNICATION.

CONTROL FUNCTIONS--

- INITIAL PROGRAM LOAD -- TO INITIALIZE OPERATION OF THE SYSTEM.
- JOB CONTROL -- BROUGHT INTO MAIN STORAGE BY THE SUPERVISOR TO PROVIDE -- JOB-TO-JOB TRANSITION, E.G., COMPILE AND EXECUTE... SYMBOLIC DEVICE ASSIGNMENT WITHIN DEVICE DEPENDENT ENVIRONMENT... ENTRY OF ADDITIONAL INFORMATION.
- SUPERVISOR -- THE TOS/360 SUPERVISOR IS TO PROVIDE MAIN STORAGE RESIDENT CONTROL FUNCTIONS IN A MINIMUM OF 6144 BYTES. THE SIZE OF THE SUPERVISOR DEPENDS ON THE OPTIONS SPECIFIED AT SYSTEM GENERATION TIME.

THE CONFIGURATION OF CONTROL FUNCTIONS CONTAINED WITHIN 6144 BYTES IS -- SCHEDULING OF I/O OPERATIONS ON THE MULTIPLEXOR AND UP TO SIX SELECTOR CHANNELS /SEE NOTE/... SYSTEM LOADER FOR PROGRAM FETCHING... TRANSIENT AREA FOR FUNCTIONS SUCH AS -- ERROR RECOVERY, FILE MANAGEMENT, /OPEN, CLOSE, END OF VOLUME/ END OF JOB, CHECKPOINT, RESTART, STORAGE PRINT, OPERATOR COMMUNICATIONS VIA 1052... 7-TRACK TAPE HANDLING... PHYSICAL I/O TABLES FOR TEN DEVICES.

NOTE-- BURST MODE ON THE MULTIPLEXOR CHANNEL CAN BE INCLUDED IN THE MINIMUM SUPERVISOR IN LIEU OF SELECTOR CHANNEL SCHEDULING. /BURST MODE IS REQUIRED IF TAPES ARE INTERMIXED WITH BYTE INTERLEAVE DEVICES./

DEPENDING ON THE COMBINATION OF SUPERVISORY FUNCTIONS CHOSEN THE FOLLOWING REPRESENT OPTIONS WHICH MAY CAUSE THE GENERATION OF A SUPERVISOR GREATER THAN 6144 BYTES --

- PROBLEM PROGRAM EXITS FOR INTERNAL INTERRUPTS SUCH AS OPERATOR INQUIRY AND INTERVAL TIMER.
- STORAGE PROTECTION
- INTERVAL TIMER
- TAPE ERROR STATISTICS
- I/O TABLES FOR ADDITIONAL DEVICES
- CHANNEL SWITCHING
- PROGRAM STORAGE INTERRUPT EXIT

IT CAN BE ASSUMED AS A MINIMUM THAT AT LEAST AS MANY AS 12 I/O DEVICES AND EITHER PROGRAM CHECK INTERRUPT EXIST OR CHANNEL SWITCHING CAN BE INCLUDED WITHIN A 6144 BYTE SUPERVISOR.

A TOS/360 SUPERVISOR GENERATED WITH THE MULTIPROGRAMMING OPTION WILL REQUIRE A MINIMUM OF 8192 BYTES. IN MANY TYPICAL CONFIGURATIONS THE MULTIPROGRAMMING OPTION CAN BE INCLUDED IN AN 8192 BYTE TOS/360 SUPERVISOR. MULTIPROGRAMMING WILL REQUIRE AS A MINIMUM A SYSTEM/360 CONFIGURATION WITH 32K BYTES OF STORAGE. THE INCLUSION OF MULTIPROGRAMMING CAPABILITY IN THE SYSTEM WILL RESULT IN THE GENERATION OF A SUPERVISOR GREATER THAN 6K BYTES REGARDLESS OF THE COMBINATION OF OTHER SUPERVISORY OPTIONS WHICH MAY BE SPECIFIED.

THE TOTAL CORE REQUIREMENTS OF THE SYSTEM SUPERVISOR IS DEPENDENT ON THE COMBINATION OF OPTIONAL SUPERVISORY FUNCTIONS SELECTED AT SYSTEM GENERATION. FURTHERMORE, THE INCLUSION OF THE STORAGE PROTECTION FEATURE, WHICH IS REQUIRED FOR MULTIPROGRAMMING, IMPOSES A 2K BOUNDARY ON THE SUPERVISOR STORAGE REGARDLESS OF THE ACTUAL STORAGE UTILIZED. THERE ARE TWO CONDITIONS WHICH MITIGATE AN ARBITRARY 2K BOUNDARY FOR SUPERVISOR STORAGE -- THEY ARE --

- VARIOUS PORTIONS OF THE SUPERVISORY TRANSIENT AREAS CAN RESIDE IN UNPROTECTED STORAGE /SAME AS BACKGROUND PROBLEM PROGRAM/.
- LABEL STORAGE AREAS NORMALLY PART OF THE PROBLEM PROGRAM AREA CAN RESIDE WITHIN THE UNUSED AREA PROTECTED BY THE SUPERVISOR.

IT IS REASONABLE TO ASSUME THAT 10,240 BYTES REPRESENTS THE MAXIMUM SUPERVISOR CAPABLE OF GENERATION IN TOS/360 WITH RESPECT TO THE COMPLEMENT OF CURRENTLY ANNOUNCED SUPERVISORY OPTIONS. THE STORAGE PROTECTION FEATURE IS REQUIRED FOR THE MULTIPROGRAMMING OPTION. THIS REQUIREMENT RESULTS FROM THE FACT THAT A MULTIPROGRAMMING SYSTEM CANNOT EFFECTIVELY FUNCTION WITHOUT THE ASSURANCE OF CONTINUOUS SYSTEM OPERATION IN SPITE OF ERRANT PROBLEM PROGRAMS.

THE REQUIREMENT FOR THE INTERVAL TIMER IS OPTIONAL AND IS CONDITIONED ONLY ON THE APPLICATION REQUIREMENTS AND THE USE OF CERTAIN SYSTEM MACRO FACILITIES. NO ARBITRARY REQUIREMENT FOR THE INTERVAL TIMER IS IMPOSED BY TOS/360.

GENERATION AND EDITING FUNCTIONS--

- SYSTEM GENERATION -- TO INITIALIZE THE SYSTEM RESIDENCE, ESTABLISH SUPERVISOR CAPABILITIES, INCLUDE DESIRED SYSTEM FUNCTIONS AND PROCESSING PROGRAMS.
- LIBRARIAN -- USED FOR MAINTAINING THE TAPE LIBRARIES AND PROVIDING PRINTED AND PUNCHED OUTPUT FROM THE LIBRARIES. THREE LIBRARIES ARE USED -- CORE IMAGE LIBRARY, RELOCATABLE LIBRARY, AND SOURCE STATEMENT LIBRARY.
- LINKAGE EDITOR -- FOR LINKING AND RELOCATING SEPARATE PROGRAM SECTIONS FROM RELOCATABLE LIBRARIES AND/OR FROM A SYSTEM INPUT UNIT, AND EDITING INTO CORE IMAGE LIBRARIES FOR LOADING BY SYSTEM LOADER.

360M-SV-413 SUPERVISOR, 6K
360M-SV-414 SUPERVISOR, 8K

THE TWO SUPERVISOR COMPONENTS ARE IDENTICAL IN CONTENT AND FUNCTION EXCEPT FOR THE ENDING ADDRESS. THE USER WHO DOES NOT EXPECT TO GENERATE A SUPERVISOR IN EXCESS OF 6144 BYTES SHOULD ORDER THE SYSTEM WITH THE 6K SUPERVISOR COMPONENT. THE USER WHO EXPECTS TO GENERATE A SUPERVISOR IN EXCESS OF 6144 BYTES SHOULD ORDER THE SYSTEM WITH THE 8K SUPERVISOR COMPONENT, THIS WILL ALLOW HIM TO ASSEMBLE AND CATALOG THE TAILORED SUPERVISOR WITHOUT LINK-EDITING ALL OF THE DESIRED SYSTEM COMPONENTS RESIDING IN THE CORE IMAGE LIBRARY. HOWEVER, IF THE TAILORED SUPERVISOR EXCEEDS THE SIZE OF THE SUPERVISOR COMPONENT ON THE SYSTEM, A COMPLETE LINKAGE EDIT RUN MUST BE PERFORMED.

ONE SUPERVISOR COMPONENT MUST BE SPECIFIED WHEN ORDERING THE SYSTEM. IF NOT SPECIFIED, THE 6K SUPERVISOR WILL BE SHIPPED.

360M-IO-404 INPUT/OUTPUT CONTROL SYSTEM

INPUT/OUTPUT CONTROL SYSTEM /IOCS/, 360M-IO-404 -- LOGICAL IOCS IS A SET OF MACRO INSTRUCTIONS WHICH HANDLE LOGICAL FILES OF DATA FOR THE USER ON THE DEVICES SUPPORTED. AMONG THESE FUNCTIONS ARE--

- REQUEST PHYSICAL I/O OPERATIONS TO BE PERFORMED WHEN NECESSARY.
- BLOCK AND DEBLOCK LOGICAL RECORDS WITHIN PHYSICAL RECORDS.
- PROVIDE LABEL HANDLING CAPABILITIES VIA OPEN/CLOSE/EOV ROUTINES.
- SWITCHING BETWEEN I/O AREAS WHEN TWO AREAS ARE SPECIFIED FOR A FILE.
- AUTOMATIC VOLUME SWITCHING OF SYSTEM OUTPUT FILE ON MAGNETIC TAPE
- COMBINED SYSTEM OUTPUT FILES ON A SINGLE MAGNETIC VOLUME.
- 7-TRACK CHECKPOINT WITH TRANSLATE MODE DATA ON MAGNETIC TAPE /DATA CONVERSION FEATURE REQUIRED/
- DUAL DENSITY RECORDING /800/1600 BPI/
- ENABLE/DISABLE MODE FOR UNIVERSAL CHARACTER SET
- ERROR RECOVERY INVOLVING COMMAND CHAINING OPERATIONS
- AUTOMATIC RETRY OF DEVICES MADE READY FOLLOWING OPERATOR INTERVENTION TYPE INPUT/OUTPUT ERRORS.

360M-IO-612 COMPILER INPUT/OUTPUT MODULES

THESE INPUT/OUTPUT MODULES USED BY COBOL AND RPG OBJECT PROGRAMS ARE PRE-ASSEMBLED AND INCORPORATED INTO THE RELOCATABLE LIBRARY. THEY PROVIDE ALL NECESSARY INPUT/OUTPUT OPERATIONS SO THAT THE USER CAN EXECUTE PROGRAMS WRITTEN IN COBOL AND/OR RPG WITHOUT HAVING TO GENERATE INPUT/OUTPUT MODULES.

360M-IO-617 1285 OPTICAL CHARACTER READER

OPTICAL CHARACTER READER PROVIDES SUPPORT OF THE IBM 1285 OPTICAL READER WHICH READS TAPES, SUCH AS THOSE PRODUCED ON CASH REGISTERS AND ADDING MACHINES, DIRECTLY INTO THE SYSTEM. THE 1285 IS NOW SUPPORTED IN A MULTIPROGRAMMING ENVIRONMENT UNDER DOS/360.

THE ONLY RESTRICTION IMPOSED IS THAT THE SYMBOLIC REGISTER NOTATION MAY NOT BE USED WITH THE RDLINE MACRO. THIS RESTRICTION WILL BE REMOVED AT A LATER DATE.

360M-UT-403 UTILITY PROGRAMS

UTILITY PROGRAMS, 360M-UT-403 -- THE FOLLOWING UTILITY PROGRAMS WILL BE ON THE DISTRIBUTED TAPE.

- CARD TO PRINTER AND/OR PUNCH -- THIS PROGRAM TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO A PRINTER AND/OR A CARD PUNCH.
- CARD TO TAPE -- THIS PROGRAM TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO MAGNETIC TAPE.
- TAPE TO CARD -- THIS PROGRAM TRANSFERS DATA FROM MAGNETIC TAPE TO CARDS. DATA MAY BE PUNCHED IN EITHER EBCDIC OR BINARY.
- TAPE COMPARE -- THE TAPE COMPARE PROGRAM COMPARES TWO FILES FROM TWO OR MORE TAPES TO ENSURE THAT THE FILES ARE IDENTICAL.
- TAPE TO PRINTER -- THIS PROGRAM WILL PRINT A TAPE FILE IN ONE OF TWO FORMATS --
 - DATA DISPLAY -- PRINTS ALL OF THE TAPE BLOCK.
 - DATA LIST -- PRINTS ONE LINE FOR EACH DATA RECORD.
- TAPE TO TAPE -- THIS PROGRAM TRANSFERS THE DATA FROM ONE TAPE TO ANOTHER

360M-UT-411 MULTIPROGRAMMING SUPPORT UTILITY MACROS

THESE MACROS MAY BE UTILIZED TO GENERATE THE FOLLOWING CONCURRENT PERIPHERAL SELF-RELOCATION UTILITY PROGRAMS WHICH WILL OPERATE IN 2K BYTES OF PROBLEM PROGRAM STORAGE --

- CARD TO TAPE
 - TAPE TO PRINT
 - TAPE TO CARD
- THE INCLUSION OF ANY USER PROGRAMMING WITH THE ABOVE UTILITIES MAY CAUSE THE STORAGE REQUIREMENTS TO EXCEED 2K BYTES. /SEE DESCRIPTION UNDER MULTIPROGRAMMING/.

360M-PT-407 AUTOTEST

AUTOTEST, 360M-PT-407 -- A DEBUGGING AID FOR OBJECT PROGRAMS ASSEMBLED BY THE TOS/360 ASSEMBLER AND EXECUTED UNDER THE BASIC OPERATING SYSTEM. USING AUTOTEST, A TEST RUN CAN BE PERFORMED AS A NORMAL JOB IN A BATCH, WITH A MINIMUM OF OPERATOR INTERVENTION. AUTOTEST MONITORS THE EXECUTION OF THE PROGRAM UNDER TEST AND PROVIDES THE FOLLOWING FACILITIES--

- THE CREATION OF INPUT DATA FILES BY MEANS OF STANDARD UTILITY PROGRAMS /IBM OR USER SUPPLIED/.
- EXCHANGE, ADDITION OR DELETION OF INSTRUCTIONS WITHOUT REASSEMBLY.
- DUMP OF ANY PORTION/S/ OF MAIN STORAGE, PERMANENT STORAGE ASSIGNMENTS, GENERAL REGISTERS AND/OR FLOATING POINT REGISTERS WHENEVER A DESIGNATED ADDRESS IS REACHED DURING PROGRAM EXECUTION. THE MAIN STORAGE DUMP CAN BE IN HEXADECIMAL, CHARACTER, FLOATING POINT, FIXED POINT, OR MNEMONIC REPRESENTATION.
- DUMP OF MAIN STORAGE AT NORMAL OR ABNORMAL END OF JOB IN HEXADECIMAL, CHARACTER AND/OR MNEMONIC REPRESENTATION. SOURCE SYMBOLS CAN ALSO BE PRINTED WITH THE END OF JOB DUMP.
- A LIST OF ALL PHASES IN THE SEQUENCE THAT THEY ARE CALLED INTO MAIN STORAGE.
- PRINT OUT OF ANY OUTPUT DATA FILES BY MEANS OF STANDARD UTILITY PROGRAMS /IBM OR USER SUPPLIED/.

360M-SH-400 SORT/MERGE PROGRAM

SORT/MERGE PROGRAM, 360M-SH-400 -- ORDERS UNSEQUENCED DATA INTO EITHER ASCENDING OR DESCENDING SEQUENCE AS SPECIFIED ON THE SORT CONTROL CARDS. THE SORT CONTROL STATEMENT CARDS PERMIT A DEVERIFICATION OF PARAMETERS TO MEET THE NEEDS OF THE MAGNETIC TAPE USER. THESE ASSIGNMENTS OF SPECIFIED PARAMETERS MAXIMIZE THE SORT PERFORMANCE TO MEET THE CONFIGURATION OF THE INDIVIDUAL USER. THE SORT EMPLOYS IOCS STANDARD LABEL CHECK OR ENABLES THE USER TO BYPASS OR PROCESS HIS NON-STANDARD LABELS. THE UTILIZATION OF THE CHECK POINT-RESTART FACILITY PERMITS THE USER TO INTERRUPT AND CONTINUE DURING THE MERGING PHASES OF THE SORT. THE MERGE ONLY OPTION GIVES THE USER THE FACILITY OF COMBINING FROM ONE TO SEVEN PRESEQUENCED FILES INTO A SINGLE OUTPUT FILE. A SEQUENCE CHECK AND REBLOCKING CAPABILITY FORM AN INTEGRAL PART OF THE MERGE OPTION.

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360M-AS-465 ASSEMBLER

ASSEMBLER, 360M-AS-465 -- A SYMBOLIC PROGRAMMING LANGUAGE USED TO WRITE PROGRAMS FOR THE IBM SYSTEM/360. THE TOS/360 ASSEMBLER PROGRAM PROCESSES THE LANGUAGE AND PROVIDES AUXILIARY FUNCTIONS USEFUL IN THE PREPARATION AND DOCUMENTATION OF A PROGRAM, AND INCLUDES FACILITIES FOR PROCESSING MACRO INSTRUCTIONS. INCLUDED IN THE LANGUAGE ARE - THE STANDARD AND OPTIONAL INSTRUCTION SETS, MNEMONICS, EXTENDED MNEMONICS, LITERALS AND MACRO FACILITIES. AN EXTENSIVE MACRO LIBRARY IS ALSO INCLUDED TO PROVIDE FACILITIES FOR SYSTEM GENERATION AND I/O DEVICE MACRO SUPPORT FOR PROCESSING PROGRAMS.

360M-RG-408 REPORT PROGRAM GENERATOR

REPORT PROGRAM GENERATOR, 360M-RG-408 -- AN EXPANDED LANGUAGE FUNCTION THAT HAS THE CAPABILITY OF COMPILING PROGRAMS WHICH CAN PRODUCE A WIDE VARIETY OF REPORTS RANGING FROM A SIMPLE LISTING TO A COMPLETE REPORT THAT INCORPORATES CALCULATION AND EDITING. STERLING CONVERSION, ARITHMETIC, TABLE LOOKUP, BRANCHING CAPABILITIES, INDICATOR CONTROL, SPLIT CONTROL FIELDS, MOVE LEFT, AND THE DESIGNATION OF MULTIPLE INPUT AND OUTPUT FILES ARE ALSO PROVIDED.

360M-CB-402 COBOL

COBOL PROVIDES A CONVENIENT METHOD OF CODING PROGRAMS TO HANDLE COMMERCIAL DATA PROCESSING PROBLEMS. IT HAS THE FOLLOWING ADVANCED FEATURES-- SOURCE PROGRAM LIBRARY FACILITY... COBOL DEBUGGING LANGUAGE... INTERNAL/EXTERNAL FLOATING POINT ITEMS AND FLOATING-POINT LITERALS... THE LINKAGE SECTION OF THE DATA DIVISION... OPTIONS 1, 2 AND 3 OF THE USE SENTENCE... THE TRANSFORM STATEMENT... OPTION 2 OF THE APPLY CLAUSE... INVERTED PRINT EDIT.

360M-FD-409 FORTRAN IV

FORTRAN IV, 360M-FD-409 -- THE FORTRAN LANGUAGE IS ESPECIALLY USEFUL IN WRITING PROGRAMS FOR SCIENTIFIC AND ENGINEERING APPLICATIONS THAT INVOLVE MATHEMATICAL COMPUTATIONS. THE IBM TOS/360 FORTRAN LANGUAGE IS COMPATIBLE WITH AND ENCOMPASSES THE PROPOSED AMERICAN STANDARDS ASSOCIATION /ASA/ BASIC FORTRAN, INCLUDING ITS MATHEMATICAL SUBROUTINE PROVISIONS. TOS/360 FORTRAN OFFERS THE FOLLOWING ADVANCED FEATURES-- MIXED-MODE... SPACING FORMAT CODE... LITERAL FORMAT CODE... THE A FORMAT CODE... SCALE FACTOR... ARRANGING CONTROL... DOUBLE PRECISION DATA TYPE... THREE DIMENSION ARRAYS... FUNCTIONAL SUBPROGRAMS MAY RETURN RESULTS VIA THE ARGUMENT LIST... PROGRAMS CODED IN BCD AND EBCDIC CAN BE COMPILED.

MINIMUM SYSTEM REQUIREMENTS - THE TOS/360 SYSTEM IS PROVIDED SPECIFICALLY FOR THE 16K AND LARGER TAPE-ONLY CONFIGURATIONS.
MINIMUM FEATURES REQUIRED -- 16K BYTES OF MAIN STORAGE... STANDARD INSTRUCTION SET*... ONE I/O CHANNEL /EITHER MULTIPLEXOR OR SELECTOR/... ONE CARD READER**... ONE CARD PUNCH***... ONE PRINTER***... ONE 1052 PRINTER-KEYBOARD... ONE 2400 SERIES MAGNETIC TAPE UNIT FOR SYSTEM RESIDENCE AND THREE 2400 SERIES MAGNETIC TAPE UNITS FOR LANGUAGE TRANSLATION FUNCTIONS. AN ADDITIONAL TAPE DRIVE IS REQUIRED FOR COMPILE-AND-EXECUTE OPTIONS. 7-TRACK TAPE UNITS CAN BE USED, BUT THE DATA CONVERSION FEATURE NO. 3228 OR NO. 3236 IS REQUIRED. 9-TRACK RESIDENCE IS RECOMMENDED BECAUSE OF THE SIGNIFICANT PERFORMANCE ADVANTAGE IT TO THE PROGRAM FETCH FUNCTION.

* A 32K MINIMUM SYSTEM IS RECOMMENDED FOR COBOL OBJECT PROGRAM EXECUTION, AND REQUIRED FOR MULTIPROGRAMMING.

** EXPANDED INSTRUCTION SETS MAY BE REQUIRED DEPENDING UPON THE SPECIFIC REQUIREMENT OF THE LANGUAGE TRANSLATORS UTILIZED.

*** SEE CONTROL PROGRAM INPUT/OUTPUT CHART FOR ACCEPTABLE UNITS. NOTE THAT ONE 2400 SERIES MAGNETIC TAPE UNIT MAY BE TAPE IS SUBSTITUTED FOR A PRINTER. SUBSTITUTED FOR THOSE UNITS. IF 7-TRACK DRIVES ARE USED, THE DATA CONVERSION FEATURE IS REQUIRED, EXCEPT WHEN A

CONTROL PROGRAM INPUT/OUTPUT - TOS/360

UNITS SUPPORTED	RESIDENCE	READER	INPUT	WORK*	PUNCH	LIST	LOG**
1052							X
2540	X	X		X			
1403					X	X	
1404					X	X	
1442 N1	X	X		X			
1442 N2					X	X	
1443							X
2501	X	X		X			
2520 B1	X	X		X			
2520 B2, B3				X			
2400	X	X	X	X	X	X	
2400 DUAL DENS.	X	X	X	X	X	X	

NOTES -
7-TRACK TAPES REQUIRE DATA CONVERSION FEATURE NO. 3228 OR NO. 3236 /EXCEPT LIST/.
SYSTEM RESIDENCE MAY BE EITHER 7- OR 9-TRACK.
SYSTEM INPUT AND SYSTEMS READER MAY BE DESIGNATED THE SAME UNIT.
SYSTEMS INPUT, SYSTEMS PUNCH AND SYSTEMS LIST ARE REQUIRED FOR SYSTEMS GENERATION AND EDITING FUNCTIONS.
* THREE /3/ REQUIRED.
** IN THE EVENT THAT THE 1052 IS INOPERATIVE, PRINTER DEVICES MAY BE ASSIGNED TEMPORARILY TO SYSLOG.

THE LOGICAL SUPPORT OF INPUT/OUTPUT FILE REQUIREMENTS FOR PROBLEM PROGRAMS IS PROVIDED AS FOLLOWS -
PROBLEM PROGRAMS COMPILED BY TOS/360

UNITS	ASSEMBLER	RPG	COBOL	PL/1	FORTRAN
2540	X	X	X	X	X
1403	X	X	X	X	X
1404 CONTINUOUS FORMS	X	X	X	X	X
1442	X	X	X	X	X
1443	X	X	X	X	X
1445	X	X	X	X	X
2501	X	X	X	X	X
2520	X	X	X	X	X
2400 /7- OR 9-TRACK/	X	X	X	X	X
2400 DUAL DENSITY	X	X	X	X	X

1052 CONSOLE /NOTE 1/ X X X X X
2671 X

NOTE 1 - COBOL ACCEPT AND DISPLAY ONLY... FORTRAN OUTPUT ONLY... PL/I DISPLAY ONLY.

ENGINEERING CHANGES - THE FOLLOWING CHANGES ARE PREREQUISITE FOR PROPER FUNCTIONING OF TOS/360 -

2030 HARDWARE...EC 126737
2030 MICRO...EC 128053
1445.....EC 305247 AND EC 305252
2040 HARDWARE...EC 255262
2040 MICRO...EC 255261
2050.....EC 255458
2821.....EC 125598
1443.....EC 305560 AND EC 305564
2540.....EC 124270

NOTES - IF THE MULTIPROGRAMMING SUPPORT FACILITIES OF TOS/360 ARE USED, THE 2030 HARDWARE EC 126751 AND 2030 MICRO EC 128058 MUST BE INSTALLED.

IN A STORAGE PROTECTED BATCH JOB ENVIRONMENT, THE 2030 MICRO EC IS 128058

THE FOLLOWING ENGINEERING CHANGES ARE NOT REQUIRED, HOWEVER, IN ORDER TO ACHIEVE THE BEST PERFORMANCE, THEY ARE RECOMMENDED -

2401.....EC 254969
2402.....EC 254969
2403.....EC 254969 AND EC 255981
2404.....EC 254969 AND EC 255982

BASIC PROGRAM MATERIAL -

DOCUMENTATION - PROGRAM MATERIAL LISTS TOS/360 AND EACH COMPONENT WHICH IS ORDERED... ATTACHMENT 1... TOS/360 RESTRICTIONS.

SRL PUBLICATIONS, APPROPRIATE TO THE COMPONENT ORDERED, WILL BE SHIPPED, EACH HAS THE TITLE HEADING ,,IBM SYSTEM/360 TAPE OPERATING SYSTEMS

ASSEMBLER SPECIFICATIONS	C24-3414
DATA MANAGEMENT CONCEPTS	C24-3430
COBOL LANGUAGE SPECIFICATIONS	C24-3433
TAPE SORT/MERGE PROGRAM SPECIFICATIONS	C24-3438
AUTOTEST SPECIFICATIONS	C24-3441
UTILITY PROGRAM SPECIFICATIONS	C24-3465
SYSTEM GENERATION AND MAINTENANCE	C24-5015
PERFORMANCE ESTIMATES	C24-5020
OPERATING GUIDE	C24-5021
UTILITY MACRO SPECIFICATIONS	C24-5042
COBOL PROGRAMMERS GUIDE	C24-5025
CONCEPTS AND FACILITIES	C24-5030
SYSTEM CONTROL AND SERVICE PROGRAMS	C24-5034
SUPERVISOR AND INPUT/OUTPUT MACROS	C24-5035
BASIC FORTRAN IV PROGRAMMERS GUIDE	C24-5038
RPG SPECIFICATIONS	C26-3570
BASIC FORTRAN IV LANGUAGE	C28-6629

MACHINE READABLE

WHEN ORDERING TOS/360, THE REQUESTOR WILL RECEIVE THE ENTIRE COLLECTION OF MACHINE READABLE PROGRAM COMPONENTS LISTED BELOW -

ASSEMBLER	360M-AS-465
COBOL	360M-CB-402
SYSTEM CONTROL PROGRAM	360M-CL-405
FORTRAN IV	360M-FD-409
INPUT/OUTPUT CONTROL SYSTEM	360M-IO-404
COMPILER INPUT/OUTPUT MODULES	360M-IO-412
OPTICAL CHARACTER READER	360M-IO-417
AUTOTEST	360M-PT-407
REPORT PROGRAM GENERATOR	360M-RG-408
SORT/MERGE	360M-SM-400
SUPERVISOR, 6K	360M-SV-413
SUPERVISOR, 8K	360M-SV-414
UTILITY PROGRAMS	360M-UT-403
MULTIPROGRAMMING SUPPORT UTILITY MACROS	360M-UT-411

THE ABOVE MATERIAL IS AVAILABLE ON ONE REEL OF 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ MAGNETIC TAPE.

TOS/360 MUST BE ORDERED ON THE IBM SYSTEM/360 OPERATING SYSTEMS ORDER FORM, FORM NUMBER 120-1411.

EACH COMPONENT FOR WHICH PROGRAM DOCUMENTATION AND MAINTENANCE MATERIAL IS REQUIRED MUST APPEAR ON THE ORDER FORM.

ONE SUPERVISOR COMPONENT MUST BE SPECIFIED WHEN ORDERING THE SYSTEM. IF NOT SPECIFIED, THE 6K SUPERVISOR WILL BE SHIPPED.

THE PROGRAM CAN BE OBTAINED ON EITHER 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ TAPE. EITHER 9-TRACK OR 7-TRACK

MUST BE INDICATED ON THE ORDER FORM. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.

THE TAPES NECESSARY TO OBTAIN THE PROGRAM MATERIAL MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPES PROVIDED MUST BE 2400 FEET IN LENGTH.

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360M IBM SYSTEM/360 DISK

*R

OPERATING SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
USE DOS/360 ORDER FORM NO. 120-1411.

DOS/360 IS DESIGNED IN MODULAR FORM TO FIT A WIDE RANGE OF SYSTEM/360 CONFIGURATIONS AND APPLICATIONS FOR MODELS 30, 40, 50, 65 AND 75, BEGINNING AT 16K BYTES OF MAIN STORAGE. A DESCRIPTION OF EACH COMPONENT AND FEATURES, FUNCTIONS AND FEATURES, THE PROGRAM DOCUMENTATION, AND ORDERING PROCEDURE FOLLOWS. THESE SHOULD BE USED AS GUIDES FOR ORDERING THE PROPER ITEMS TO MEET INDIVIDUAL REQUIREMENTS.

SYSTEM CONTROL AND BASIC IOCS, 360M-CL-453.

A PREREQUISITE TO ANY COMPONENT IN DOS/360. THE PROGRAM FORMS THE NUCLEUS OF THE SYSTEM AND PROVIDES THE FUNCTIONS OF SYSTEM CONTROL, GENERATION, AND EDITING. CONTROL PROGRAM INPUT/OUTPUT ASSIGNMENTS ARE -- SYSTEM RESIDENCE - SYSTEM RESIDENCE UNIT... SYSTEM READER - UNIT USED FOR JOB CONTROL CARDS... SYSTEM INPUT - MAIN SYSTEM INPUT UNIT... SYSTEM LIST - SYSTEM PRINTER UNIT... SYSTEM PUNCH - SYSTEM OUTPUT UNIT... SYSTEM LOG - MEDIUM USED FOR OPERATOR COMMUNICATION.

CONTROL FUNCTIONS--
- INITIAL PROGRAM LOADING - TO INITIALIZE OPERATION OF THE SYSTEM.
- SUPERVISOR - TO PROVIDE MAIN STORAGE RESIDENT CONTROL FUNCTIONS IN A MINIMUM OF 6,144 BYTES. THE SIZE OF THE SUPERVISOR DEPENDS ON THE OPTIONS SPECIFIED AT SYSTEM GENERATION TIME.

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THE CONFIGURATION OF CONTROL FUNCTIONS CONTAINED WITHIN 614K BYTES IS -- SCHEDULING OF I/O OPERATIONS ON THE MULTIPLEXER CHANNEL AND UP TO SIX SELECTOR CHANNELS... SYSTEM LOADER FOR PROGRAM FETCHING... TRANSIENT AREA FOR FUNCTIONS SUCH AS - ERROR RECOVERY, FILE MANAGEMENT /OPEN, CLOSE, END-OF-VOLUME/, END-OF-JOB, CHECKPOINT, RESTART; STORAGE PRINT, OPERATOR COMMUNICATIONS VIA I/O... 7-TRACK TAPE HANDLING... PHYSICAL I/O TABLES FOR I/O DEVICES.

NOTE-- BURST MODE ON THE MULTIPLEXER CHANNEL CAN BE INCLUDED IN THE MINIMUM SUPERVISOR IN LIEU OF SELECTOR CHANNEL SCHEDULING. /BURST MODE IS REQUIRED IF TAPES ARE INTERMIXED WITH BYTE INTERLEAVE DEVICES/.

THE TOTAL CORE REQUIREMENT OF THE SUPERVISOR IS DEPENDENT ON THE COMBINATION OF OPTIONAL SUPERVISORY FUNCTIONS SELECTED AT SYSTEM GENERATION. FURTHERMORE, THE INCLUSION OF THE STORAGE PROTECTION FEATURE, WHICH IS REQUIRED FOR MULTIPROGRAMMING, IMPOSES A 2K BOUNDARY ON THE SUPERVISOR STORAGE REGARDLESS OF THE ACTUAL STORAGE UTILIZED.

A DOS/360 SUPERVISOR GENERATED WITH ANY OF THE FOLLOWING OPTIONS WILL REQUIRE A MINIMUM OF 8,192 BYTES--

- MULTIPROGRAMMING.
- TELECOMMUNICATIONS.
- DASD FILE PROTECTION.
- 2311 SYSTEM INPUT/OUTPUT.
- THE INTERVAL TIMER FEATURE IS OPTIONAL AND IS CONDITIONED ONLY ON THE APPLICATION REQUIREMENTS AND THE USE OF CERTAIN SYSTEM MACRO FACILITIES. NO ARBITRARY REQUIREMENT FOR THE INTERVAL TIMER IS IMPOSED BY DOS/360. FOR EXAMPLE, THE INTERVAL TIMER IS NOT REQUIRED FOR THE TELECOMMUNICATIONS CAPABILITY IN DOS/360. IT IS, HOWEVER, RECOMMENDED IN ORDER TO BE ABLE TO TAKE ADVANTAGE OF ALL SYSTEMS FACILITIES AVAILABLE WITH THE TELECOMMUNICATIONS CAPABILITY.
- A TELECOMMUNICATIONS CONFIGURATION, IN ADDITION TO A MINIMUM STORAGE REQUIREMENT OF 32K BYTES, MUST INCLUDE ONE SELECTOR CHANNEL FOR AT LEAST THE SYSTEM RESIDENT DEVICE /2311/, SINCE NO BURST MODE DEVICE CAN CO-EXIST WITH TELECOMMUNICATION DEVICES ON THE MULTIPLEXER CHANNEL. THE AMOUNT OF STORAGE REQUIRED FOR A TELECOMMUNICATIONS APPLICATION, IN ADDITION TO THE SYSTEM SUPERVISOR /8K BYTES MINIMUM/, IS DEPENDENT ON THE EXTENT OF THE BTAM FACILITIES UTILIZED AND THE SIZE OF THE USER DETERMINED AREAS AND ROUTINES. THE MINIMUM STORAGE FOR THE BTAM MODULE IS 3K BYTES.
- JOB CONTROL - BROUGHT INTO MAIN STORAGE BY THE SUPERVISOR TO PROVIDE JOB-TO-JOB TRANSITION. E.G., COMPILER AND EXECUTE. SYMBOLIC DEVICE ASSIGNMENT WITHIN DEVICE DEPENDENT ENVIRONMENT... ENTRY OF ADDITIONAL INFORMATION.

GENERATION AND EDITING FUNCTIONS--

- SYSTEM GENERATION - TO INITIALIZE THE SYSTEM RESIDENCE, ESTABLISH SUPERVISOR CAPABILITIES, AND INCLUDE DESIRED SYSTEM FUNCTIONS AND PROCESSING PROGRAMS.
- LIBRARIAN USED FOR MAINTAINING THE LIBRARIES AND PROVIDING PRINTED AND PUNCHED OUTPUT FROM THE RELOCATABLE AND SOURCE STATEMENT LIBRARIES. THREE LIBRARIES ARE USED - CORE IMAGE LIBRARY, RELOCATABLE LIBRARY, AND SOURCE STATEMENT LIBRARY.
- LINKAGE EDITOR - FOR LINKING AND RELOCATING SEPARATE PROGRAM SECTIONS FROM THE RELOCATABLE LIBRARY AND/OR FROM A SYSTEM INPUT UNIT, AND EDITING INTO THE CORE IMAGE LIBRARY FOR LOADING BY SYSTEM LOADER.

BASIC INPUT/OUTPUT CONTROL SYSTEM /IOCS/- LOGICAL IOCS IS A SET OF ROUTINES AND MACRO INSTRUCTIONS THAT HANDLE LOGICAL FILES OF DATA FOR THE USER ON THE DEVICES SUPPORTED. AMONG THESE FUNCTIONS ARE--

- REQUEST PHYSICAL I/O OPERATIONS TO BE PERFORMED WHEN NECESSARY.
- BLOCK AND DEBLOCK LOGICAL RECORDS WITHIN PHYSICAL RECORDS.
- PROVIDE LABEL HANDLING CAPABILITIES VIA OPEN/CLOSE/EOD ROUTINES.
- SWITCHING BETWEEN I/O AREAS WHEN TWO AREAS ARE SPECIFIED FOR A FILE.
- OVERLAPPING READING/Writing AND PROCESSING OPERATIONS.
- THE IOCS CORE IS TABULAR-MODULAR TYPE. THE TABULAR-MODULAR CONCEPT SEPARATES AN IOCS INPUT/OUTPUT ROUTINE IN TWO PARTS--
- THE TABULAR SECTION IS A SET OF PARAMETERS DESCRIBING THE CHARACTERISTICS OF THE FILE.
- THE MODULAR SECTION CONTAINS THE LOGICAL MODULE NECESSARY TO THE I/O OPERATION. THESE LOGICAL I/O MODULES MAY BE PREASSEMBLED AND INCORPORATED IN THE PROBLEM-PROGRAM AT LINKAGE EDITOR TIME.

A SINGLE LOGIC MODULE MAY SUPPORT MORE THAN ONE TABULAR SECTION. OTHER FEATURES OF IOCS ARE--

- GREATER FLEXIBILITY IS PROVIDED IN THE ASSIGNMENT AND CONTROL OF SYSTEM INPUT AND OUTPUT FILES TO FACILITATE AND ENCOURAGE CONCURRENT PERIPHERAL OPERATIONS.
- SYSTEM INPUT AND OUTPUT FILES ON 2311 DISK STORAGE DRIVE.
- SELF-RELOCATING FACILITIES.
- AUTOMATIC VOLUME SWITCHING FOR SYSTEM OUTPUT FILES ON MAGNETIC TAPES.
- COMBINED SYSTEM OUTPUT FILES ON A SINGLE MAGNETIC TAPE VOLUME.
- MULTIPLE PROGRAM CHECKPOINTS ON 2311 DISK STORAGE DRIVE.
- 7-TRACK CHECKPOINT WITH TRANSLATE MODE DATA ON MAGNETIC TAPE. /DATA CONVERSION FEATURE IS REQUIRED/.
- DASD FILE PROTECTION FROM ERRANT INPUT/OUTPUT OPERATIONS.
- DUAL DENSITY MAGNETIC TAPE RECORDING /800/1600 BPI/.
- ENABLE/DISABLE MODE FOR THE UNIVERSAL CHARACTER SET /UCS/.
- ERROR RECOVERY INVOLVING COMMAND CHAINING OPERATIONS.
- AUTOMATIC RETRY OF DEVICES MADE READY FOLLOWING OPERATOR INTERVENTION TYPE I/O ERRORS.

SUPERVISOR /6K/, 360N-SV-474.

SUPERVISOR /8K/, 360N-SV-475.

SUPERVISOR /10K/, 360N-SV-473.

THE PREGENERATED SUPERVISOR, /6 OR 8K/, IS CONTAINED IN THE CORE IMAGE LIBRARY WHEN RECEIVED BY THE REQUESTER. THIS WILL ALLOW THE USER TO USE THE MACHINE COMPONENTS WHICH ARE ALSO IN THE CORE IMAGE LIBRARY WITHOUT ASSEMBLY OR CATALOGING. SEE THE DESCRIPTION OF SYSTEM CONTROL AND BASIC IOCS, 360N-CL-453 FOR DESCRIPTION OF THE 6K CONFIGURATION. THE 8K SUPERVISOR HAS THE SAME CONFIGURATION, BUT HAS BEEN GENERATED TO RESERVE UP TO THE 8K BOUNDARY, AND WILL REQUIRE A 32K SYSTEM. REQUIRE A 32K SYSTEM.

CONTINUED FROM PRIOR COLUMN--

CONSECUTIVE DISK INPUT/OUTPUT CONTROL SYSTEM /IOCS/ MACROS, 360N-IO-455.

CONSECUTIVE DISK MACROS /GET/PUT/ ARE USED TO SEQUENTIALLY PROCESS SUCCESSIVE RECORDS IN A LOGICAL FILE. DASD RECORDS ARE PROCESSED STARTING WITH A BEGINNING ADDRESS AND CONTINUING IN ORDER THROUGH THE RECORDS ON SUCCESSIVE TRACKS AND CYLINDERS TO THE ENDING ADDRESS. THE PROGRAM MAY CONTINUE IMMEDIATELY FOLLOWING THE GET/PUT MACRO BEFORE THE INPUT OR OUTPUT OPERATION IS COMPLETED. THESE MACROS ARE USED FOR PROCESSING RECORDS ON A 2311 DISK STORAGE DRIVE OR A 2321 DATA CELL DRIVE.

CONSECUTIVE TAPE INPUT/OUTPUT CONTROL SYSTEM /IOCS/ MACROS, 360N-IO-456.

CONSECUTIVE TAPE MACROS /GET/PUT/ ARE USED TO SEQUENTIALLY PROCESS SUCCESSIVE RECORDS IN A LOGICAL FILE. MAGNETIC TAPE RECORDS ARE PROCESSED STARTING WITH THE FIRST RECORD OF A FILE THROUGH THE END.

DIRECT ACCESS METHOD MACROS, 360N-IO-454.

RECORDS WITHIN A LOGICAL FILE ARE ORGANIZED ON DIRECT-ACCESS VOLUMES IN ANY MANNER CHOSEN BY THE USER. STORAGE OR RETRIEVAL OF A RECORD /READ/WRITE/ IS BY ACTUAL ADDRESS OR BY RELATIVE ADDRESS WITHIN A LOGICAL FILE. THIS ADDRESS CAN BE THAT OF THE DESIRED RECORD, OF A STARTING POINT WITHIN THE LOGICAL FILE WHERE A SEARCH FOR THE RECORD BEGINS. THE STARTING POINT IS BASED ON A RECORD KEY FURNISHED BY THE USER. THE DIRECT ACCESS METHOD MACROS ARE USED FOR PROCESSING RECORDS ORGANIZED IN A RANDOM MANNER ON A 2311 DISK STORAGE DRIVE OR A 2321 DATA CELL DRIVE.

INDEXED SEQUENTIAL FILE MANAGEMENT SYSTEM MACROS, 360N-IO-457.

THE INDEXED SEQUENTIAL FILE MANAGEMENT SYSTEM /ISFMS/ MACROS PERMITS DASD RECORDS TO BE PROCESSED IN RANDOM ORDER, OR IN SEQUENTIAL ORDER BY CONTROL INFORMATION. FOR RANDOM PROCESSING, THE USER SUPPLIES THE KEY /CONTROL INFORMATION/ OF THE DESIRED RECORD TO ISFMS, AND ISSUES A READ OR WRITE MACRO INSTRUCTION TO TRANSFER THE SPECIFIED RECORD. FOR SEQUENTIAL PROCESSING BY CONTROL INFORMATION, ISFMS ALLOWS THE USER TO CONSTRUCT DATA FILES BY KEY SEQUENCE IN A MANNER THAT PERMITS INSERTIONS /ADDITIONS/ WITHOUT SORTING, COPYING, OR MERGING. ISFMS CAN BE USED ON A 2311 DISK STORAGE DRIVE OR A 2321 DATA CELL DRIVE.

CONSECUTIVE PAPER TAPE INPUT/OUTPUT CONTROL SYSTEM /IOCS/ MACROS, 360N-IO-458.

CONSECUTIVE PAPER TAPE MACROS ARE USED FOR PROCESSING PAPER TAPE RECORDS, WITH OR WITHOUT TRANSLATION OF ANY CODE. A USER MAY SPECIFY ONE OR TWO I/O AREAS AS DESIRED, BUT WORK AREAS ARE NOT SERVICED. TWO RECORD FORMATS ARE ACCEPTABLE--FIXED-UNBLOCKED /END-OF-RECORD CHARACTER PROHIBITED/... UNDEFINED /END-OF-RECORD CHARACTER MANDATORY/.

BASIC TELECOMMUNICATIONS ACCESS METHOD, 360N-CQ-469.

BTAM IS DESIGNED TO PROVIDE MACROS TO FACILITATE WRITING TELECOMMUNICATION PROGRAMS. THESE INCLUDE FACILITIES FOR PERFORMING THE FOLLOWING OPERATIONS--

- ESTABLISHING, FOR SWITCHED NETWORKS, LINE CONNECTION WITH TERMINALS BY CALLING THE TERMINALS OR BY ANSWERING CALLS FROM THE TERMINALS.
- POLLING AND ADDRESSING TERMINALS ACCORDING TO USER ESTABLISHED TERMINAL LISTS, AND CHANGING THE POLLING OR ADDRESSING SCHEMES AT EXECUTION TIME.
- TRANSMITTING AND RECEIVING MESSAGES AND POSTING COMPLETION.
- BUFFER POOL MANAGEMENT.
- CHECKING FOR TRANSMISSION ERRORS AND POSTING ERROR CONDITIONS.
- SHARING PROCESSING TIME WITH OTHER PARTITIONS IN ORDER TO MORE EFFECTIVELY UTILIZE THE CPU.
- ERROR RECOVERY PROCEDURES
- ERROR COUNTS
- ON-LINE TERMINAL TESTS

IT IS EXPECTED THAT THE TELEPROCESSING PROGRAM WILL NORMALLY OPERATE IN A FOREGROUND PARTITION THAT WILL INCLUDE THE BTAM MODULE COMBINED WITH THE USER'S MESSAGE PROCESSING ROUTINES. THE USER MAY EMPLOY ANY OF THE IOCS MACROS AVAILABLE IN THE SYSTEM IN DESIGNING HIS TELECOMMUNICATIONS APPLICATION. THE SIZE OF THE TELECOMMUNICATIONS PROBLEM PROGRAM IS DEPENDENT UPON THE BTAM MODULE AND THE EXTENT OF THE FOLLOWING USER DETERMINED AREAS AND FUNCTIONS--

- I/O BUFFER AREAS.
- NUMBER AND SIZE OF TERMINAL LISTS.
- MESSAGE PROCESSING ROUTINES.
- NUMBER OF MACRO INSTRUCTIONS ISSUED.
- NUMBER OF LINES.
- NUMBER OF TERMINALS PER LINE.
- NUMBER OF LINE GROUPS.

BTAM PROVIDES A MULTIPLE WAIT MACRO-INSTRUCTION FOR USE IN T/P LINE OPERATIONS ONLY. THIS MACRO-INSTRUCTION ENABLES THE MESSAGE PROCESSING PROGRAM TO RELEASE CONTROL OF THE CPU UNTIL ONE OR MORE OF A SERIES OF EVENTS HAS OCCURRED /SUCH AS THE COMPLETION OF A T/P READ OR WRITE OPERATION/, THUS PROVIDING EFFICIENT CONCURRENT OPERATION FOR LOWER PRIORITY PROGRAMS.

QUEUED TELECOMMUNICATIONS ACCESS METHOD, 360N-CQ-470

WITH QTAM, THIS HIGH LEVEL TELE-PROCESSING LANGUAGE, THE USER CAN SIGNIFICANTLY REDUCE THE TIME TO IMPLEMENT THE COMPLEXITY ASSOCIATED WITH THE MULTIPLE T/P LINE HANDLING. QTAM IS A GENERALIZED IOCS THAT EXTENDS THE TECHNIQUES OF LOGICAL IOCS TO THE TELECOMMUNICATIONS ENVIRONMENT. UNLIKE OTHER COMMONLY USED ACCESS METHODS, QTAM FURNISHES FAR MORE THAN THE MECHANICS FOR INPUT/OUTPUT OPERATIONS. IN ADDITION TO THE STANDARD GET/PUT MACRO INSTRUCTION SUPPORT FOR MESSAGE PROCESSING PROGRAMS, QTAM PROVIDES A HIGH-LEVEL AND FLEXIBLE MESSAGE CONTROL LANGUAGE.

A TELECOMMUNICATIONS SYSTEM BUILT UPON QTAM FACILITIES CONSISTS OF TWO MAJOR COMPONENTS -

1. A MESSAGE CONTROL PROGRAM /FOREGROUND 1 ONLY/ TO CONTROL THE FLOW OF MESSAGE TRAFFIC FROM ONE REMOTE TERMINAL TO ANOTHER /MESSAGE SWITCHING APPLICATIONS/ AND BETWEEN REMOTE TERMINALS AND ANY MESSAGE PROCESSING PROGRAM /MESSAGE PROCESSING APPLICATIONS/.
2. MESSAGE PROCESSING PROGRAMS /FOREGROUND 2 AND/OR BACKGROUND/ TO PERFORM MESSAGE PROCESSING REQUIRED BY USERS APPLICATION.

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NOTE: DOS/360 WITH MULTIPROGRAMMING REQUIRES A 10K MINIMUM BACKGROUND ALLOCATION AT ALL TIMES. THE BACKGROUND MAY OR MAY NOT BE QTAM RELATED /MESSAGE PROCESSING PROGRAMMING/. QTAM ALLOWS A SYNCHRONOUS OPERATION OF ALL PARTITIONS OF THE SYSTEM. THIS METHOD OF EXECUTION IS BASED ON THE COMPLETION OF QUEUED EVENTS AND ON THE ESTABLISHED PRIORITIES OF FOREGROUND 1, FOREGROUND 2 AND BACKGROUND. A TELECOMMUNICATIONS SYSTEM OPERATING UNDER DOS/QTAM CAN BE DESIGNED FOR A WIDE VARIETY OF APPLICATIONS, INCLUDING MESSAGE SWITCHING, DATA COLLECTION, PROCESSING COLLECTED DATA AND INQUIRY PROCESSING. SOME OF THE CAPABILITIES PROVIDED BY QTAM THROUGH THE USE OF MACRO INSTRUCTIONS ARE -

- AUTOMATIC CONTROL OF SWITCHED NETWORKS
 - POLLING TERMINALS
 - RECEIVING AND EDITING MESSAGES FROM TERMINALS
 - ADDRESSING TERMINALS
 - SENDING AND EDITING MESSAGES TO TERMINALS
 - DYNAMIC BUFFER MANAGEMENT
 - QUEUEING MESSAGES ON A DIRECT-ACCESS STORAGE DEVICE.
- THE SIZE OF THE TELECOMMUNICATION PROBLEM PROGRAM IS DEPENDENT UPON THE QTAM MODULE AND THE EXTENT OF FOLLOWING USER DETERMINED AREAS AND FUNCTIONS -

- I/O BUFFERS
- TERMINAL LISTS
- MESSAGE PROCESSING ROUTINES
- NUMBER OF MACRO INSTRUCTIONS ISSUED
- NUMBER OF TERMINALS PER LINE

THE FOLLOWING CONFIGURATION AND SYSTEM DESIGN CONSIDERATIONS ARE APPLICABLE TO THE DOS/360 TELECOMMUNICATION ENVIRONMENT -

- ALL TELECOMMUNICATIONS MUST BE ON THE MULTIPLEXER CHANNEL AND NO BURST MODE DEVICES MAY COEXIST ON THE CHANNEL.
- ALL TERMINALS ON A LINE MUST BE OF THE SAME TYPE. TERMINALS MAY BE MIXED WITHIN THE SAME PROBLEM PROGRAM.

QTAM SYSTEM REQUIREMENTS - 32K BYTES OF MAIN STORAGE /WHILE A MINIMUM NUMBER OF COMMUNICATION LINES WILL OPERATE IN 32K, MOST QTAM APPLICATIONS WILL REQUIRE AT LEAST 64K/... STANDARD INSTRUCTION SET PROTECTION... ONE CARD READER... ONE CARD PUNCH... ONE PRINTER... ONE 1052 KEYBOARD... ONE 2311 FOR SYSTEM RESIDENCE ON A SELECTOR CHANNEL... COMMUNICATIONS EQUIPMENT NECESSARY TO INTERFACE TO THE COMMUNICATION LINES... A 2701/2702 ATTACHED TO A MULTIPLEXER CHANNEL.

* SEE CONTROL PROGRAM INPUT/OUTPUT CHART FOR ACCEPTABLE UNITS.

THE FOLLOWING QTAM RESTRICTIONS WILL BE REMOVED IN LATER RELEASES -

- QTAM SUPPORT FOR DASD MESSAGE QUEUES FILE IS LIMITED TO ONE 1316 DISK PACK WITH A SINGLE XTENT DEFINITION FOR THE MESSAGE QUEUES FILE.
- IF ANY QTAM PARTITION TERMINATES ABNORMALLY, ALL QTAM PARTITIONS MUST TERMINATE, AND THEY CAN BE RE-LOADED ONLY AFTER AN IPL PROCEDURE.
- THE STOPJOB COMMAND CANNOT BE ISSUED FROM A MESSAGE PROCESSING PARTITION TO A TELECOMMUNICATIONS LINE IN A ,,SWITCHED,, NETWORK.
- DOS/360 QTAM-I DOES NOT RECOGNIZE ZERO LENGTH ,,PUTS,,
- THE WORK AREA FOR A ,,GET,, MUST BE LOCATED ON A HALF-WORD BOUNDARY
- NO ENDING STATUS IS RETURNED TO QTAM AND AN INDIVIDUAL LINE BECOMES INACTIVE IF A WRITE COMMAND AND INCOMING DATA OCCUR SIMULTANEOUSLY OR A NON-DATA SET CALL IS PLACED TO A 2702 LINE.

COMPILER INPUT/OUTPUT MODULES, 360N-10-476.

THESE INPUT/OUTPUT MODULES USED BY COBOL AND RPG OBJECT PROGRAMS ARE PRE-ASSEMBLED AND INCORPORATED INTO THE RELOCATABLE LIBRARY. THEY PROVIDE ALL NECESSARY INPUT/OUTPUT OPERATIONS SO THAT THE USER CAN EXECUTE PROGRAMS WRITTEN IN COBOL AND/OR RPG WITHOUT HAVING TO GENERATE INPUT/OUTPUT ROUTINES.

OPTICAL CHARACTER READER IOCS, 360N-10-478.

OPTICAL CHARACTER READER IOCS PROVIDES SUPPORT OF THE IBM 1285 OPTICAL READER WHICH READS TAPES, SUCH AS THOSE PRODUCED ON CASH REGISTERS AND ADDING MACHINES, DIRECTLY INTO THE SYSTEM. THE 1285 IS NOW SUPPORTED IN A MULTIPROGRAMMING ENVIRONMENT UNDER DOS/360.

THE ONLY RESTRICTION IMPOSED IS THAT SYMBOLIC REGISTER NOTATION MAY NOT BE USED WITH THE RDLINE MACRO. THIS RESTRICTION WILL BE REMOVED AT A LATER DATE.

MULTIPROGRAMMING SUPPORT UTILITY MACROS, 360N-UT-471.

THESE MACROS PROVIDE THE USER OF DOS/360 WITH A DIRECT AND EASY MEANS OF GENERATING EFFICIENT FILE-TO-FILE UTILITY PROGRAMS TAILORED TO HIS SPECIFIC NEEDS. THE GENERATED UTILITY PROGRAMS ARE DESIGNED TO OPERATE AS FOREGROUND PROGRAMS WITHIN THE MULTIPROGRAMMING ENVIRONMENT OF DOS/360, BUT CAN ALSO OPERATE AS BACKGROUND PROGRAMS. THESE MACROS MAY BE COMBINED WITH USER PROGRAMS TO PRODUCE EITHER GENERALIZED OR SPECIFIC FILE PROCESSING PROGRAMS. THESE MACROS WILL PRODUCE SELF-RELOCATING OBJECT CODE WHICH WILL PROVIDE INPUT/OUTPUT CONTROL FUNCTIONS SUCH AS -

- OPENING AND CLOSING FILES, INCLUDING LABEL PROCESSING.
- BLOCKING/DEBLOCKING OF FIXED LENGTH RECORDS.
- PRINTER FORMS AND STACKER SELECTION CONTROL.
- USER EXITS BEFORE, DURING, AND UPON COMPLETION OF RECORD PROCESSING.

DOS/360 UTILITIES.

THE DOS/360 UTILITIES HAVE BEEN DIVIDED INTO THREE GROUPS IN ORDER TO SIMPLIFY ORDERING AND MAINTENANCE. EACH GROUP IS ITEMIZED AND DESCRIBED BELOW. THE FOLLOWING FEATURES ARE AVAILABLE IN MOST OF THE PROGRAMS-

- MOVING AND COPYING A LOGICAL FILE OR PART OF A LOGICAL FILE FROM ONE VOLUME TO ANOTHER.
 - MOVING A LOGICAL FILE FROM ONE LOCATION TO ANOTHER ON THE SAME VOLUME.
 - PRINTING AND/OR PUNCHING A LOGICAL FILE.
 - FIELD SELECTING, BLOCKING, AND DEBLOCKING OF RECORDS.
 - COMPUTING I/O AREA ASSIGNMENTS BASED ON AVAILABLE STORAGE SPACE AND THE SIZE OF THE INPUT AND OUTPUT BLOCKS. MAXIMUM ADVANTAGE OF DEVICE AND PROCESS OVERLAP FOR A GIVEN BLOCK SIZE IS TAKEN.
 - LABEL CHECKING.
 - SKIPPING A NUMBER OF INPUT RECORDS BEFORE PROCESSING BEGINS.
- GROUP 1 UTILITIES /360N-UT-461/ IS A PREREQUISITE FOR USING GROUP 2 AND/OR GROUP 3.

GROUP 1 /UNIT RECORD AND DISK/ UTILITIES, 360N-UT-461.

- CARD TO PRINTER AND/OR PUNCH - TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO A PRINTER AND/OR A CARD PUNCH. FOR CARD TO PRINTER ONLY - PRINTS IN ONE OF TWO FORMATS-
- DATA DISPLAY - PRINTS ALL OF THE BLOCK.
- DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD.
- CARD TO DISK - TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO DISK, WITH OR WITHOUT KEY FIELDS.
- DISK TO CARD - TRANSFERS DATA FROM DISK TO CARDS. THE DISK FILE MAY OR MAY NOT HAVE KEY FIELDS. DATA MAY BE PUNCHED IN EITHER EBCDIC OR BINARY.
- DISK TO PRINTER - PRINTS A DISK FILE IN ONE OF TWO FORMATS-
- DATA DISPLAY - PRINTS ALL OF A DISK BLOCK.
- DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD.
- DISK TO DISK - TRANSFERS THE DATA FROM ONE DISK FILE TO ANOTHER. THE INPUT AND/OR OUTPUT FILE MAY OR MAY NOT HAVE KEY FIELDS.
- CLEAR DISK - CLEARS ONE OR MORE AREAS OF 2311 DISK STORAGE, AND ESTABLISHES PRE-FORMATTED TRACKS CONTAINING AN INDICATED BASE THROUGHOUT THE AREA CLEARED.

GROUP 2 /MAGNETIC TAPE/ UTILITIES, 360N-UT-462.

- TAPE TO PRINTER - PRINTS A TAPE FILE IN ONE OF TWO FORMATS-
- DATA DISPLAY - PRINTS ALL OF A TAPE BLOCK.
- DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD.
- CARD TO TAPE - TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO MAGNETIC TAPE.
- TAPE TO CARD - TRANSFERS DATA FROM MAGNETIC TAPE TO CARDS. DATA MAY BE PUNCHED IN EITHER EBCDIC OR BINARY.
- DISK TO TAPE - TRANSFERS DATA FROM A DISK FILE TO A TAPE FILE. THE DISK FILE MAY OR MAY NOT HAVE KEY FIELDS.
- TAPE TO DISK - TRANSFERS DATA FROM A TAPE FILE TO A DISK FILE. THE DISK FILE MAY OR MAY NOT HAVE KEY FIELDS.
- DATA CELL TO TAPE - TRANSFERS THE DATA FROM ONE TAPE TO ANOTHER. THE INPUT AND/OR OUTPUT FILE MAY OR MAY NOT HAVE KEY FIELDS.
- TAPE TO DATA CELL - TRANSFERS DATA FROM A TAPE FILE TO A DATA CELL FILE. THE DATA CELL FILE MAY OR MAY NOT HAVE KEY FIELDS.
- TAPE COMPARE - COMPARES TWO FILES FROM TWO OR MORE TAPES TO ENSURE THAT THE FILES ARE IDENTICAL.

GROUP 3 /DATA CELL/ UTILITIES, 360N-UT-463.

- DATA CELL TO PRINTER - PRINTS A DATA CELL FILE IN ONE OF TWO FORMATS-
- DATA DISPLAY - PRINTS ALL OF A DATA CELL BLOCK.
- DATA LIST - PRINTS ONE LINE FOR EACH DATA RECORD.
- DISK TO DATA CELL - TRANSFERS DATA FROM A DISK FILE TO A DATA CELL FILE. THE INPUT AND/OR OUTPUT FILE MAY OR MAY NOT HAVE KEY FIELDS.
- DATA CELL TO DISK - TRANSFERS DATA FROM A DATA CELL FILE TO A DISK FILE. THE INPUT AND/OR OUTPUT FILE MAY OR MAY NOT HAVE KEY FIELDS.
- DATA CELL TO DATA CELL - TRANSFERS THE DATA FROM ONE DATA CELL FILE TO ANOTHER. THE INPUT AND/OR OUTPUT FILE MAY OR MAY NOT HAVE KEY FIELDS.
- CLEAR DATA CELL - CLEARS ONE OR MORE AREAS OF 2321 DATA CELL STORAGE, AND ESTABLISHES PREFORMATTED TRACKS CONTAINING AN INDICATED BASE THROUGHOUT THE AREA CLEARED.

VOCABULARY FILE UTILITY, 360N-UT-472

THIS PROGRAM PROVIDES FOR THE CREATION AND UPDATING OF AN AUDIO VOCABULARY FILE. THE CUSTOMER RECEIVES THE INPUT VOCABULARY FILE CONTAINING WORDS IN DIGITALLY CODED FORM ON EITHER PUNCHED CARDS OR MAGNETIC TAPE. THE PROGRAM ALLOWS THE USER TO SELECT THE WORDS HE NEEDS, BY MEANS OF CONTROL STATEMENTS FROM THIS FILE AND TO ORGANIZE THEM ON DISK /2311/ IN THE MANNER BEST SUITED TO HIS APPLICATION. THE PROGRAM ALSO PROVIDES THE ABILITY TO LIST THE INPUT VOCABULARY FILE AND THE OPERATING VOCABULARY FILE CREATED BY THE USER.

TAPE SORT/MERGE, 360N-SM-400.

THE SORT PROGRAM ENABLES THE USER TO SORT FILES OF UNSEQUENCED TAPE RECORDS INTO ONE SEQUENTIAL FILE. THE MERGE PROGRAM ENABLES THE USER TO MERGE /COLLATE/ UP TO SEVEN PRESORTED TAPE FILES INTO ONE FILE. SIGNIFICANT FEATURES OF TAPE SORT/MERGE ARE-

- SORTING OR MERGING ON AS MANY AS TWELVE CONTROL-DATA FIELDS.
- COLLATING SEQUENCES AND DATA FORMAT CAN BE SPECIFIED SEPARATELY FOR EACH CONTROL FIELD.
- RECORDS CAN BE SORTED OR MERGED INTO ASCENDING OR DESCENDING SEQUENCE.
- THE SORT EMPLOYS IOCS STANDARD LABEL CHECKING OR ENABLES THE USER TO BYPASS OR PROCESS HIS NON-STANDARD LABELS.
- THE CHECKPOINT-RESTART FACILITY PERMITS THE USER TO INTERRUPT AND CONTINUE DURING THE MERGING PHASES OF THE SORT.
- MAGNETIC TAPES ARE USED AS WORK FILES.
- AN ALTERNATE WORK DRIVE IS AVAILABLE DURING SORT AND WILL ALLOW THE MAXIMUM INPUT FILE SIZE TO BE APPROXIMATELY DOUBLED.

DISK SORT/MERGE, 360N-SM-450.

THE SORT PROGRAM ENABLES THE USER TO SORT FILES OF UNSEQUENCED DISK /2311/ OR TAPE RECORDS INTO ONE SEQUENTIAL FILE. THE MERGE PROGRAM ENABLES THE USER TO MERGE /COLLATE/ UP TO FOUR PRE-SORTED DISK OR TAPE FILES INTO ONE FILE. THE PROGRAM ASSUMES THAT INPUT RECORDS FOR A SORT OPERATION ARE IN RANDOM SEQUENCE. RECORDS CAN BE SORTED OR MERGED INTO ASCENDING OR DESCENDING SEQUENCE. THE OUTPUT SEQUENCE FOR A MERGE-ONLY OPERATION MUST BE THE SAME AS THE INPUT SEQUENCE. SIGNIFICANT FEATURES OF THE SORT/MERGE ARE-

- SORTING OR MERGING ON AS MANY AS TWELVE CONTROL-DATA FIELDS.
- COLLATING SEQUENCES AND DATA FORMAT CAN BE SPECIFIED SEPARATELY FOR EACH CONTROL FIELD.
- OPTION OF WRITING AN OUTPUT FILE ON DISK COMPOSED OF THE DISK ADDRESSES OR DISK-ADDRESSES-PLUS-CONTROL-DATA FOR THE SORTED RECORDS.
- PROVIDES EXITS TO STORAGE AREAS FOR USER-WRITTEN ROUTINES.
- SORTS MULTIPLE INPUT FILES.
- INPUT AND OUTPUT CAN BE FROM EITHER TAPE OR DISK.
- DISK INTERMEDIATE STORAGE MAY BE DESIGNATED ON THE SYSTEM RESIDENCE DEVICE ASSUMING SUFFICIENT WORKING STORAGE IS AVAILABLE.
- DISK STORAGE IS USED AS WORK AREAS.

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AUTOTEST, 360N-PT-459.

AUTOTEST IS A DEBUGGING AID FOR OBJECT PROGRAMS ASSEMBLED BY THE ASSEMBLER AND EXECUTED UNDER DOS/360. IT MONITORS THE EXECUTION OF THE PROGRAM UNDER TEST AND HAS THE FOLLOWING FACILITIES --

- CREATION OF INPUT DATA BY MEANS OF STANDARD UTILITY PROGRAMS.
- EXCHANGE, ADDITION OR DELETION OF INSTRUCTION WITHOUT REASSEMBLY.
- ,,SNAP-SHOT,, OF REGISTERS, MAIN STORAGE AND PERMANENT STORAGE ASSIGNMENTS.
- DUMP AT NORMAL OR ABNORMAL END OF JOB.
- LIST OF ALL PHASES IN SEQUENCE OF CALLING.
- POINT OF ANY OUTPUT FILE.

AUTOTEST RUNS IN THE BACKGROUND PARTITION ONLY WITH ALL OTHER PARTITIONS REDUCED TO ZERO.

ASSEMBLER, 360N-AS-465.

ASSEMBLER LANGUAGE IS A SYMBOLIC PROGRAMMING LANGUAGE USED TO WRITE PROGRAMS FOR THE SYSTEM/360. THE DOS/360 ASSEMBLER PROGRAM PROCESSES THE LANGUAGE, PROVIDES AUXILIARY FUNCTIONS USEFUL IN THE PREPARATION AND DOCUMENTATION OF A PROGRAM, AND INCLUDES FACILITIES FOR PROCESSING MACRO INSTRUCTIONS. INCLUDED IN THE LANGUAGE ARE THE STANDARD AND OPTIONAL INSTRUCTION SETS, MNEMONICS, EXTENDED MNEMONICS, LITERALS, AND MACRO FACILITIES. AT SYSTEM GENERATION TIME, THE USER HAS THE OPTION TO GENERATE AN ASSEMBLER USING--

- THREE 2311 DISK STORAGE EXTENTS AS WORK FILES, USING 16K BYTES OF CORE STORAGE. /MINIMUM REQUIRED BACKGROUND 10K/.
- THREE 2400 SERIES MAGNETIC TAPE UNITS /EITHER 7-TRACK OR 9-TRACK/ AS WORK FILES, USING 16K BYTES OF CORE STORAGE. /MINIMUM REQUIRED BACKGROUND 10K/. THE DATA CONVERSION FEATURE IS REQUIRED FOR 7-TRACK OPERATION.
- 32K BYTES OF CORE STORAGE. THIS ASSEMBLER PERMITS THE USER TO SELECT AT EXECUTION TIME THREE 2311 DISK STORAGE EXTENTS OR THREE 2400 SERIES MAGNETIC TAPE UNITS AS WORK FILES. 2311 DISK STORAGE EXTENTS MAY BE ON THE SAME DEVICE THAT CONTAINS THE DOS/360 SYSTEM RESIDENCE. /MINIMUM REQUIRED BACKGROUND 14K/.

ASSEMBLER ALSO PROVIDES THE FOLLOWING FEATURES--

- PUNCH ERROR RECOVERY PROCEDURES.
- SUPPORT FOR MULTIVOLUME SYSTEM OUTPUT.
- SUPPORT FOR 2311 AS SYSIN, SYSIST, SYSPCH /USING 32K BYTES OF CORE STORAGE/.

REPORT PROGRAM GENERATOR /RPG/, 360N-RG-460.

DOS/360 RPG IS A POWERFUL, HIGH LEVEL, PROBLEM ORIENTED LANGUAGE CAPABLE OF GENERATING PROGRAMS THAT RANGE FROM PRODUCING SIMPLE REPORTS TO FULL FILE MAINTENANCE. THE GENERATED PROGRAMS WILL READ DATA FROM PUNCHED CARDS, TAPE AND DISK., UPDATE RECORDS ACCORDING TO USER SPECIFICATIONS., WRITE OUTPUT RECORDS ON TAPE AND DISK., PUNCH CARDS AND PREPARE PRINTED REPORTS. RPG OFFERS A RAPID METHOD OF CONVERTING DEFINED APPLICATIONS TO OPERATIONAL PROGRAMS PRODUCING RESULTS. WITH MINIMAL SPECIFICATIONS, RPG GENERATED PROGRAMS CAN--

- OBTAIN DATA RECORDS FROM SINGLE OR MULTIPLE INPUT FILES.
- PERFORM RECORD IDENTIFICATION.
- SEQUENCE CHECK INPUT FILES.
- DETERMINE LOGICAL ORDER OF RECORD PROCESSING.
- PERFORM CALCULATIONS ON DATA TAKEN FROM INPUT RECORDS OR LITERALS.
- PERFORM AUTOMATIC DECIMAL ALIGNMENT.
- PERFORM TEST AND/OR COMPARISONS WHICH MAY INFLUENCE PROCESSING.
- EXIT TO USER SUBROUTINES WRITTEN IN A LANGUAGE OTHER THAN IN RPG.
- PRODUCE REPORTS WITH UNLIMITED NUMBER OF HEADING AN DETAIL UP TO NINE LEVELS OF TOTAL PLUS AN END-OF-JOB TOTAL.

IN ADDITION, RPG HAS THE CAPABILITIES OF PROCESSING THE FOLLOWING WORLD TRADE REQUIREMENTS--

- AUTOMATIC HANDLING OF STERLING FIELDS.
- ALTERNATE COLLATING PURPOSES.
- INVERTED FIELD IN EDITING.

RPG REQUIRES THE STANDARD INSTRUCTION SET AND DECIMAL ARITHMETIC FEATURE NO. 3237.

COBOL, 360N-CB-452.

COBOL /COMMON BUSINESS ORIENTED LANGUAGE/ IS SIMILAR TO ENGLISH. COBOL PROVIDES A CONVENIENT METHOD OF CODING PROGRAMS TO HANDLE COMMERCIAL DATA PROCESSING PROBLEMS. DOS/360 COBOL PROVIDES IMPORTANT NEW FEATURES THAT REDUCE THE COST OF PROGRAMMING AND EXTEND THE USE OF THE LANGUAGE TO NEW AREAS OF APPLICATION. AMONG THE NEW FEATURES FURNISHED BY THE COBOL COMPILER ARE--

- FLOATING POINT FACILITY.
- DEBUGGING SOURCE STATEMENTS.
- DEBUGGING PACKETS THAT MAY BE COMPILED TOGETHER WITH THE SOURCE PROGRAM AND EXECUTED AT OBJECT TIME WITHOUT ALTERATIONS TO THE ORIGINAL SOURCE PROGRAM.
- SUBPROGRAM FACILITY.
- COPY AND INCLUDE FROM A USERS SOURCE PROGRAM LIBRARY.
- IMPROVED OBJECT CODE EFFICIENCY.
- IMPROVED OBJECT PROGRAM EXECUTION TIME.
- IMPROVED PERFORM PERFORMANCE.
- DASD STATEMENTS HANDLED BY THE COBOL COMPILER FOR 2311 DISK STORAGE DRIVE AND 2321 DATA CELL DRIVE. THESE ARE--
- FOR INDEXED SEQUENTIAL - LOAD, ADD, RETRIEVE, RETRIEVE AND UPDATE.
- FOR DIRECT ACCESS - SEQUENTIAL BUILD, RETRIEVE, RETRIEVE AND UPDATE.
- SEQUENTIAL PROCESSING FOR 2321 DATA CELL DRIVE.
- USE AFTER ERROR CLAUSE HANDLED FOR UTILITY AND DIRECT ACCESS FILES.
- APPLY WRITE-ONLY CLAUSE HANDLED.
- INVERTED PRINT EDIT.

A COBOL LIBRARY CONSISTS OF SUBROUTINES CALLED BY THE COMPILER TO PERFORM CONVERSIONS, COMPLEX ARITHMETIC OPERATIONS, AND CERTAIN I/O FUNCTIONS.

COBOL REQUIRES THE STANDARD INSTRUCTION SET AND THE DECIMAL ARITHMETIC FEATURE NO. 3237. THE FLOATING POINT ARITHMETIC FEATURE NO. 4427 IS ALSO REQUIRED IF FLOATING POINT LITERALS, DATA ITEMS OR NON-INTEGERS EXPONENTS ARE USED. THE COBOL COMPILER DESIGN POINT IS 14K OF CORE STORAGE. FOR THIS REASON A 32K SYSTEM IS REQUIRED FOR COMPILATION OF COBOL PROGRAMS.

COBOL DASD MACROS, 360N-CB-468.

CONTINUED FROM PRIOR COLUMN--

THESE MACROS ENABLE A USER OF DOS/360 COBOL TO ACCESS THE 2311 DISK STORAGE DRIVE BY USING INDEXED SEQUENTIAL OR DIRECT ACCESS IOCS. THE FOLLOWING FUNCTIONS ARE PROVIDED--

- FOR INDEXED SEQUENTIAL - LOAD, SEQUENTIAL AND/OR RANDOM RETRIEVAL, RANDOM RETRIEVAL AND ADD.
- FOR DIRECT ACCESS LOAD, SEQUENTIAL AND/OR RANDOM RETRIEVAL.

THESE MACROS ARE ASSEMBLED USING THE DOS/360 ASSEMBLER AND ARE LINK-EDITED WITH THE OBJECT PROGRAM PRODUCED BY THE COBOL COMPILER.

FORTRAN IV, 360N-FO-451.

THE FORTRAN IV LANGUAGE IS ESPECIALLY USEFUL IN WRITING PROGRAMS FOR SCIENTIFIC AND ENGINEERING APPLICATIONS THAT INVOLVE MATHEMATICAL COMPUTATIONS. THE DOS/360 FORTRAN IV LANGUAGE IS COMPATIBLE WITH AND ENCOMPASSES THE AMERICAN STANDARDS ASSOCIATION /ASA/ BASIC FORTRAN, INCLUDING ITS MATHEMATICAL SUBROUTINE PROVISIONS.

DOS/360 FORTRAN IV OFFERS THE FOLLOWING ADVANCED FEATURES --

- MIXED-MODE... SPACING FORMAT... LITERAL FORMAT CODE... THE A FORMAT CODE... SCALE FACTOR... CARRIAGE CONTROL... DOUBLE PRECISION DATA TYPE... THREE DIMENSION ARRAYS... FUNCTIONAL SUBPROGRAMS MAY RETURN RESULTS VIA THE ARGUMENT LIST.

THE FORTRAN IV COMPILER ALLOWS THE INTRODUCTION OF SOURCE PROGRAMS IN EITHER BCD OR EBCDIC CHARACTER CODES. THE FORTRAN IV COMPILER AND OBJECT PROGRAMS REQUIRE THE STANDARD INSTRUCTION SET AND THE FLOATING POINT FEATURE NO. 4427.

PL/I, 360N-PL-464

THE BASIC PL/I COMPILER PROVIDES, IN A SINGLE HIGH-LEVEL LANGUAGE, MANY NEW AND SIGNIFICANT FEATURES, SUCH AS--

- COMPREHENSIVE DATA CONVERSION AND EDITING FACILITIES.
- DATA STRUCTURES FOR ALPHAMERIC INFORMATION.
- ABILITY TO PROCESS A WIDE RANGE OF DATA TYPES, INCLUDING CHARACTER AND BIT STRINGS, FIXED AND FLOATING DECIMAL, AND FIXED AND FLOATING BINARY.
- BOTH STRUCTURED DATA AND ARRAY DATA HAVE ARITHMETIC CAPABILITY, INCLUDING EXPRESSIONS WHOSE ELEMENTS ARE SIMPLE VARIABLES, STRUCTURED DATA, AND ARRAYS.
- DATA STREAM TRANSMISSION.
- RECORD TRANSMISSION CAPABILITY.

THE PL/I SOURCE PROGRAM MAY EMPLOY A SET OF DASD MACROS /360N-CB-468/ THAT ENABLE THE USER TO ACCESS THE 2311 DISK STORAGE DRIVE BY USING INDEXED SEQUENTIAL IOCS MACROS TO PERFORM THESE FUNCTIONS FOR ISFMS FILES--

- LOAD.
- SEQUENTIAL RETRIEVAL AND UPDATE.
- RANDOM RETRIEVAL AND UPDATE.
- RANDOM RETRIEVAL, UPDATE, AND ADD.

THE PROGRAMMER SUPPLIES PARAMETERS WHICH DESCRIBE THE FILE TO THE MACRO, AND THE MACRO IS THEN ASSEMBLED BY THE DOS/360 ASSEMBLER. THE ASSEMBLED MACRO CAN BE CATALOGED INTO THE RELOCATABLE LIBRARY, FROM WHICH IT IS LINK EDITED WITH AN OBJECT PROGRAM PRODUCED BY THE BASIC PL/I COMPILER. THE BASIC PL/I SOURCE PROGRAM ACCESSES THESE MACROS WITH A CALL STATEMENT. SPECIFIC MACROS CAN BE PRE-ASSEMBLED, CATALOGED, AND USED BY ANY BASIC PL/I PROGRAM USING THE SAME FILE. NOTE THAT THIS FACILITY IS EMPLOYED ONLY FOR INDEXED SEQUENTIAL FILES; THE BASIC PL/I COMPILER SERVICES DIRECT ACCESS METHOD FILES DIRECTLY.

MINIMUM SYSTEM REQUIREMENTS-- MINIMUM FEATURES REQUIRED --

- 16,384 BYTES OF MAIN STORAGE FOR BATCH JOB PROCESSING*...
- 32,768 BYTES OF MAIN STORAGE FOR 2311 AS SYSTEM INPUT/OUTPUT, MULTIPROGRAMMING AND/OR TELECOMMUNICATIONS... STANDARD INSTRUCTION SET**.
- STORAGE PROTECTION FEATURE /REQUIRED FOR MULTIPROGRAMMING/... ONE I/O CHANNEL /EITHER MULTIPLEXER OR SELECTOR/***... ONE CARD READER /1442, 2501, 2520, OR 2540/****... ONE PRINTER /1403, 1404, OR 1443/*****
- ONE 1052 PRINTER-KEYBOARD... ONE 2311 DISK STORAGE DRIVE.

* THE COBOL COMPILER DESIGN POINT IS 14K. FOR THIS REASON 32K BYTES ARE REQUIRED FOR COMPILATION.

** RPG AND COBOL REQUIRE THE DECIMAL ARITHMETIC FEATURE /NO. 3237/. FORTRAN REQUIRES THE FLOATING POINT FEATURE /NO. 4427/. THE FLOATING POINT FEATURE /NO. 4427/ IS ALSO REQUIRED IN COBOL IF FLOATING POINT LITERALS, DATA ITEMS, OR NON-INTEGERS EXPONENTS ARE USED.

*** TELECOMMUNICATIONS REQUIRES A MULTIPLEXER CHANNEL AND AT LEAST ONE SELECTOR CHANNEL.

**** ONE 2400 SERIES MAGNETIC TAPE DRIVE MAY BE SUBSTITUTED FOR EACH OF THE 7-TRACK DRIVES ARE USED. THE DATA CONVERSION FEATURE NO. 3228 OR NO. 3236 IS REQUIRED EXCEPT WHEN A TAPE IS SUBSTITUTED FOR A PRINTER.

SYSTEMS GENERATION UTILIZES THE ASSEMBLER TO PERFORM FUNCTIONS AND THEREFORE REQUIRES THREE /3/ LOGICAL FILES FOR WORKING STORAGE. IF SUFFICIENT WORKING STORAGE IS NOT AVAILABLE ON THE SYSTEMS RESIDENT UNIT, EITHER A SECOND 2311 DISK STORAGE DRIVE OR THREE /3/ 2400 MAGNETIC TAPE UNITS WILL BE REQUIRED. IT IS RECOMMENDED THAT A MULTIPLE DISK OR DISK/TAPE SYSTEM BE USED.

THE FOLLOWING FEATURES AND I/O DEVICES ARE SUPPORTED BY THE DOS/360 --

- INTERVAL TIMER... SIMULTANEOUS READ-WHILE-WRITE TAPE CONTROL /2404 OR 2804/... ONE MULTIPLEXER CHANNEL AND UP TO 16 STORAGE PROTECTION FEATURE /REQUIRED FOR MULTIPROGRAMMING/... ADDITIONAL MAIN STORAGE UP TO A SYSTEM/360 MODEL J... UNIVERSAL CHARACTER SET... 1442 CARD READ PUNCH... 1442 CARD PUNCH... 2501 CARD READER... 2520 CARD PUNCH... 2520 CARD READ PUNCH... 2540 CARD READ PUNCH... 1403 PRINTER... 1404 PRINTER /FOR CONTINUOUS FORMS ONLY/... 1443 PRINTER... 1445 PRINTER... 1052 PRINTER-KEYBOARD /USED FOR OPERATOR COMMUNICATIONS/... 2311 DISK STORAGE DRIVE... 2321 DATA CELL DRIVE... 2401, 2402, 2403, 2404, AND 2415 MAGNETIC TAPE UNITS... 2671 PAPER TAPE READER... 2816 TAPE SWITCHING UNIT.

THE DOS/360 BTAM FACILITIES SUPPORT THE FOLLOWING CONTROL UNITS, FEATURES, AND TERMINALS --

- 2701 DATA ADAPTER UNIT WITH AUTO CALL /NO. 1302/ NO. 1303/ FEATURE... 2702 TRANSMISSION CONTROL UNIT WITH FEATURES - AUTO CALL ADAPTER /NO. 1290/, 1032 ATTACHMENT /NO. 7918/,... 2703 TRANSMISSION CONTROL UNIT WITH AUTO CALL ADAPTER /NO. 1315/ FEATURE... 2740 COMMUNICATION TERMINAL... 7770/7772 AUDIO RESPONSE UNITS... 2260 DISPLAY /LOCAL/ STATION.

THE FOLLOWING TERMINALS CAN BE ATTACHED BY MEANS OF A PRIVATE, LEASED, OR COMMON-CARRIER NETWORK TO THE MULTIPLEXER CHANNEL THROUGH A 2701, 2702, OR 2703 CONTROL UNIT

- 1030 DATA COLLECTION SYSTEM... 1050 DATA COMMUNICATION SYSTEM... 1060 DATA COMMUNICATION SYSTEM... 2260 LOW COST DISPLAY /REMOTE/ /2701 ONLY WITH 2848 CONTROL UNIT/... AT+T 83B3

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IED FROM PRIOR PAGE--
SELECTIVE CALLING STATIONS... AT-T TELETYPEWRITER TERMINAL
MODELS 33 AND 35... WESTERN UNION PLAN 115A OUTSTATIONS.

THE FOLLOWING CONFIGURATION AND SYSTEM DESIGN CONSIDERATIONS
ARE APPLICABLE TO THE DOS/360 TELECOMMUNICATION ENVIRONMENT--
- ALL TELECOMMUNICATION DEVICES MUST BE ON THE MULTIPLEXER
CHANNEL AND NO BURST MODE DEVICES MAY COEXIST ON THE CHANNEL.,
- ALL TERMINALS ON A LINE MUST BE OF THE SAME TYPE. THE
TERMINALS MAY BE MIXED WITHIN THE SAME PROBLEM PROGRAM.

CONTROL PROGRAM INPUT/OUTPUT - DOS/360

UNITS SUPPORTED	RESIDENCE	READER	INPUT	WORK*	PUNCH	LIST	LOG**
1052							X
2540	X	X		X			
1403					X		X
1404					X		X
1442 N1	X	X		X			
1442 N2				X			
1443					X		X
2501	X	X					
2520 B1	X	X		X			
2520 B2, B3				X			
2311	X	X	X	X	X		X
2400 DUAL DENS.	X	X	X	X	X		X

* 2311 IS REQUIRED FOR CONTROL PROGRAM WORKING STORAGE., I.E.,
COMPILE AND GO LINKAGE EDITOR.
** IN THE EVENT THE 1052 IS INOPERATIVE, PRINTER DEVICES MAY BE
TEMPORARILY ASSIGNED TO SYSLOG.
2400 MAY BE USED FOR WORKING STORAGE ONLY BY LANGUAGE PROCESSORS
/3 REQUIRED/. 7-TRACK TAPES REQUIRE DATA CONVERSION FEATURE
/EXCEPT LIST/. WORK DEVICES MAY NOT BE MIXED BETWEEN DISK
AND TAPE.

THE LOGICAL SUPPORT OF INPUT/OUTPUT FILE REQUIREMENTS FOR
PROBLEM PROGRAMS IS PROVIDED AS FOLLOWS -

PROBLEM PROGRAMS COMPILED BY DOS/360

UNITS	ASSEMBLER	RPG	COBOL	PL/I	FORTRAN
2540	X	X	X	X	X
1403	X	X	X	X	X
1404 CONTINUOUS FORMS	X	X	X	X	X
1442 N1 AND N2	X	X	X	X	X
1443	X	X	X	X	X
1445	X	X	X	X	X
2501	X	X	X	X	X
2520 B1, B2 AND B3	X	X	X	X	X
2400 /7- OR 9-TRACK/	X	X	X	X	X
2400 DUAL DENSITY	X	X	X	X	X
2311 CONSECUTIVE ORG.	X	X	X	X	X
2311 DIRECT ACCESS ORG.	X	X	X	X	X
2311 INDEXED SEQ. ORG.	X	X	X	X	X
2321 CONSECUTIVE ORG.	X	X	X	X	X
2321 DIRECT ACCESS ORG.	X	X	X	X	X
2321 INDEXED SEQ. ORG.	X	X	X	X	X
1052 CONSOLE /NOTE 1/	X	X	X	X	X
2671	X				
2260 LOCAL	X				
2701, 2702, 2703, WITH 1030, 1050, 1060, 2740, 2260 /2701 ONLY/, AND TELETYPE TERMINALS /WU 115A, AT-T 8383 AND MODELS 33/35/	X				
2701, 2703 BINARY SYNCHRONOUS AND 2780	X				
7770/72	X				

NOTE 1 - COBOL ACCEPT AND DISPLAY ONLY, FORTRAN OUTPUT ONLY,
PL/I DISPLAY ONLY.

ENGINEERING CHANGES - THE FOLLOWING ENGINEERING CHANGES ARE
PREREQUISITE FOR PROPER FUNCTIONING OF DOS/360--
2030 HARDWARE LOGIC LEVEL EC 126737
2030 MICRO PROGRAM LEVEL EC 128053
1445 EC 305247
2841 HARDWARE LOGIC LEVEL EC 413160
2841 MICRO PROGRAM LEVEL EC 413140
2821 EC 125598

NOTE 1- IF THE MULTIPROGRAMMING AND/OR TELECOMMUNICATIONS
SUPPORT FACILITIES OF DOS/360 ARE USED, THE 2030 HARDWARE
LOGIC LEVEL EC 126751 AND 2030 MICROPROGRAMMING
LEVEL EC 128058 MUST BE INSTALLED.

NOTE 2- IN A STORAGE PROTECTED BATCH JOB ENVIRONMENT, THE
2030 MICROPROGRAMMING LEVEL EC IS 128058,
NOTE 3- THE FOLLOWING ENGINEERING CHANGES ARE NOT REQUIRED,
HOWEVER, IN ORDER TO ACHIEVE IMPROVED PERFORMANCE,
THEY ARE RECOMMENDED.

- 2401 ... EC 254969
- 2402 ... EC 254969
- 2403 ... EC 254969 AND EC 255981
- 2404 ... EC 254969 AND EC 255982

QUESTIONS REGARDING ENGINEERING CHANGE LEVEL REQUIREMENTS
SHOULD BE DIRECTED TO THE SERVICING FE BRANCH OFFICE.

RESTRICTIONS--
COBOL, FORTRAN, SYSTEMS CONTROL AND BASIC IOCS AND THE
MPS UTILITIES CONTROL PROCEDURE AND CODING RESTRICTIONS
WHICH WILL BE CORRECTED AT A LATER DATE. DETAILED INFORMATION
CONCERNING THESE RESTRICTIONS ARE CONTAINED IN THE DOCUMENTATION
DISTRIBUTED WITH THE SYSTEM.

BASIC PROGRAM MATERIAL -
THE FOLLOWING SRL PUBLICATIONS APPROPRIATE TO THE COMPONENT
ORDERED WILL BE SHIPPED WITH INITIAL ORDER FOR DOS/360 -

ASSEMBLER SPECIFICATIONS	C24-3414
DATA MANAGEMENT CONCEPTS	C24-3427
COBOL LANGUAGE SPECIFICATIONS	C24-3433
TAPE SORT/MERGE PROGRAM SPECIFICATIONS	C24-3438
SORT/MERGE PROGRAM SPECIFICATIONS	C24-3444
UTILITY PROGRAMS SPECIFICATIONS	C24-3465
OPERATING GUIDE	C24-5022
COBOL PROGRAMMERS GUIDE	C24-5025
CONCEPTS AND FACILITIES	C24-5030
PERFORMANCE ESTIMATES	C24-5032
SYSTEM GENERATION AND MAINTENANCE	C24-5033
SYSTEM CONTROL AND SYSTEM SERVICE PROGRAMS	C24-5036
SUPERVISOR AND INPUT/OUTPUT MACROS	C24-5037
FORTRAN IV PROGRAMMERS GUIDE	C24-5038
COBOL DASD MACROS	C24-5039

CONTINUED FROM PRIOR COLUMN--

UTILITY MACRO SPECIFICATIONS	C24-5042
PL/I DASD MACROS	C24-5059
AUTOTEST SPECIFICATIONS	C24-5062
PL/I PROGRAMMERS GUIDE	C24-9005
REPORT PROGRAM GENERATOR SPECIFICATIONS	C26-3570
VOCABULARY FILE UTILITY FOR 7772 AUDIO RESPONSE UNIT	C27-6924
FORTRAN IV LANGUAGE	C28-6629
PL/I SUBSET LANGUAGE SPECIFICATIONS	C28-6809
BASIC TELECOMMUNICATIONS ACCESS METHOD	C30-5001
QTAM MESSAGE CONTROL PROGRAM	C30-5002
QTAM MESSAGE PROCESSING PROGRAM SERVICES	C30-5003
A PROGRAM MATERIAL LIST AND TEMPORARY RESTRICTIONS WILL ALSO BE SHIPPED BY PID WHEN DOS/360 IS ORDERED.	

MACHINE READABLE - DOS/360 IS DISTRIBUTED AS ONE PRE-GENERATED
SYSTEM WITH A GK SUPERVISOR /360N-SV-474/., OR... ONE
PREGENERATED SYSTEM WITH AN IOK SUPERVISOR /360N-SV-475/.,
OR... ONE PREGENERATED SYSTEM WITH AN IOK SUPERVISOR
/360N-SV-473/.

WHEN ORDERING DOS/360, THE REQUESTOR WILL RECEIVE THE ENTIRE
COLLECTION OF MACHINE READABLE PROGRAM COMPONENTS IN BOTH
CORE IMAGE AND RELOCATABLE LIBRARIES, LISTED BELOW -

ASSEMBLER	360N-AS-465
COBOL DASD MACROS	360N-CL-453
SYSTEM CONTROL AND BASIC IOCS*	360N-CG-469
BASIC TELECOMMUNICATIONS ACCESS	360N-CG-470
QUEUED TELECOMMUNICATIONS ACCESS METHOD	360N-FD-451
FORTRAN IV	360N-ID-454
DIRECT ACCESS METHOD	360N-ID-454
CONSECUTIVE TAPE IOCS	360N-ID-455
CONSECUTIVE TAPE IOCS	360N-ID-456
INDEXED SEQUENTIAL FILE MANAGEMENT	360N-ID-457
CONSECUTIVE PAPER TAPE IOCS	360N-ID-458
COMPILER I/O MODULES	360N-ID-476
OPTICAL CHARACTER READER IOCS	360N-ID-478
PL/I	360N-PL-464
AUTOTEST	360N-PT-459
REPORT PROGRAM GENERATOR	360N-RG-460
TAPE SORT/MERGE	360N-SM-400
DISK SORT/MERGE	360N-SM-450
SUPERVISOR /10K/*	360N-SV-473
SUPERVISOR /6K/*	360N-SV-474
SUPERVISOR /8K/*	360N-SV-475
GROUP 1 UTILITIES	360N-UT-461
GROUP 2 UTILITIES	360N-UT-462
GROUP 3 UTILITIES	360N-UT-463
MPS UTILITY MACROS	360N-UT-471
VOCABULARY FILE UTILITY FOR 7772	360N-UT-472

*THE SYSTEM CONTROL AND BASIC IOCS COMPONENT AND ONE OF THE
TWO SUPERVISOR COMPONENTS ARE REQUIRED.

TO ORDER THE COMPONENTS THE NEW PROGRAM ORDER FORM,, IBM
PROGRAM ORDER FOR IBM SYSTEM/360 OPERATING SYSTEMS,, FORM
NUMBER, 120-1411 MUST BE USED.
EACH COMPONENT FOR WHICH PROGRAM DOCUMENTATION AND MAINTENANCE
MATERIAL IS REQUIRED MUST APPEAR ON THE ORDER FORM. IF NO
SUPERVISOR IS INDICATED, PID WILL SUPPLY THE /6K/, 360N-SV-474.

DOS/360 MACHINE READABLE IS AVAILABLE ON -
READABLE IS AVAILABLE ON -
ONE 2400 FOOT REEL OF MAGNETIC TAPE - 9-TRACK /800 BPI
OR 1600 BPI/

OR
ONE 2400 FOOT REEL OF MAGNETIC TAPE - 7-TRACK AT 800 BPI
/DATA CONVERSION FEATURE REQUIRED/

OR
TELE-PROCESSING COMPONENTS ARE AVAILABLE ON -
ONE 2400 FOOT REEL OF MAGNETIC TAPE - 9-TRACK /800 BPI
OR 1600 BPI/

OR
ONE 2400 FOOT REEL OF MAGNETIC TAPE - 7-TRACK AT 800 BPI
/DATA CONVERSION FEATURE REQUIRED/

OR
ONE 1316 DISK PACK.

THE MAGNETIC TAPES ARE IN DISK PACK RESTORE FORM. THE DOS/360
DATA ARE PRECEDED BY AN INITIALIZE 2311 UTILITY PROGRAM AND A
TAPE-TO-DISK PROGRAM.
WHEN ORDERING DOS/360 ON MAGNETIC TAPE THE REQUESTOR MUST
INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED
9-TRACK WILL BE FORWARDED.
THE TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED.

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360P-AS-021 SYSTEM/360 BASIC ASSEMBLER

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-AS-021

THE BASIC ASSEMBLER IS A TWO-PHASE, ONE-FOR-ONE ASSEMBLY PROGRAM
WHICH TRANSLATES SOURCE PROGRAMS WRITTEN IN THE SYSTEM/360 BASIC
ASSEMBLER LANGUAGE INTO MACHINE LANGUAGE OBJECT PROGRAMS. THIS
OUTPUT IS IN RELOCATABLE DECK FORMAT AND CAN BE LOADED WITH
EITHER THE ABSOLUTE OR THE RELOCATING LOADERS PROVIDED WITH THE
BASIC UTILITY PROGRAMS. A PROGRAM LISTING WITH ERROR INDICATORS
IS ALSO PROVIDED. IF AVAILABLE, FROM ONE TO FIVE MAGNETIC TAPE
UNITS MAY BE UTILIZED TO SPEED THE ASSEMBLY PROCESS.
MINIMUM SYSTEM REQUIREMENTS - STANDARD S/360 INSTRUCTION SET...8K
MAIN STORAGE...2540 OR 1442 CARD READ PUNCH OR 2501 CARD READER
AND THE 2520 CARD PUNCH AND/OR CARD READER PUNCH...1403 OR 1443
PRINTER /OPTIONAL/...1052 PRINTER KEYBOARD /OPTIONAL/...ONE TO
FIVE 2400 SERIES TAPE UNITS /OPTIONAL/. NOTE - THE BASIC CARD
ASSEMBLER DOES NOT CONTAIN PUNCH ERROR RECOVERY CAPABILITY FOR
THE 2520.

BASIC PROGRAM MATERIAL--
DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM MATERIAL LIST...
SAMPLE PROBLEM OPERATING INSTRUCTIONS...BASIC ASSEMBLER
LANGUAGE MANUAL...OPERATING GUIDE.
MACHINE READABLE - SAMPLE PROBLEM SYMBOLIC DECK...
NON-RELOCATABLE SELF-LOADING ASSEMBLED DECKS FOR PHASE 1
AND PHASE 2.

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**360P-AS-091 BPS BASIC TAPE SYSTEM /8K/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-AS-091**

THE BASIC TAPE SYSTEM CONSISTS OF THE 8K TAPE ASSEMBLER AND THE 8K TAPE SYSTEM CONTROL AND SYNCHRONOUS TRANSMITTER/RECEIVER MACRO. THE STR MACROS PROVIDE DIAL AND LEASED LINE PROGRAMMING SUPPORT FOR SYSTEM/360 MODELS 30, 40, 50, 65 AND 75 WITH 2701 DATA ADAPTER UNIT AND SYNCHRONOUS DATA ADAPTER TYPE I /NOS. 7695 AND 7696/, COMMUNICATING WITH THE FOLLOWING STR DEVICES -

- S/360 MOD 20 WITH THE COMMUNICATION ADAPTER, FEATURE NO. 2073.
- S/360 MODEL 30, 40, 50, 65 OR 75 WITH A 2701
- ADAPTER UNIT EQUIPPED WITH THE SYNCHRONOUS DATA ADAPTER TYPE I /SDA-I/.
- 1009 DATA TRANSMISSION UNIT... 1013 CARD TRANSMISSION TERMINAL... 7701 MAGNETIC TAPE TRANSMISSION TERMINAL... 7702 MAGNETIC TAPE TRANSMISSION TERMINAL... 7711 DATA COMMUNICATION UNIT... 1974 MODEL 2 DATA TRANSMISSION TERMINAL /RPQ UNIT/... 1978 MODELS 1, 2 AND 3 PRINT-READ-PUNCH TERMINAL /RPQ UNIT/.

PUNCH ERROR RECOVERY FOR THE 1442 AND 2540 IS ALSO PROVIDED BY THIS PROGRAM AND 800/1600 BPI DUAL DENSITY FEATURE IS SUPPORTED. ALL TAPE FILES PRESENTLY RECORDED IN 800 BPI CAN BE RUN WITHOUT ALTERATION ON DRIVES HAVING THE DUAL DENSITY FEATURE.

MINIMUM SYSTEM REQUIREMENTS - AN 8K SYSTEM/360, MODEL 30 WITH THREE 2400 SERIES MAGNETIC TAPE UNITS /ONE MUST BE 9-TRACK/... ONE 2540, /ONE 2501 CARD READER, A 2671 PAPER TAPE READER/ OR 1442 CARD READER OR 2520 CARD READ PUNCH MODEL B1 OR CARD PUNCH MODELS B2 AND/OR B3 /ALL 2520 MODELS HAVE ENGINEERING CHANGES 811839 AND 811842/... ONE 1403, 1404, OR 1443 PRINTER... ONE I/O CHANNEL /EITHER MULTIPLEX OR SELECTOR/... STANDARD INSTRUCTION SET... 2701 DATA ADAPTER UNIT WITH SDA-I /NOS. 7695 AND NO. 7696/... AT LEAST ONE OF THE FOLLOWING - 2401 OR 2402 MAGNETIC TAPE UNIT, MODEL 4, 5 OR 6, AND 2803 OR 2804 TAPE CONTROL, MODEL 2, 403 MAGNETIC TAPE UNIT AND CONTROL, MODEL 4, 5 OR 6... 2415 MAGNETIC TAPE UNIT AND CONTROL, MODEL 4, 5 OR 6.

THE IBM 1285 OPTICAL READER, WHICH IS USED TO READ PRINTED PAPER TAPES DIRECTLY INTO THE SYSTEM. UP TO EIGHT UNITS CAN BE ATTACHED. A BYTE MULTIPLEXING FUNCTION IS INCLUDED THAT PERMITS THE INTERLEAVING OF THE 1285 WITH OTHER I/O DEVICES THAT OPERATE IN THE BYTE MODE. UP TO TWELVE DEVICES /FOR EXAMPLE- 1442 CARD READ PUNCH, 2501 CARD READER OR ADDITIONAL 1285 OPTICAL READERS/ MAY OPERATE IN THIS MODE.

MOST STR APPLICATIONS WILL PROBABLY REQUIRE 16K, HOWEVER, UTILITY TYPE APPLICATIONS REQUIRING MINIMUM PROCESSING AND CODE CONVERSION ARE SUPPORTED IN AN 8K ENVIRONMENT.

SUPPORTED DEVICES MUST BE AT OR ABOVE THE FOLLOWING ENGINEERING CHANGE LEVELS

UNIT NUMBER	ENGINEERING CHANGE LEVEL
2040	255490
7702	706973 ERC R0641
7711	254441
1978	892559
1009	123005
1974	120593
2701	707484
2020	11924

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST...
SAMPLE PROBLEM OPERATING INSTRUCTIONS... PROGRAMMERS TAPE UNITS /C24-3354/, ASSEMBLER WITH INPUT/OUTPUT MACROS MANUAL C24-3355, OPERATING GUIDE C24-3391...
MACRO DEFINITION LANGUAGE MANUAL, C24-3364.
MACHINE READABLE - A 9-TRACK DTR CONTAINING THE ASSEMBLER I/OCS/SYSTEM CONTROL PROGRAM. THE SAMPLE PROBLEM DECK IN CARD FORM.

THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

**360P-FD-031 BASIC PROGRAMMING SUPPORT
FORTRAN TAPE SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-FD-031**

BPS/360 FORTRAN /TAPE/ SYSTEM COMPRISES A COMPILER /INCLUDING LIBRARY SUBROUTINES/, A LOADER, AND AN EDITOR.

- BPS FORTRAN TAPE COMPILER - THE COMPILER IS AN EIGHT-PHASE PROGRAM WHICH TRANSLATES PROGRAMS WRITTEN IN THE FORTRAN IV LANGUAGE INTO RELOCATABLE OBJECT PROGRAMS. A SOURCE PROGRAM LISTING ALONG WITH ERROR INDICATORS AND A STORAGE MAP OF THE VARIABLES, EXTERNAL REFERENCES, AND CONSTANTS ARE PROVIDED ON REQUEST. A COMPILE-AND-GO FEATURE IS PROVIDED. THE JOB TO BE PERFORMED MAY CONSIST OF SOURCE PROGRAM/S/, PREVIOUSLY COMPILED OBJECT PROGRAM/S/, OR A COMBINATION OF THE TWO, ALSO PROVIDED ARE CONTROL CARD CAPABILITIES WHICH ENABLE THE USER TO CHANGE DEVICE ASSIGNMENTS AT EDIT, COMPILER, OR OBJECT TIME.
- LOADER - THE FORTRAN LOADER IS A TWO-PHASE RELOCATING LOADER THAT CAN LOAD SEPARATELY COMPILED PROGRAMS INTO STORAGE AND COMPLETE THE LINKAGES BETWEEN THEM. THIS LOADER WILL ALSO LOAD INPUT ACCEPTABLE TO THE BPS/360 BASIC UTILITIES RELOCATING LOADER /360P-UT-020/.
- EDITOR - THE FORTRAN EDITOR ENABLES LIBRARY SUBROUTINES TO BE DELETED, ADDED, OR CHANGED, AS WELL AS PROPRIETARY CHANGES TO THE COMPILER AND EDITOR ITSELF.

MINIMUM SYSTEM REQUIREMENTS - A SYSTEM/360 WITH A SCIENTIFIC INSTRUCTION SET AND 16K OR MORE BYTES OF MAIN STORAGE AND THE FOLLOWING MINIMUM I/O UNITS - ONE OR ANY COMBINATION OF THE FOLLOWING DEVICES THAT PROVIDES FOR CARD READING AND PUNCHING - 1442 CARD READ PUNCH, 2501 CARD READER, 2520 CARD READ PUNCH, 2520 CARD PUNCH, 2540 CARD READ PUNCH... 1403 OR 1443 PRINTER... THREE 2400 SERIES MAGNETIC TAPE UNITS, EITHER 9-TRACK OR 7-TRACK WITH THE DATA CONVERSION AND 7-TRACK COMPATIBILITY FEATURES... AN OPTIONAL 2400 SERIES MAGNETIC TAPE UNIT FOR COMPILE-AND-GO... AN OPTIONAL 1052 PRINTER KEYBOARD.

MACHINE CONFIGURATION

	SYSIN	PUNCH	PRINT	COMPILER		OBJECT	
				WORK FILES	GO FILE	PROGRAM WORKFILES	
2501	X					X	
2520	X	X				X	
2540	X	X				X	
1442	X	X				X	
1403			X			X	

CONTINUED FROM PRIOR COLUMN--

1443			X			X
1052			X			X
2400	X	X	X	X	X	X

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... REBLOCK OPERATING INSTRUCTIONS... ATTACHMENT... PROGRAMMERS INSTRUCTIONS... LANGUAGE MANUAL... C28-6629.
GUIDE, C28-659... LANGUAGE MANUAL C28-6629.
MACHINE READABLE - ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR CONTAINING THE COMPILER, LOADER, LIBRARY AND EDITOR.

NOTE - THE DTR WILL BE PROVIDED BY PID - NO TAPE SUBMITTAL IS REQUIRED.
REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED.

**360P-FD-205 BPS FORTRAN IV /16K-CARD/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-FD-205**

IBM SYSTEM/360 BASIC PROGRAMMING SUPPORT FORTRAN IV - SYSTEM/360 BPS FORTRAN IV /16K CARD/, CONSISTS OF A COMPILATION SYSTEM, AN EXECUTION SYSTEM AND A FORTRAN LIBRARY.

COMPILATION SYSTEM - A TWELVE-PHASE PROGRAM WHICH TRANSLATES A SOURCE PROGRAM WRITTEN IN SYSTEM/360 FORTRAN IV LANGUAGE INTO A RELOCATABLE OBJECT PROGRAM. A SOURCE PROGRAM LISTING IS PROVIDED ON REQUEST ALONG WITH ERROR INDICATORS AND A LIST OF EXTERNAL REFERENCES. ERROR RECOVERY PROCEDURES ARE PROVIDED FOR READING, PRINTING, AND PUNCHING.

EXECUTION SYSTEM - CAN LOAD SEPARATELY COMPILED PROGRAMS INTO STORAGE AND COMPLETE THE LINKAGES BETWEEN THEM. THE SYSTEM WILL ALSO LOAD ANY INPUT ACCEPTABLE TO THE BPS/360 BASIC UTILITIES RELOCATING LOADER /360P-UT-020/. LARGE JOBS WHICH EXCEED AVAILABLE CORE MAY BE BROKEN INTO SEGMENTS AND LOADED SEQUENTIALLY INTO THE SAME CORE AREA... INFORMATION IS PASSED BETWEEN THE SEGMENTS THROUGH COMMON STORAGE, WHICH IS PRESERVED. ALSO PROVIDED ARE CONTROL CARD CAPABILITIES WHICH ENABLE THE USER TO CHANGE DEVICE ASSIGNMENTS AT OBJECT TIME, AS WELL AS ERROR RECOVERY PROCEDURES FOR READING, PRINTING, AND PUNCHING.

LIBRARY - THE ROUTINES PROVIDED ARE- FOXPD... FOXPI... FIXPI... FRXPI... FRXPR... EXIT... ALOG, ALOG 10... SQRT... ATAN... TANH... EXP... COS, SIN... DUMP, PDUMP... DLOG, DLOG 10... DSQRT... DATAN... DTANH... DCOS, DSIN... DEXP... MOD... AMOD, DMOD... HAXO, MIND, AMAXO, AMINO... MAXI, MINI, AMAXI, AMINI... DMAKI, DMINI... FLOAT, DFOAT... IFIX, INT, IDINT... SLITE, SLITET... OVERFL... DVCHK... IBCOM, NIBCOM... DIM, IDIM... SIGN, ISIGN... SNGL... DBLE... ABS, ABS, DABS.
MINIMUM SYSTEM REQUIREMENTS - A 16K SYSTEM/360 WITH THE FOLLOWING MINIMUM I/O DEVICES FOR COMPILATION OF SOURCE PROGRAMS - ONE 1442 CARD READ PUNCH OR 2540 CARD READ PUNCH OR 2520 CARD READ PUNCH. ONE 1443 PRINTER OR 1403 PRINTER. A 1052 PRINTER-KEYBOARD IS OPTIONAL. IN ADDITION, THE FLOATING POINT ARITHMETIC FEATURE IS REQUIRED FOR THE EXECUTION OF OBJECT PROGRAMS.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... PROGRAMMERS GUIDE C21-5000... LANGUAGE SPECIFICATIONS MANUAL C21-9040.
MACHINE READABLE - THE COMPILATION SYSTEM, EXECUTION SYSTEM, LIBRARY AND I/O ROUTINES, AND SAMPLE PROGRAM ARE AVAILABLE IN CARD FORM OR ON A 7- OR 9-TRACK DTR. 7-TRACK DTR REQUIRES THE DATA CONVERSION FEATURE.

IF TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

**360P-ID-058 IBM SYSTEM/360 BPS
INPUT/OUTPUT 1412/1419
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-ID-058**

THE PROGRAM PROVIDES FOR BANKING APPLICATIONS THE USE OF ONE 1412 ATTACHED TO A S/360 MODEL 30 OR ONE OR TWO 1419/S ATTACHED TO A S/360 MODEL 30, 40, 50 OR 65. THE PROGRAM CAN CONTROL THE INPUT AND OUTPUT FUNCTIONS THAT ARE ASSOCIATED WITH SUCH TYPICAL MICR PROCESSING AS DEMAND DEPOSIT CAPTURE, OUTGOING TRANSIT AND PROFF OF DEPOSIT. THE PROGRAM HAS THESE FUNCTIONS- ENGAGING AND DISENGAGING THE MICR READERS... READING MICR DOCUMENTS... BATCH NUMBERING. MAINTENANCE OF A DOCUMENT INPUT BUFFER/S/... PRESENTING DATA FOR USER PROCESSING INCLUDING FIELD VALIDITY INDICATORS... UP TO FOUR USER PROGRAMS CONCURRENTLY. THESE FOUR PROGRAMS, REFERRED TO AS A USER/S PROGRAM SET CAN CONTAIN /A/ ONE 1412 OR 1419 PROGRAM AND UP TO THREE ADDITIONAL USER PROGRAMS... OR /B/ TWO 1419 PROGRAMS AND UP TO TWO ADDITIONAL USER PROGRAMS... OR /C/ ONE TO FOUR USER PROGRAMS WHICH DO NOT INCLUDE 1412 OR 1419 INPUT. A USER PROGRAM SET ONCE LOADED MUST COMPLETE PROCESSING OF ALL PROGRAMS WITHIN THAT SET PRIOR TO LOADING A NEW PROGRAM SET. MAINTAINS MAXIMUM MICR READER-PRINTER THROUGHPUT. THROUGHPUT SPEEDS WILL VARY WITH DOCUMENT LENGTH, AMOUNT OF USER PROCESSING TIME, OTHER INPUT AND/OR OUTPUT OPERATIONS AND SYSTEM CONFIGURATION. THE MINIMUM TIME AVAILABLE FOR STACKER SELECTION FOR EACH MICR READER IS -

1412	7.5 MILLISECOND
1419	9.5 MILLISECOND

AT LEAST 9.5 MILLISECOND ARE AVAILABLE FOR STACKER DECISIONS ON THE 1419 FOR 100 PER CENT OF THE DOCUMENTS READ. FOR THOSE CASES WHERE THE 9.5 MILLISECOND /7.5 MILLISECOND FOR THE 1412/ OF STACKER SELECTION TIME ARE EXCEEDED AND WORST CASE CONDITIONS SUCH AS MINIMUM DOCUMENT SPACING OCCUR, AN INCREASE IN REJECTS CAN BE EXPECTED. ASSUME A SYSTEM/360 MODEL 30 WITH A

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 2 MICROSECOND STORAGE CYCLE. /THE TIMINGS IN PARENTHESIS PERTAIN TO SYSTEM/360 MODEL 40/. ONE READER/SORTER- THE I/O PROGRAM WILL USE 2.0 /1.2/ MILLISECOND /MINIMUM/ TO PROCESS THE EXTERNAL INTERRUPT AND 2.8 /1.4/ MILLISECOND /MAXIMUM/ IF A UNIT CHECK HAS OCCURRED ON THE READER/SORTER. TWO READER/SORTERS- THE I/O PROGRAM WILL USE 2.1 /1.20/ MILLISECOND TO PROCESS THE INTERRUPT FROM EACH MICR READER WHENEVER THE INTERRUPTS ARE NOT CONCURRENT. WHENEVER BOTH MICR READERS INTERRUPT CONCURRENTLY, THE I/O PROGRAM WILL USE 4.1 /2.10/ MILLISECOND TO PROCESS BOTH INTERRUPTS. IF EACH MICR READER HAS A UNIT CHECK AT THE TIME OF CONCURRENT INTERRUPTION, THE I/O PROGRAM WILL USE 5.6 /2.8/ MILLISECOND OF THE AVAILABLE DOCUMENT GAP TIME. THE AVAILABLE TIME FOR SELECTION PROCESSING WILL BE REDUCED BY THE CHARACTER TRANSFER TIME ASSOCIATED WITH CONCURRENT I/O OPERATIONS AND THE TIME NEEDED TO COMPLETE INSTRUCTION EXECUTION PRIOR TO INTERRUPTION. THE I/O CONTROL PROGRAM MAY TAKE UP TO AN ADDITIONAL .5 /.25/ MILLISECOND TO PROCESS THE EXTERNAL INTERRUPT. IF ANY OTHER INTERRUPT IS BEING SERVICED. IN MAKING TIMING CALCULATIONS, ONLY ONE PRINTER CAN AFFECT, AND THEREBY REDUCE, THE MICR READER DOCUMENT SELECTION TIME. NOTE- CHANNEL CONTENTION PROBLEMS MAY BE MINIMIZED BY -- PLACING THE 1412 OR 1419/S AT THE HIGHEST PRIORITY ON THE MULTIPLEXOR CHANNEL... DISENGAGING THE 1412 OR 1419/S WHENEVER OTHER I/O OPERATIONS MIGHT CONFLICT. THE AVERAGE DOCUMENT CYCLE TIMES /WITHOUT CONSIDERING THE PRINTER/ ARE-

	1412	1419
DOCUMENT LENGTH - 6 INCHES	60 MS.	37.4 MS.
DOCUMENT LENGTH - 8 3/4 INCHES	87.5 MS.	54.5 MS.

TO DETERMINE THE PRINTER TIME AVAILABLE NECESSARY TO SUBMIT THE TIME REQUIRED FOR THE FOLLOWING FACTORS FROM THE AVERAGE DOCUMENT CYCLE TIME. THIS APPLIES FOR EITHER ONE OR TWO MICR READERS.

1. MICR READER/S/ INTERRUPT SERVICING TIME.
 2. USERS DOCUMENT SELECTION TIME/S/.
 3. THE TIME REQUIRED TO GET DOCUMENT RECORD/S/.
 4. THE TIME REQUIRED FOR EACH I/O OPERATION /EXCLUSIVE OF THE MICR READER/S/.
 5. CHARACTER TRANSFER INTERFERENCE TIMES FOR ALL I/O OPERATIONS INCLUDING THE MICR READER/S/.
- APPROXIMATELY 5 /2.5/ MILLISECOND WILL BE TAKEN FOR EACH I/O OPERATION EXCLUSIVE OF THE READER/SORTER. THIS TIME INCLUDES -- START I/O, INTERRUPT SERVICING AND RECOGNITION OF ERRORS. APPROXIMATELY 2 /1.0/ MILLISECOND WILL BE TAKEN TO GET EACH DOCUMENT RECORD FROM THE INPUT BUFFER.

CORE STORAGE REQUIREMENTS- THE I/O 1412/1419 PROGRAM HAS THE FOLLOWING CORE SIZE REQUIREMENTS --

	MODEL 30	MODEL 40
A 1412 OR 1419 WITH 2400 SERIES TAPE	4400 BYTES	4650 BYTES
A 1412 OR 1419 WITH 2311 DISK	4400 BYTES	4650 BYTES
TWO 1419/S WITH 2400 SERIES TAPE	5600 BYTES	5600 BYTES
TWO 1419/S WITH 2311 DISK	5600 BYTES	5600 BYTES

- WHEN THE MULTIPLEX CAPABILITY IS USED, AN ADDITIONAL 160 BYTES IS REQUIRED FOR THE CONTROL PROGRAM.

MINIMUM SYSTEM REQUIREMENTS- ONE 1412 OR ONE 1419 MICR READER WITH ADAPTER FEATURE /ADAPTER FEATURE NO. 7720 IS REQUIRED FOR USER PROGRAM 1419 OR 1412 INPUT... 2030 PROCESSING UNIT /BEYOND ENGINEERING CHANGE LEVEL 125919/ /A MODEL D IS REQUIRED FOR DUAL 1419 OPERATION/ OR 2040 PROCESSING UNIT MODEL D/ 1419 ONLY...1412 IS NOT SUPPORTED ON 2040/ OR 2050 PROCESSING UNIT MODEL F /1419 ONLY...1412 IS NOT SUPPORTED ON 2050/... A CARD READER /1442, 2501, 2520 OR 2540 NI... A PRINTER /1403, 1404, 1443, 1445 OR 1052 PRINTER KEYBOARD... STANDARD INSTRUCTION SET... /2030 ONLY/ OR DIRECT CONTROL... APPROPRIATE CONTROL UNITS.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... BPS INPUT/OUTPUT SPECIFICATIONS, C24-3398... OPERATING GUIDE, C24-3419. MACHINE READABLE - IPL LOADER AND SYMBOLIC DECKS... MANUAL SUPERVISOR, JOB CONTROL... TAPE LABEL ROUTINES... DISK INPUT LABELS... DISK OUTPUT LABELS... THESE DECKS ARE AVAILABLE ON CARD OR TAPE, EITHER 9-TRACK OR 7-TRACK DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE, 9-TRACK OR 7-TRACK MUST BE INDICATED ON THE PROGRAM REQUEST CARD. IF NOT SPECIFIED 9-TRACK WILL BE SUPPLIED. IF THE 7-TRACK TAPE IS REQUESTED THE DATA CONVERSION FEATURE IS REQUIRED. DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

059 INPUT/OUTPUT 1418/1428

ORDER THROUGH LOCAL IBM BRANCH OFFICE
 ECIFY FILE NUMBER 360P-10-059

THE BASIC CONTROL PROGRAM PROVIDES A SINGLE REQUEST QUEUE FOR INPUT/OUTPUT OPERATIONS ON THE MULTIPLEXOR CHANNEL. THE MULTIPLEX CAPABILITY PROVIDES FOUR REQUEST QUEUES WHICH WILL PERMIT FOUR UNBUFFERED DEVICES /WHICH DO NOT OPERATE IN THE BURST MODE/ TO OPERATE IN THE DATA INTERLEAVED MODE. IF ANY BURST MODE /TAPE OR DISK/ OPERATIONS ARE ATTEMPTED ON A MULTIPLEXOR CHANNEL, THE QUEUE, INPUT/OUTPUT OPERATIONS WHICH CAN BE MULTIPLEXED ON THE REMAINING QUEUES WILL BE PROCESSED FIRST UNTIL ALL SUCH REQUESTS HAVE BEEN SERVICED.

THE MULTIPLE PROGRAM FACILITY PROVIDED TO HANDLE FOUR APPLICATIONS CONSISTS OF SEVERAL SUBROUTINES THAT BECOME AN INTEGRAL PART OF THE 1418/1428 CONTROL PROGRAM. THE MULTIPLE PROGRAM FACILITY PROVIDES WORDS /PCW/S/ TO TRANSFER CONTROL AMONG THE USER PROGRAMS. A PCW IS A 240 BYTE AREA RESERVED BY THE USER FOR EACH OF HIS PROGRAMS. THE CONTROL PROGRAM STORES THE STATUS OF THE SYSTEM/360 WHEN CONTROL IS BEING TRANSFERRED FROM ONE USER PROGRAM TO ANOTHER. THIS FACILITY PERMITS THE USER TO OPERATE ONE 1418/1428 READER ON-LINE WITH A SYSTEM/360 WITH UP TO THREE OTHER NON 1418/1428 PROGRAMS. EACH OF THE APPLICATIONS IS CONTROLLED BY A SEPARATE USER PROGRAM.

A USER PROGRAM WRITTEN FOR A SINGLE 1418/1428 READER PROGRAM MAY BE EASILY ADAPTED FOR USE IN A MULTIPLE PROGRAM APPLICATION. IN ORDER TO ADAPT A USER'S SINGLE 1418/1428 PROGRAM TO A MULTIPLE APPLICATION -
 - A PROGRAM CONTROL WORD MUST BE PROVIDED TO CONTROL TRANSFER FROM ONE USER PROGRAM TO ANOTHER USER PROGRAM.
 - ENTRY POINTS MUST BE PROVIDED IN THE SUBROUTINES ASSOCIATED WITH THE MULTIPLE PROGRAM FACILITY.

CONTINUED FROM PRIOR COLUMN--

THE INPUT/OUTPUT 1418/1428 PROGRAM CONTROLS THE INPUT AND OUTPUT FUNCTIONS THAT ARE ASSOCIATED WITH SUCH TYPICAL OCR PROCESSING AS FORMATTING, BLOCKING AND CONVERSION TO MAGNETIC TAPE OR DISK STORAGE, BATCH BALANCING AND PUNCHING OF OUT-OF-BALANCE DATA.

THE CONTROL PROGRAM PROVIDES MAXIMUM PROGRAMMING FLEXIBILITY IN THE TIME DEPENDENT OCR APPLICATIONS. THE FOLLOWING FUNCTIONS ARE PROVIDED FOR THE USERS PROGRAM-
 - CHANNEL SCHEDULER AND COMPLETE ERROR ROUTINES FOR I/O DEVICES OTHER THAN THE 1418/1428.
 - MAINTENANCE OF A DOCUMENT INPUT BUFFER.
 - OPERATOR COMMUNICATION ROUTINE.
 - TAPE LABEL PROCESSING OR DISK LABEL PROCESSING.
 THE I/O PROGRAM ALLOWS THE USER TO INSERT HIS ROUTINES FOR SUCH FUNCTIONS AS-
 - STACKER DETERMINATION.
 - FORMATTING OF PRINTER, PUNCH, AND MAGNETIC TAPE OR DISK OUTPUT.
 - DOCUMENT ARITHMETIC PROCESSING.
 - RECOGNITION OF CONTROL LEVELS.

THE PROGRAM CONSISTS OF -- SUPERVISOR... JOB CONTROL... TAPE AND DISK PROCESSING ROUTINES... INITIAL PROGRAM LOADER /IPL/. THESE COMPONENTS /EXCEPT IPL/ AND THE USER-PROVIDED PROGRAM /S/ ARE ASSEMBLED, AND THE RESULTING OBJECT DECKS WITH IPL ARE LOADED INTO MAIN STORAGE FROM CARDS. THE COMBINED DECK /INPUT/OUTPUT 1418/1428 PROGRAM AND THE USERS PROGRAM /S/ ALLOWS THE PROCESSING OF DATA READ AND EFFECTS THE READING AND WRITING OF OTHER INPUT/OUTPUT DEVICES WHICH THE USER MAY REQUIRE. INPUT/OUTPUT OPERATIONS AND OTHER SUPERVISORY FUNCTIONS ARE REQUESTED THROUGH THE USE OF THE SUPERVISOR-CALL /SVC/ INTERRUPTION FEATURE OF THE SYSTEM/360.

THE 1418/1428 CONTROL PROGRAM IS DESIGNED TO MAKE POSSIBLE MAXIMUM OCR THROUGHPUT. THROUGHPUT SPEEDS WILL VARY WITH DOCUMENT LENGTH AMOUNT OF USER PROCESSING TIME, AND OTHER I/O OPERATIONS. DISENGAGING THE 1418 OR 1428 IN ORDER TO PERFORM A BURST MODE OPERATION ON THE MULTIPLEXOR CHANNEL OR ANY OTHER OPERATION REQUIRING A DISENGAGE WILL DECREASE THROUGHPUT. THE MAXIMUM STACKER SELECT TIME FOR THE 1418 AND 1428 IS 10 MS PLUS ANY ADDITIONAL TIME PROVIDED BY TERMINATING THE LAST READ COMMAND PRIOR TO THE TRAILING EDGE OF THE DOCUMENT PASSING THE ,,DOCUMENT END ,, SENSING STATION. IF THE READ COMMAND IS TERMINATED WITH THE TRAILING EDGE OF THE DOCUMENTS PASSING THE SELECTED DOCUMENT END SWITCH SETTING, THE FOLLOWING TIMES ARE AVAILABLE-
 DOCUMENT END 94 MS
 2 63 MS
 3 25 MS
 4 10 MS

ASSUME A SYSTEM/360 MODEL 30 WITH A 1.5 MICROSECOND STORAGE. THE TIMES FOR A 2 MICROSECOND STORAGE CYCLE ARE SHOWN IN PARENTHESSES. THE CONTROL PROGRAM WILL USE A MAXIMUM OF 1.5 /2.0/ MILLISECOND TO PROCESS EACH EXTERNAL INTERRUPT AND 7.5 /1.0/ MILLISECOND /MAXIMUM/ ADDITIONAL IF A UNIT CHECK HAS OCCURRED. CONCURRENT I/O OPERATIONS WILL DEDUCT FROM THE USERS STACKER SELECTION ROUTINE. THE TIME NEEDED TO COMPLETE THE INSTRUCTION BEING EXECUTED WHEN THE INTERRUPT OCCURS WILL ALSO REDUCE THE AVAILABLE TIME. THE I/O PROGRAM CAN DELAY THE EXTERNAL INTERRUPT UP TO .38 /.5/ MILLISECOND IF ANOTHER INTERRUPT IS BEING PROCESSED. DOCUMENT REJECTS WILL OCCUR WHEN THE AVAILABLE STACKER SELECT TIME IS EXCEEDED.

NOTE- CHANNEL CONTENTION PROBLEMS MAY BE MINIMIZED BY -- /1/ PLACING THE 1418 OR 1428 AS THE HIGHEST PRIORITY ON THE MULTIPLEXOR CHANNEL... /2/ DISENGAGING THE 1418 OR 1428 WHERE OTHER I/O OPERATIONS WOULD CONFLICT. THE USER WILL HAVE THE FOLLOWING TIMES AVAILABLE FOR HIS OVERLAPPED PROCESS TIME IN THE MAIN LINE PROGRAM ASSUMING NO CONCURRENT I/O OPERATIONS. THESE TIMES CONSIDER INTERFERENCE FROM 39 OCR CHARACTERS PER 6 INCH DOCUMENT WITH A SINGLE READ COMMAND IN THE CCW CHAIN
 1418 113 MILLISECOND
 1428 113 MILLISECOND
 APPROXIMATELY 3.5 /5.0/ MILLISECOND WILL BE REQUIRED FOR EACH I/O OPERATION REQUESTED /THIS INCLUDES START I/O, INTERRUPT SERVICING, AND RECOGNITION OF ERRORS/. APPROXIMATELY 1.5 /2.0/ MILLISECOND WILL BE REQUIRED TO GET A DOCUMENT RECORD FROM THE INPUT BUFFER. CONCURRENT I/O OPERATIONS WILL DEDUCT FROM THE USERS AVAILABLE PROCESS TIME.

MINIMUM SYSTEM REQUIREMENTS- ONE 1418 OR ONE 1428 OPTICAL READER WITH ADAPTER FEATURE /NO. 7720/... 2030 /MODEL C/. /NOTE THAT A MODEL D IS REQUIRED IF THE MULTIPLE PROGRAM FACILITY IS USED/ OR 2040 /MODEL D/ OR 2050 /MODEL F/... 2540, 2520, 2501, OR 1442 NI CARD READ PUNCH... EXTERNAL INTERRUPT FEATURE /2030 ONLY/ OR DIRECT CONTROL SPECIAL FEATURE... STANDARD INSTRUCTION SET... APPROPRIATE CONTROL UNITS... ONE PRINTER /1403 - 2, 3, NI, 1443 NI, OR 1052 PRINTER-KEYBOARD... ONE CARD READER /1442 NI, 2540, 2520 B1, 2501 B1 OR 2501 B2/.

NOTE- THE MODEL 2030 MUST BE AT OR BEYOND ENGINEERING CHANGE LEVEL 125919.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... BPS INPUT/OUTPUT MANUAL C24-3437... OPERATING GUIDE C24-3023. MACHINE READABLE - INPUT/OUTPUT 1418/1428 PROGRAM DECKS CONSISTING OF- /IPL/ INITIAL PROGRAM LOADER... SYMBOLIC DECKS FOR SUPERVISOR, JOB CONTROL, TAPE LABEL ROUTINES, DISK INPUT AND OUTPUT LABEL ROUTINES. THESE DECKS ARE AVAILABLE IN CARD FORM OR ON 9- OR 7-TRACK DTR /DATA CONVERSION FEATURE REQUIRED/. IF TRACK REQUIREMENT IS NOT SPECIFIED A 9-TRACK DTR WILL BE SUPPLIED. NO TAPE SUBMITTAL IS REQUIRED.

360P-10-060 BPS/360 INPUT OUTPUT 1231-NI PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
 SPECIFY FILE NUMBER 360P-10-060

THE BASIC CONTROL PROGRAM PROVIDES A SINGLE REQUEST QUEUE FOR INPUT/OUTPUT OPERATIONS ON THE MULTIPLEXOR CHANNEL. THE MULTIPLEX CAPABILITY PROVIDES FOUR REQUEST QUEUES WHICH WILL PERMIT FOUR UNBUFFERED DEVICES /WHICH DO NOT OPERATE IN THE BURST MODE/ TO OPERATE IN THE DATA INTERLEAVED MODE. THE MULTIPLEX CAPABILITY PERMITS THE USER TO OPERATE UP TO FOUR 1231 NI READERS ON-LINE WITH A SYSTEM/360. IF ANY BURST

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MODE /TAPE OR DISK/ OPERATIONS ARE ATTEMPTED ON A MULTIPLEXOR CHANNEL QUEUE, INPUT/OUTPUT OPERATIONS WHICH CAN BE MULTIPLEXED ON THE REMAINING QUEUES WILL BE PROCESSED FIRST UNTIL ALL SUCH REQUESTS HAVE BEEN SERVICED. THE MULTIPLE PROGRAM FACILITY PROVIDED TO HANDLE UP TO FOUR APPLICATIONS CONSISTS OF SEVERAL SUBROUTINES THAT BECOME AN INTEGRAL PART OF THE 1231 NI CONTROL PROGRAM. THE MULTIPLE PROGRAM FACILITY USES PROGRAM CONTROL WORDS /PCW/ TO TRANSFER CONTROL AMONG THE USER PROGRAMS. A PCW IS A 240 BYTE AREA RESERVED BY THE USER FOR EACH OF HIS PROGRAMS. THE CONTROL PROGRAM STORES THE STATUS OF THE SYSTEM/360 WHEN CONTROL IS BEING TRANSFERRED FROM ONE USER PROGRAM TO ANOTHER. UP TO FOUR 1231 NI READERS MAY BE DISTRIBUTED IN ANY MANNER AMONG THE FOUR PROGRAMS.

A PROGRAM WRITTEN FOR A SINGLE PROGRAM APPLICATION MAY BE EASILY ADAPTED FOR USE IN A MULTIPLE PROGRAM APPLICATION. IN ORDER TO ADAPT A SINGLE APPLICATION TO A MULTIPLE APPLICATION-- 1- A PROGRAM CONTROL WORD MUST BE PROVIDED TO CONTROL TRANSFER FROM ONE USER READER PROGRAM TO ANOTHER USER READER PROGRAM. 2- ENTRY POINTS MUST BE PROVIDED TO THE SUBROUTINES ASSOCIATED WITH THE MULTIPLE PROGRAM FACILITY.

THE INPUT/OUTPUT 1231 NI PROGRAM IS DESIGNED TO ELIMINATE THE NEED TO PROGRAM LOGICAL DETAILS ASSOCIATED WITH INPUT AND OUTPUT OF 1231 NI DATA SHEET PROCESSING. IN ADDITION, THE ABILITY TO CONVENIENTLY READ, WRITE AND CONTROL OTHER I/O DEVICES /TAPE, DISK AND PUNCHED CARD DATA PROCESSING/ IS INCLUDED.

FEATURES--

- PROVISION FOR CONTROLLING FUNCTIONS OF THE MASTER MARK SPECIAL FEATURE. THE MASTER MARK SPECIAL FEATURE PERMITS READING DATA THAT IS RECORDED COMMON TO A SPECIFIC BATCH OF DOCUMENTS.
- AUTOMATIC SERVICING OF INTERRUPTS.
- COMPLETE DISK AND/OR TAPE CHECKING.
- CONTROL OF SUCH 1231 NI FUNCTIONS AS - FEEDING DOCUMENTS... READING DOCUMENTS... STACKER SELECTING DOCUMENTS... HANDLING VALIDITY CHECK CONDITIONS.

THE INPUT/OUTPUT 1231 NI PROGRAM CONSISTS OF -- SUPERVISOR... JOB CONTROL... TAPE AND DISK LABEL PROCESSING ROUTINES... INITIAL PROGRAM LOADER /IPL/. THESE COMPONENTS AND THE USER PROVIDED PROBLEM PROGRAMS/ ARE ASSEMBLED, AND THE RESULTING OBJECT DECKS /WITH IPL/ ARE LOADED INTO MAIN STORAGE FROM CARDS. THE COMBINED DECK /INPUT/OUTPUT 1231 NI PROGRAM AND THE USERS PROGRAMS// ALLOWS THE PROCESSING OF DATA READ FROM THE OPTICAL MARK PAGES AND EFFECTS THE READING AND WRITING OF OTHER INPUT/OUTPUT DEVICES WHICH THE USER MAY REQUIRE IN HIS 1231 NI APPLICATIONS. INPUT/OUTPUT OPERATIONS AND OTHER SUPERVISORY FUNCTIONS ARE REQUESTED THROUGH THE USE OF THE SUPERVISOR-CALL /SVC/ INTERRUPTION FEATURE OF THE SYSTEM/360.

IN A 1231 NI CONFIGURATION, THROUGHPUT WILL VARY WITH USER PROCESSING TIME REQUIREMENTS AND OTHER INPUT/OUTPUT OPERATIONS. HOWEVER, THE INPUT/OUTPUT 1231 NI PROGRAM IS DESIGNED TO MAKE POSSIBLE THE MAXIMUM 1231 NI READER THROUGHPUT WHICH IS A RATED SPEED OF 2,000 DATA SHEETS PER HOUR /THE IDCP IS DESIGNED TO MAKE POSSIBLE THIS THROUGHPUT RATE FOR EACH 1231 NI READER UP TO A MAXIMUM OF FOUR/.

MINIMUM SYSTEM REQUIREMENTS- 2030 /MODEL C/ /A MODEL D IS REQUIRED IF THE MULTIPLE PROGRAM FACILITY IS USED/ OR 2040 /MODEL D/ OR 2050 /MODEL F/ OR 2065 /MODEL G/... STANDARD INSTRUCTION SET... ONE 1231 OPTICAL MARK PAGE READER MODEL N1... ONE CARD READER /1442 N1, 2540, 2520 B1, 2501 B1 OR 2501 B2/... ONE PRINTER /1403 2, 3, N1, 1443 N1, OR 1052 PRINTER-KEYBOARD/... APPROPRIATE CONTROL UNITS.

BASIC PROGRAM MATERIAL -

DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3408... OPERATING GUIDE C24-3460. MACHINE READABLE - THE FOLLOWING PROGRAMS MAY BE OBTAINED IN THE FORM OF CARDS OR ON A 7- OR 9-TRACK DTR* - INITIAL PROGRAM LOADER /IPL/... SYMBOLIC DECKS FOR - SUPERVISOR, JOB CONTROL, TAPE LABEL ROUTINES, DISK INPUT LABEL ROUTINES, DISK OUTPUT LABEL ROUTINES. IF THE PROGRAM IS ORDERED ON A DTR AND THE TRACK REQUIREMENT IS NOT SPECIFIED A 9-TRACK DTR WILL BE SUPPLIED. NO TAPE SUBMITTAL IS REQUIRED - THE DTR WILL BE SUPPLIED BY PROGRAM INFORMATION DEPARTMENT. * THE DATA CONVERSION FEATURE IS REQUIRED TO USE THE 7-TRACK DTR.

360P-PT-045 BPS AUTOTEST /8K-TAPE/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-PT-045

AUTOTEST /8K TAPE/ IS A DEBUGGING AID FOR OBJECT PROGRAMS ASSEMBLED WITH THE BPS BASIC TAPE SYSTEM /8K/, MAY BE ORDERED FOR USE ON EITHER 9- OR 7-TRACK TAPE. USING AUTOTEST, RUNS CAN BE PLANNED TO PROCEED WITH A MINIMUM OF OPERATOR INTERVENTION. AUTOTEST RESIDES ON TAPE DURING TESTING. IT CONTROLS TESTING AND--

- PROVIDES FOR THE CREATION OF TAPE DATA FILES PRIOR TO THE TEST OF EACH PROGRAM.
- LOADS THE OBJECT PROGRAM, AND CLEARS UNUSED CORE.
- ALLOWS THE EXCHANGE, ADDITION, OR DELETION OF INSTRUCTIONS WITHOUT RE-ASSEMBLY.
- MONITORS THE EXECUTION OF THE OBJECT PROGRAM.
- PROVIDES THE DUMP OF ALL OR ANY PORTION OF CORE STORAGE, PERMANENT STORAGE ASSIGNMENTS, AND/OR GENERAL REGISTERS WHENEVER A DESIGNATED ADDRESS IS REACHED DURING OBJECT PROGRAM EXECUTION.
- ALLOWS AUTOTEST OUTPUT TO BE STORED ON AN AVAILABLE SCRATCH TAPE FOR LATER OFF-LINE PRINTING.
- WILL DUMP CORE STORAGE AT NORMAL OR ABNORMAL END OF JOB.
- PRINTS FIXED OR VARIABLE LENGTH, BLOCKED OR UNBLOCKED TAPE RECORDS.
- PROVIDES AN 80-80 LISTING OF INPUT/OUTPUT CARDS AT END OF TEST SESSION.

MINIMUM SYSTEM REQUIREMENTS - A 16K SYSTEM/360 WITH - A 2520 2540, OR 1442 CARD READ PUNCH, OR A 2501 CARD READER... A 7-TRACK OR 9-TRACK 2400 SERIES MAGNETIC TAPE UNIT FOR SYSTEM RESIDENCE /7-TRACK REQUIRES THE DATA CONVERSION FEATURE/... STANDARD INSTRUCTION SET... A 1403, 1404, OR 1443 PRINTER OR ONE 2400 SERIES MAGNETIC TAPE UNIT. SUPPORTED OPTIONALLY - STORAGE - 32K OR 64K... 1052 PRINTER-KEYBOARD. THE PROGRAM MAINTENANCE WILL BE SUPPLIED IN THE TRACK FORM ORIGINALLY REQUESTED.

CONTINUED FROM PRIOR COLUMN--

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3343... OPERATING GUIDE C24-3417. MACHINE READABLE - ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR CONTAINING THE AUTOTEST PROGRAM AND SAMPLE PROBLEM DECK IN OBJECT FORM.

IF TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE PROGRAM INFORMATION DEPARTMENT WILL SUPPLY THE DTR. NO TAPE SUBMITTAL IS REQUIRED.

360P-RG-200 SYSTEM/360 BPS REPORT PROGRAM GENERATOR /CARD/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-RG-200

THE BPS/360 REPORT PROGRAM GENERATOR /CARD/ IS A PROGRAM LANGUAGE AND A PROCESSOR PROGRAM THAT IS USED TO PRODUCE MACHINE LANGUAGE OBJECT PROGRAMS. THE OBJECT PROGRAMS WILL BE USED PRIMARILY TO PRODUCE BUSINESS REPORTS, BUT THE REPORTS MAY RANGE FROM A SIMPLE CARD-TO-PRINTER LISTING TO A COMPLETE REPORT THAT INCORPORATES NUMEROUS CALCULATIONS AND EDITING. SOME OF THE CAPABILITIES OF THE LANGUAGE ARE--
- THE OBJECT PROGRAM CAN OBTAIN DATA RECORDS FROM AS MANY AS THREE CARD-INPUT FILES.
- THE OBJECT PROGRAM CAN MATCH RECORDS IN AS MANY AS THREE CARD FILES TO GOVERN PROCESSING OF THE REPORT.
- INPUT RECORDS MAY BE CHECKED FOR SEQUENCE.
- THE OBJECT PROGRAM CAN SEARCH TABLES, AND IT CAN USE DATA FOUND IN THE TABLES TO PRODUCE THE REPORT.
- CALCULATIONS MAY BE PERFORMED ON DATA TAKEN FROM INPUT RECORDS OR RPG LITERALS.
- THE PROGRAM CAN BRANCH TO A SUBROUTINE THAT HAS BEEN WRITTEN IN A LANGUAGE OTHER THAN RPG, PERFORM CALCULATIONS, AND RETURN TO THE RPG PROGRAM.
- THE REPORT CAN BE PRODUCED ON AS MANY AS THREE PRINTER OR PUNCH FILES.

MACHINE REQUIREMENTS- TO GENERATE AN RPG OBJECT PROGRAM, THE FOLLOWING ARE THE MINIMUM MACHINE REQUIREMENTS -- 8K BYTES OF MAIN STORAGE /UP TO 32K BYTES OF MAIN STORAGE MAY BE UTILIZED/... CARD READER... CARD PUNCH /IF OBJECT PROGRAM CARD DECK IS DESIRED/... PRINTER /IF DIAGNOSTICS ARE DESIRED/... STANDARD INSTRUCTION SET... DECIMAL ARITHMETIC FEATURE. TO EXECUTE AN RPG OBJECT PROGRAM, THE FOLLOWING ARE REQUIRED -- 8K BYTES OF MAIN STORAGE /UP TO 32K BYTES OF MAIN STORAGE MAY BE UTILIZED/... STANDARD INSTRUCTION SET... DECIMAL ARITHMETIC FEATURE... I/O UNITS AS REQUIRED BY THE OBJECT PROGRAM.

THE FOLLOWING CARD I/O DEVICES AND PRINTERS ARE SUPPORTED - 1442 CARD READ PUNCH... 2501 CARD READER... 2520 CARD READ PUNCH, MODEL B1... 2520 CARD PUNCH, MODEL B2... 2520 CARD PUNCH, MODEL B3... 2540 CARD READ PUNCH, MODEL I... 1403 PRINTER... 1404 PRINTER... 1443 PRINTER... 1052 PRINTER-KEYBOARD**.

*THE 1404 PRINTER MAY BE UTILIZED FOR CONTINUOUS FORMS OPERATIONS ONLY.
**THE 1052 MAY BE USED ONLY AS AN OUTPUT LOGGING DEVICE. UP TO THREE CARD INPUT DEVICES AND UP TO THREE CARD OUTPUT DEVICES OR PRINTERS MAY BE USED IN ANY COMBINATION. THE OBJECT PROGRAM REQUIRES AT LEAST ONE CARD INPUT DEVICE AND ONE CARD OUTPUT OR PRINTER DEVICE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM DESCRIPTION... SPECIFICATIONS MANUAL C24-3374... OPERATING GUIDE C24-3464. MACHINE READABLE - RPG NON-RELOCATABLE ASSEMBLED DECK AND I/O UNITS AS REQUESTED BY THE SPECIFICATIONS... STANDARD INSTRUCTION SET... DECIMAL ARITHMETIC FEATURE. REQUIRED /, OR IN CARD FORM.

WHEN ORDERING THIS PROGRAM, THE REQUESTOR MUST INDICATE THE MODE OF SHIPMENT DESIRED. IF IT IS NOT INDICATED A 9-TRACK DTR WILL BE FORWARDED. NO TAPE SUBMITTAL IS REQUIRED, THE DTR WILL BE SUPPLIED.

360P-RG-201 S/360 BPS REPORT PROGRAM GENERATOR PROGRAM /8K TAPE/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-RG-201

THIS IS A PROBLEM-ORIENTED LANGUAGE DESIGNED TO PROVIDE USERS WITH AN EFFICIENT, EASY-TO-USE TECHNIQUE FOR GENERATING PROGRAMS THAT CAN OBTAIN DATA RECORDS FROM SINGLE-OR MULTIPLE-INPUT FILES... PERFORM CALCULATIONS ON DATA TAKEN FROM INPUT RECORDS OR RPG LITERALS... WRITE PRINTED REPORTS... USE TABLE LOOKUP... EXIT TO A USERS SUBROUTINE WRITTEN IN A LANGUAGE OTHER THAN RPG... BRANCH WITHIN THE CALCULATIONS... SEQUENCE-CHECK INPUT RECORDS.

MINIMUM SYSTEM REQUIREMENTS- SOURCE PROGRAM GENERATION -- 8K BYTES CORE STORAGE WITH... ONE 2540, 1442 OR 2520 B1 CARD READ PUNCH OR 2520 B2 AND/OR B3 CARD PUNCH /THE 2520 MAY NOT BE USED FOR A COMBINED FILE/... ONE 1443 PRINTER, 1403 PRINTER, OR 1404 PRINTER /CONTINUOUS FORMS OPERATION ONLY/... THREE 2400 SERIES MAGNETIC TAPE UNITS, ONE OF WHICH MUST BE 9-TRACK /IF 7-TRACK TAPE UNITS ARE USED, THE DATA CONVERSION FEATURE IS REQUIRED/... STANDARD INSTRUCTION SET... DECIMAL ARITHMETIC FEATURE. THIS PROGRAM MUST BE INTEGRATED INTO THE 360P-AS-091 BASIC PROGRAMMING SUPPORT ASSEMBLER/LOGS SYSTEM TAPE. OBJECT PROGRAM EXECUTION -- ALTHOUGH THE RPG COMPILER WILL OPERATE IN 8K, MOST USER OBJECT PROGRAMS WILL REQUIRE 16K... I/O UNITS AS REQUESTED BY THE SPECIFICATIONS... STANDARD INSTRUCTION SET... DECIMAL ARITHMETIC FEATURE. ADDITIONAL MACHINE FEATURES SUPPORTED- PROGRAM GENERATION -- 16K, 32K, OR 65K CORE STORAGE BYTES... 2501 CARD READER. OBJECT PROGRAM EXECUTION -- 16K, 32K, OR 65K CORE STORAGE BYTES... 2400 SERIES MAGNETIC TAPE UNITS /7- OR 9-TRACK/... UP TO TEN I/O DEVICES /3 OF WHICH MAY BE PRINTERS/ MAY BE USED - ONE INPUT FILE IS REQUIRED... 2501 CARD READER. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROGRAM DESCRIPTION... SYSTEM UPDATE INSTRUCTIONS... RESTRICTIONS... BPS-RPG SPECIFICATIONS /TAPE/, C24-3418. BPS-RPG OPERATING GUIDE 18K TAPE/, C24-3391. MACHINE READABLE - 9-TRACK DTR /SEE NOTE BELOW/ CONTAINING - ASSEMBLED DECK... SAMPLE PROGRAM /SOURCE LANGUAGE/.

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OPTIONAL PROGRAM MATERIAL - 9-TRACK TAPE CONTAINING THE SOURCE DECK. OPTIONAL PROGRAM MATERIAL LIST AND SYMBOLIC DECK ASSEMBLY INSTRUCTIONS.

NOTE- NO TAPE SUBMITTAL IS REQUIRED FOR THE BASIC PROGRAM MATERIAL - THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT. OPTIONAL PROGRAM MATERIAL MUST BE INDICATED ON THE ORDER CARD, THE TAPE REQUIRED TO OBTAIN IT MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE MUST BE 2400 FEET IN LENGTH.

360P-SM-043 BPS SORT MERGE /8K-TAPE/

1 CHANNEL

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-SM-043

THE 8K TAPE SORT/MERGE PROGRAM IS A GENERALIZED SORT/MERGE PROGRAM DESIGNED TO OPERATE ON THE SYSTEM/360. WITH THIS PROGRAM THE USER CAN SORT RECORDS INTO ONE SEQUENTIAL FILE, OR MERGE MULTIPLE PRESORTED FILES INTO ONE CONTINUOUS SEQUENTIAL FILE. CONTROL-DATA INFORMATION CAN BE CONTAINED IN AS MANY AS TWELVE FIELDS IN EACH RECORD. THE SORT/MERGE PROGRAM IS IN THE FORM OF AN ASSEMBLED OBJECT PROGRAM WHEN IT IS RECEIVED BY THE USER. IN ADDITION, THE FACILITY TO CREATE A PROGRAM TAPE /9-TRACK, OR 7-TRACK IF THE DATA CONVERSION FEATURE IS PRESENT/ IS PROVIDED. CONTROL CARD STATEMENTS TAILOR THE GENERALIZED SORT/MERGE PROGRAM TO THE USERS SPECIFIC APPLICATION. IF THE PROGRAM WILL BE LOADED FROM CARDS, THE CONTROL STATEMENTS ARE INSERTED INTO THE PROGRAM DECK. IF THE PROGRAM WILL BE LOADED FROM MAGNETIC TAPE, THE CONTROL STATEMENTS ARE PLACED IN THE CARD READER. THE PROGRAM ASSUMES THAT INPUT RECORDS FOR A SORT OPERATION ARE IN RANDOM SEQUENCE., HOWEVER, IF ANY INHERENT SEQUENCING EXISTS WITHIN THE INPUT FILE, THE PROGRAM WILL TAKE ADVANTAGE OF IT. RECORDS CAN BE SORTED OR MERGED INTO ASCENDING OR DESCENDING SEQUENCE, AND AN INDIVIDUAL SEQUENCE CAN BE SPECIFIED BY THE USER FOR EACH CONTROL DATA FIELD. THE OUTPUT SEQUENCE FOR A MERGE-ONLY OPERATION MUST BE THE SAME AS THE INPUT SEQUENCE.

FEATURES OF THE SORT/MERGE PROGRAM ARE -

- TRANSLATES MNEMONIC CONTROL-CARD INFORMATION THAT DESCRIBES THE FILE PARAMETERS FOR EACH INPUT AND OUTPUT FILE.
- SORTS SINGLE OR MULTIPLE INPUT FILES UNDER CONTROL OF THE VOLUME ENTRY IN THE INPIL STATEMENT.
- MERGES A MINIMUM OF ONE TO A MAXIMUM OF FIVE INPUT FILES.
- ALLOWS MULTIVOLUME INPUT AND/OR OUTPUT.
- PROVIDES FOR SPECIFICATION OF AN ALTERNATE INPUT DRIVE /SORT ONLY/ AND AN ALTERNATE OUTPUT DRIVE /SORT OR MERGE/.
- PROVIDES FOR INPUT FROM AND OUTPUT TO 7-TRACK AND/OR 9-TRACK MAGNETIC TAPES.
- PROVIDES CHECKPOINT, INTERRUPT, AND RESTART PROCEDURES DURING THE MERGE PHASE /PHASE 2/ OF A SORT OPERATION.
- PROVIDES EXITS TO USER-WRITTEN ROUTINES.
- PRINTS OUT- THE CONTROL CARD INFORMATION /OPTIONAL/, RECORD COUNTS AT THE END OF PHASE 1 AND PHASE 2 /OPTIONAL/, AND NECESSARY DIAGNOSTICS.
- PROVIDES THE OPTION TO BYPASS UNREADABLE DATA BLOCKS OR TO INDICATE THE NEED FOR OPERATOR INTERVENTION.
- SEQUENCE-CHECKS THE RECORDS DURING THE FINAL PASS.
- SORTS OR MERGES ON EACH CONTROL FIELD INDEPENDENTLY, PERMITTING THE USER TO SPECIFY EITHER ASCENDING OR DESCENDING SEQUENCE FOR EACH INDIVIDUAL FIELD.
- PROCESSES STANDARD SYSTEM/360 VOLUME AND FILE LABELS.
- PROVIDES STANDARD SYSTEM/360 IOCS ERROR PROCEDURES.
- ALLOWS AN ALTERNATE WORK DRIVE TO BE SPECIFIED, THIS ALLOWS THE MAXIMUM INPUT FILE SIZE TO BE APPROXIMATELY DOUBLED.
- SUPPORTS THE 800/1600 BPI DUAL DENSITY FEATURE.

MINIMUM SYSTEM REQUIREMENTS -

FOR 1 CHANNEL PROGRAM /360P-SM-043/ -- 8,192 BYTES OF MAIN STORAGE... ONE MULTIPLEXOR OR ONE SELECTOR CHANNEL... THREE 2400 SERIES MAGNETIC TAPE UNITS /7- AND/OR 9-TRACK/ /IF THE OPTIONAL ALTERNATE WORK DRIVE IS USED FOUR UNITS ARE REQUIRED/... A PRINTER /1403, 1404, OR 1443, OR A 1052 PRINTER KEYBOARD/... A CARD READER /1442, 2501, 2520 OR 2540/... STANDARD INSTRUCTION SET.

- ONE 2816 SWITCHING UNIT WITH TWO 2403 MAGNETIC TAPE AND CONTROL UNITS OR TWO 2803 TAPE CONTROL UNITS ATTACHED ONE TO EACH OF TWO SELECTOR CHANNELS. /THIS COMBINATION PRODUCES A READ-WRITE-COMPUTE ENVIRONMENT/.
- TWO 2403 MAGNETIC TAPE AND CONTROL UNITS OR TWO 2803 TAPE CONTROL UNITS ATTACHED ONE TO EACH OF TWO SELECTOR CHANNELS. /THIS COMBINATION PRODUCES A READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT ONLY/.
- TWO 2415 MAGNETIC TAPE AND CONTROL UNITS ATTACHED ONE TO EACH OF TWO SELECTOR CHANNELS. /THIS COMBINATION PRODUCES A READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT ONLY/. THE POOLED ENTRY /ALL READING DONE ON ONE CHANNEL AND ALL WRITING DONE ON THE OTHER/ OF THE OPTION STATEMENT CANNOT BE SPECIFIED WITH THIS CONFIGURATION.

THE PROGRAM TAKES ADVANTAGE OF... A MAXIMUM OF 65,534 BYTES OF MAIN STORAGE... UP TO ELEVEN 2400 SERIES MAGNETIC TAPE UNITS /7-TRACK AND/OR 9-TRACK/, AS FOLLOWS- UP TO TWO FOR INPUT DRIVES... UP TO SIX FOR WORK DRIVES... UP TO TWO FOR OUTPUT DRIVES... ONE FOR PROGRAM RESIDENCE... 7-TRACK AND 9-TRACK TAPE CONSIDERATIONS- THE POSSIBLE COMBINATIONS OF 7-TRACK OR 9-TRACK TAPES FOR A SORT OPERATION ARE --

	CHARACTER DATA ONLY	ANY DATA
INPUT	7T OR 9	7D OR 9
WORK	7T AND/OR 9	9 ONLY
OUTPUT	7T OR 9	7D OR 9

NOTE- 7T EQUALS 7-TRACK IN 6-BIT TRANSLATE MODE.
7D EQUALS 7-TRACK IN DATA CONVERSION MODE.
9 EQUALS 9-TRACK.

WHEN 7T IS USED, THE DATA MUST BE FIXED-LENGTH AND 6-BIT FORMAT BECAUSE BLOCK AND RECORD LENGTH FIELDS OF VARIABLE LENGTH RECORDS ARE IN BINARY AND CANNOT BE READ BACKWARDS.

BASIC PROGRAM MATERIAL -

DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM DESCRIPTION... SPECIFICATIONS MANUAL C24-3320... OPERATING PROCEDURES MANUAL C24-3413.
MACHINE READABLE - NON-RELOCATABLE ASSEMBLED DECK IN CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

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DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED. IF TRACK REQUIREMENT IS NOT SPECIFIED, A 9-TRACK DTR WILL BE FORWARDED.

360P-SM-044 BPS SORT MERGE /8K-TAPE/

2 CHANNEL

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-SM-044

THE 8K TAPE SORT/MERGE PROGRAM IS A GENERALIZED SORT/MERGE PROGRAM DESIGNED TO OPERATE ON THE SYSTEM/360. WITH THIS PROGRAM THE USER CAN SORT RECORDS INTO ONE SEQUENTIAL FILE, OR MERGE MULTIPLE PRESORTED FILES INTO ONE CONTINUOUS SEQUENTIAL FILE. CONTROL-DATA INFORMATION CAN BE CONTAINED IN AS MANY AS TWELVE FIELDS IN EACH RECORD. THE SORT/MERGE PROGRAM IS IN THE FORM OF AN ASSEMBLED OBJECT PROGRAM WHEN IT IS RECEIVED BY THE USER. IN ADDITION, THE FACILITY TO CREATE A PROGRAM TAPE /9-TRACK, OR 7-TRACK IF THE DATA CONVERSION FEATURE IS PRESENT/ IS PROVIDED. CONTROL CARD STATEMENTS TAILOR THE GENERALIZED SORT/MERGE PROGRAM TO THE USERS SPECIFIC APPLICATION. IF THE PROGRAM WILL BE LOADED FROM CARDS, THE CONTROL STATEMENTS ARE INSERTED INTO THE PROGRAM DECK. IF THE PROGRAM WILL BE LOADED FROM MAGNETIC TAPE, THE CONTROL STATEMENTS ARE PLACED IN THE CARD READER. THE PROGRAM ASSUMES THAT INPUT RECORDS FOR A SORT OPERATION ARE IN RANDOM SEQUENCE., HOWEVER, IF ANY INHERENT SEQUENCING EXISTS WITHIN THE INPUT FILE, THE PROGRAM WILL TAKE ADVANTAGE OF IT. RECORDS CAN BE SORTED OR MERGED INTO ASCENDING OR DESCENDING SEQUENCE, AND A IN INDIVIDUAL SEQUENCE CAN BE SPECIFIED BY THE USER FOR EACH CONTROL DATA FIELD. THE OUTPUT SEQUENCE FOR A MERGE-ONLY OPERATION MUST BE THE SAME AS THE INPUT SEQUENCE. THE 2-CHANNEL SORT/MERGE PROGRAM IS DESIGNED PRIMARILY FOR USE ON A 2-CHANNEL SYSTEM CONFIGURATION OPERATING IN EITHER A READ-WRITE-COMPUTE OR A READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT. IT MAY, HOWEVER, BE USED ON SYSTEMS HAVING ONLY ONE CHANNEL /READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT ONLY/. THE PERFORMANCE OBTAINED BY USING THE 2-CHANNEL PROGRAM ON A 1-CHANNEL SYSTEM WILL GENERALLY SURPASS THAT OF THE 1-CHANNEL PROGRAM ON THE SAME SYSTEM PROVIDED THE SYSTEM HAS MORE THAN 8K BYTES OF MAIN STORAGE. THIS IS DUE TO THE FACT THAT THE 2-CHANNEL PROGRAM USES DUAL OUTPUT AREAS, WHILE THE 1-CHANNEL PROGRAM USES ONLY ONE.

FEATURES OF THE SORT/MERGE PROGRAM ARE -

- TRANSLATES MNEMONIC CONTROL-CARD INFORMATION THAT DESCRIBES THE FILE PARAMETERS FOR EACH INPUT AND OUTPUT FILE.
- SORTS SINGLE OR MULTIPLE INPUT FILES UNDER CONTROL OF THE VOLUME ENTRY IN THE INPIL STATEMENT.
- MERGES A MINIMUM OF ONE TO A MAXIMUM OF FIVE INPUT FILES.
- ALLOWS MULTIVOLUME INPUT AND/OR OUTPUT.
- PROVIDES FOR SPECIFICATION OF AN ALTERNATE INPUT DRIVE /SORT ONLY/ AND AN ALTERNATE OUTPUT DRIVE /SORT OR MERGE/.
- PROVIDES FOR INPUT FROM AND OUTPUT TO 7-TRACK AND/OR 9-TRACK MAGNETIC TAPES.
- PROVIDES CHECKPOINT, INTERRUPT, AND RESTART PROCEDURES DURING THE MERGE PHASE /PHASE 2/ OF A SORT OPERATION.
- PROVIDES EXITS TO USER-WRITTEN ROUTINES.
- PRINTS OUT- THE CONTROL CARD INFORMATION /OPTIONAL/, RECORD COUNTS AT THE END OF PHASE 1 AND PHASE 2 /OPTIONAL/, AND NECESSARY DIAGNOSTICS.
- PROVIDES THE OPTION TO BYPASS UNREADABLE DATA BLOCKS OR TO INDICATE THE NEED FOR OPERATOR INTERVENTION.
- SEQUENCE-CHECKS THE RECORDS DURING THE FINAL PASS.
- SORTS OR MERGES ON EACH CONTROL FIELD INDEPENDENTLY, PERMITTING THE USER TO SPECIFY EITHER ASCENDING OR DESCENDING SEQUENCE FOR EACH INDIVIDUAL FIELD.
- PROCESSES STANDARD SYSTEM/360 VOLUME AND FILE LABELS.
- PROVIDES STANDARD SYSTEM/360 IOCS ERROR PROCEDURES.
- ALLOWS AN ALTERNATE WORK DRIVE TO BE SPECIFIED, THIS ALLOWS THE MAXIMUM INPUT FILE SIZE TO BE APPROXIMATELY DOUBLED.
- SUPPORTS THE 800/1600 BPI DUAL DENSITY FEATURE.

MINIMUM SYSTEM REQUIREMENTS -

/360P-SM-044/ -- 8,192 BYTES OF MAIN STORAGE... EITHER ONE OR TWO SELECTOR CHANNELS... THREE 2400 SERIES MAGNETIC TAPE UNITS /7- AND/OR 9-TRACK/ /IF THE OPTIONAL ALTERNATE WORK DRIVE IS USED FOUR UNITS ARE REQUIRED/... A PRINTER /1403, 1404, 1443 OR A 1052 PRINTER KEYBOARD/... A CARD READER /1442, 2501, 2520 OR 2540/... STANDARD INSTRUCTION SET.

- TAPE CONTROL UNIT CONSIDERATIONS FOR 2-CHANNEL PROGRAM- IF THE SYSTEM HAS ONE SELECTOR CHANNEL AND THE 2-CHANNEL PROGRAM WILL BE EXECUTED, ONE OF THE FOLLOWING MINIMUMS MUST BE OBSERVED-
- ONE 2415 MAGNETIC TAPE UNIT AND CONTROL. /THIS COMBINATION PRODUCES A READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT ONLY/.
- ONE 2403 MAGNETIC TAPE UNIT AND CONTROL OR 2803 TAPE CONTROL. /THIS COMBINATION PRODUCES A READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT ONLY/.

IF THE SYSTEM HAS TWO SELECTOR CHANNELS AND THE 2-CHANNEL PROGRAM WILL BE EXECUTED, ONE OF FOUR MINIMUM COMBINATIONS MUST BE OBSERVED-

- ONE 2404 MAGNETIC TAPE UNIT AND CONTROL, OR ONE 2804 TAPE CONTROL. /THIS COMBINATION PRODUCES A READ-WRITE-COMPUTE ENVIRONMENT/.
- ONE 2816 SWITCHING UNIT WITH TWO 2403 MAGNETIC TAPE AND CONTROL UNITS OR TWO 2803 TAPE CONTROL UNITS ATTACHED ONE TO EACH OF TWO SELECTOR CHANNELS. /THIS COMBINATION PRODUCES A READ-WRITE-COMPUTE ENVIRONMENT/.
- TWO 2403 MAGNETIC TAPE AND CONTROL UNITS OR TWO 2803 TAPE CONTROL UNITS ATTACHED ONE TO EACH OF TWO SELECTOR CHANNELS. /THIS COMBINATION PRODUCES A READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT ONLY/.
- TWO 2415 MAGNETIC TAPE AND CONTROL UNITS ATTACHED ONE TO EACH OF TWO SELECTOR CHANNELS. /THIS COMBINATION PRODUCES A READ-COMPUTE AND WRITE-COMPUTE ENVIRONMENT ONLY/.

ADDITIONAL MACHINE FEATURES SUPPORTED - THE PROGRAM TAKES ADVANTAGE OF... A MAXIMUM OF 65,534 BYTES OF MAIN STORAGE... UP TO ELEVEN 2400 SERIES MAGNETIC TAPE UNITS /7-TRACK AND/OR 9-TRACK/, AS FOLLOWS- UP TO TWO FOR INPUT DRIVES... UP TO SIX FOR WORK DRIVES... UP TO TWO FOR OUTPUT DRIVES... ONE FOR PROGRAM RESIDENCE... 7-TRACK AND 9-TRACK TAPE CONSIDERATIONS- THE POSSIBLE COMBINATIONS OF 7-TRACK OR 9-TRACK TAPES FOR A SORT OPERATION ARE --

	CHARACTER DATA ONLY	ANY DATA
INPUT	7T OR 9	7D OR 9
WORK	7T AND/OR 9	9 ONLY

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OUTPUT 7 OR 9 7D OR 9
NOTE- 7T EQUALS 7-TRACK IN 6-BIT TRANSLATE MODE.
7D EQUALS 7-TRACK IN DATA CONVERSION MODE.
9 EQUALS 9-TRACK.
WHEN 7T IS USED, THE DATA MUST BE FIXED-LENGTH AND 6-BIT
FORMAT BECAUSE BLOCK AND RECORD LENGTH FIELDS OF VARIABLE
LENGTH RECORDS ARE IN BINARY AND CANNOT BE READ BACKWARDS.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SAMPLE PROBLEM
DESCRIPTION... SPECIFICATIONS MANUAL C24-3320...
OPERATING PROCEDURES MANUAL C24-3413.
MACHINE READABLE - NON-RELOCATABLE ASSEMBLED DECK IN CARD
FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION
FEATURE REQUIRED/ DTR.
THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPT.
IF TRACK REQUIREMENT IS NOT SPECIFIED, A 9-TRACK DTR WILL
BE FORWARDED.

360P-UT-017 SYSTEM/360 ABSOLUTE PROGRAM LOADER

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-017

THE SYSTEM/360 ABSOLUTE PROGRAM LOADER /360P-UT-017/ LOADS
ASSEMBLED PROGRAMS INTO THE STORAGE LOCATIONS ASSIGNED BY THE
ASSEMBLER. FACILITIES FOR MAKING CORRECTIONS OR REPLACEMENTS
TO THE ASSEMBLED PROGRAM AT LOAD TIME ARE ALSO PROVIDED. THE
FUNCTIONS OF THE RELOCATING LOADER ARE ALSO PROVIDED BY THE
RELOCATING LOADER. THIS PROGRAM USES SERUP INTERFACE RATHER THAN
READ ERROR RECOVERY ROUTINES.
MINIMUM REQUIREMENTS - STANDARD S/360 INSTRUCTION SET... 8K MAIN
STORAGE... 2540 OR 1442 CARD READ PUNCH OR ONE 2400 SERIES TAPE
UNIT OR 2501 CARD READER AND THE 2520 MODEL B1 CARD READ PUNCH...
OPTIONAL I/O DEVICES - 1403 OR 1443 PRINTER OR 1052 PRINTER
KEYBOARD.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM SUPPORT MANUAL...
OPERATING GUIDE...SAMPLE PROBLEM OPERATING INSTRUCTIONS...
PROGRAM MATERIAL LIST...SPECIAL INFORMATION ATTACHMENT...
MACHINE READABLE - ASSEMBLED NON-RELOCATABLE DECKS- BOTH
LOW AND HIGH SELF LOADING DECKS...SAMPLE PROBLEM SYMBOLIC
DECK.

360P-UT-018 SYSTEM/360 CARD/TAPE I/O SUBROUTINES

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-018

THE CARD/TAPE I/O SUBROUTINES IS A MODULAR SET OF BASIC
ASSEMBLER LANGUAGE SUBROUTINES WHICH PROVIDE THE USER WITH
STANDARD, TESTED I/O SUPPORT. THE DESIRED FUNCTIONS ARE SELECTED
BY THE USER AND EITHER COMBINED WITH HIS SOURCE PROGRAM AS INPUT
TO THE BASIC ASSEMBLER, OR ARE PRE-ASSEMBLED INTO RELOCATABLE
TEXT AND COMBINED WITH THE RELOCATABLE TEXT OF INDEPENDENT
ASSEMBLIES FOR LOADING BY THE RELOCATING LOADER.
MINIMUM REQUIREMENTS - STANDARD S/360 INSTRUCTION SET...8K MAIN
STORAGE... ONE 2501 CARD READER AND 2520 MODELS B1
/CARD READ PUNCH/, B2 AND B3 /CARD PUNCHES OR
ONE 2540 OR 1442 CARD READ PUNCH OR 1403 OR 1443
PRINTER OR 1052 PRINTER KEYBOARD OR ONE 2400 SERIES TAPE UNIT.
OPTIONAL I/O DEVICES - ANY NUMBER OF EACH UNIT.
BECAUSE THE I/O SUBROUTINES ARE LOADED INTO STORAGE WITH AND AT
THE SAME TIME AS THE USER'S PROGRAM THE INPUT DEVICES FOR LOADING
ARE NOT INCLUDED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT NO. 1
/SPECIAL INFORMATION/... BASIC UTILITIES MANUAL,
C28-6505... OPERATING GUIDE, C28-6557.
MACHINE READABLE - SAMPLE PROBLEM SYMBOLIC DECK AND I/O
SUPPORT PACKAGE SYMBOLIC DECK IN CARD FORM OR ON ONE
9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK
IS REQUIRED. IF NOT SPECIFIED A 9-TRACK DTR WILL BE FORWARDED.
THE DTR WILL BE PROVIDED BY THE PROGRAM INFORMATION DEPARTMENT -
NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-019 SYSTEM/360 DUMP PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-019

THE SYSTEM/360 DUMP PROGRAM /360P-UT-019/ PROVIDES THE FACILITY
TO PRINT THE CONTENTS OF ALL OR A PORTION OF MAIN STORAGE AND THE
GENERAL AND FLOATING POINT REGISTERS AT SELECTED POINTS DURING
OBJECT PROGRAM EXECUTION. THE OUTPUT WILL BE SUPPRESSED IF THE
ASSOCIATED PRIORITY NUMBER DOES NOT MATCH THAT REQUESTED BY THE
USER WITH A CONTROL CARD AT OBJECT TIME, THUS PROVIDING THE
FACILITY TO ACTIVATE STORAGE DUMPING AT LOAD TIME. A TWO-PHASE
VERSION OF THIS PROGRAM IS PROVIDED TO ECONOMIZE ON STORAGE
REQUIREMENTS DURING THE EXECUTION OF THE USER'S PROGRAM.
THIS PROGRAM USES SERUP INTERFACE RATHER THAN READ/PUNCH ERROR
ROUTINES.
MINIMUM REQUIREMENTS- STANDARD INSTRUCTION SET...8K MAIN STORAGE
/SINGLE PHASE/- 1403 OR 1443 PRINTER OR 1052 PRINTER KEYBOARD...
ALLOWANCES FOR OPERATOR MESSAGES ARE MADE WITH THESE
OPTIONAL I/O DEVICES - 1403 OR 1443 PRINTER OR 1052 PRINTER
KEYBOARD, /TWO PHASE/- 2540 OR 1442 CARD READ PUNCH WITH 1403 OR
1443 PRINTER OR 1052 PRINTER KEYBOARD- 2501 CARD READER AND 2520
MODELS B1, B2 OR B3...ONE 2400 SERIES TAPE UNIT WITH A 1403
OR 1443 PRINTER OR 1052 PRINTER KEYBOARD. OPTIONAL I/O DEVICES -
1403 OR 1443 PRINTER OR 1052 PRINTER KEYBOARD. USED FOR ERROR
MESSAGES.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM SUPPORT MANUAL...
OPERATING GUIDE...SAMPLE PROBLEM OPERATING INSTRUCTIONS...
PROGRAM MATERIAL LIST...SPECIAL INFORMATION ATTACHMENT...
MACHINE READABLE - ASSEMBLED DECKS FOR - SINGLE PHASE DUMP
RELOCATABLE...TWO PHASE DUMP- PHASE 1 RELOCATABLE...TWO
PHASE DUMP- PHASE 2 NON-RELOCATABLE /SELF-LOADING/...
SAMPLE PROBLEM SYMBOLIC DECK.

360P-UT-020 SYSTEM/360 RELOCATING PROG. LOADER

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-020

CONTINUED FROM PRIOR COLUMN--

THE DISTINGUISHING FEATURE OF THE RELOCATING LOADER IS ITS
ABILITY TO RELOCATE SEPARATE ASSEMBLIES AND TO COMPLETE THE
LINKAGES BETWEEN THEM. THE FUNCTIONS OF THE ABSOLUTE LOADER ARE
ALSO PROVIDED BY THE RELOCATING LOADER. IN ADDITION, THE
RELOCATING LOADER LISTS THE STORAGE LOCATIONS OF THE SEPARATE
ASSEMBLIES WHICH IT LOADS. THIS PROGRAM USES SERUP INTERFACE
RATHER THAN READ ERROR RECOVERY ROUTINES.
MINIMUM REQUIREMENTS - STANDARD S/360 INSTRUCTION SET...8K
MAIN STORAGE...2540 OR 1442 CARD READ PUNCH OR 2400 SERIES TAPE
UNIT OR 2501 CARD READER AND THE 2520 MODEL B1 CARD READ PUNCH.
OPTIONAL I/O DEVICES - 1403 OR 1443 PRINTER OR 1052 PRINTER
KEYBOARD.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM MATERIAL LIST...
SAMPLE PROBLEM OPERATING INSTRUCTIONS...PROGRAM SUPPORT
MANUAL...OPERATING GUIDE...SPECIAL INFORMATION ATTACHMENT...
MACHINE READABLE - SAMPLE PROBLEM SYMBOLIC DECK...RELOCATING
LOADER NON-RELOCATABLE ASSEMBLED DECK /LOW SELF-LOADING/.

360P-UT-048 UNIVERSAL CHARACTER SET UTILITY PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-048

THE BPS UNIVERSAL CHARACTER SET UTILITY PROGRAM IS PROVIDED
TO LOAD THE SPECIAL 1403/2821 READ/WRITE STORAGE. STORAGE
IS LOADED WITH THE PROPER ARRANGEMENT OF 240 SELECTED EXTENDED
BINARY CODE DECIMAL INTERCHANGE CODES TO CAUSE THE PROPER
SELECTION OF GRAPHICS TO BE PRINTED.
AFTER LOADING READ/WRITE STORAGE, THE PROGRAM - PRINTS A
UNIQUE MESSAGE TO IDENTIFY ALL ARRANGEMENTS OTHER THAN
SPECIAL CUSTOM-DESIGNED OR 1400 SERIES ARRANGEMENTS... PRINTS
THE TRAIN OR CHAIN IMAGE, AND... PRINTS ANY CUSTOMER
IDENTIFICATION MESSAGE PROVIDED BY AN OPTION CARD.
THIS PROGRAM WILL HANDLE THE LOADING OF ANY NUMBER OF UCS
PRINTERS.
MINIMUM SYSTEM REQUIREMENTS- AN 8K SYSTEM/360 WITH A 2520,
2540, 1442, OR 2501 CARD READER... A 1403 PRINTER MODEL 2, 3,
OR N1... AND UNIVERSAL CHARACTER SET SPECIAL FEATURE.
OPTIONAL MATERIAL REQUESTED MUST BE ITEMIZED ON THE ORDER CARD.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM WRITE-UP...REFERENCE MANUAL...
OPERATING GUIDE...
MACHINE READABLE - NON-RELOCATABLE ASSEMBLED DECK...UTILITY
PROGRAM LOADER.

OPTIONAL PROGRAM MATERIAL - UTILITY SYMBOLIC DECK.

360P-UT-050 CARD TO PRINTER AND/OR PUNCH

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-050

TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO A PRINTER
AND/OR PUNCH.

CARD TO PRINTER
THE CARD-TO-PRINTER FUNCTION PRODUCES PRINTED OUTPUT IN TWO
FORMATS-

- DISPLAY - TRANSFERS THE CONTENTS OF A CARD FILE TO A
PRINTER WITH EACH RECORD BEING PLACED ON ONE PRINT LINE.
THE FIELD-SELECT OPTION CANNOT BE PERFORMED WITH DISPLAY.
IN THIS FORMAT THE FIRST 20 POSITIONS OF THE PRINT LINE
ARE RESERVED FOR INFORMATION DESCRIBING THE FILE.
 - LIST - INPUT RECORDS ARE TRANSFERRED TO THE PRINTER WITH
EACH RECORD BEING FULLY PRINTED. THE FIELD SELECT
OPTION MAY BE USED. IN THIS FORMAT THE ENTIRE PRINT LINE
IS AVAILABLE TO THE USER.
- SEQUENCE CHECKING CAN BE PERFORMED ON CARD INPUT.

CARD TO PUNCH
THE CARD-TO-PUNCH FUNCTION ACCEPTS INPUT RECORDS PUNCHED
IN EITHER EBCDIC OR BINARY. OUTPUT RECORDS MAY ALSO BE
IN EITHER EBCDIC OR BINARY. THE RECORDS MAY BE COPIED OR
FIELD-SELECTED. INPUT CARDS CANNOT BE SEQUENCED-CHECKED.

CARD TO PRINTER AND PUNCH
THE CARD-TO-PRINTER AND PUNCH FUNCTION ALLOWS EBCDIC INPUT
AND OUTPUT RECORDS. PRINTED RECORDS ARE IN THE LIST FORMAT.
INPUT CARDS CANNOT BE SEQUENCED-CHECKED.

- THE FEATURES ARE-
- JOB DESCRIPTION MESSAGES MAY BE PRINTED OR SUPPRESSED
USING UPSI JOB-CONTROL CARD OPTION.
 - THE 1052 IS ASSIGNED THROUGH SYSLOG.
 - PUNCH-CHECK ERROR RECOVERY FOR 2540 CARD READ PUNCH FOR
THE CARD TO PRINTER AND/OR PUNCH AND TAPE TO CARD PROGRAMS.
 - STACKER CONTROL FOR THE CARD TO PRINTER AND/OR PUNCH PROGRAM.
 - FIELD SELECTION INSTRUCTIONS ARE GENERATED INTO UPPER
STORAGE TO ENSURE FASTEST POSSIBLE MANIPULATION OF DATA.
 - I/O AREA ASSIGNMENTS ARE COMPUTED BASED ON AVAILABLE
STORAGE SPACE AND SIZE OF INPUT AND OUTPUT BLOCKS TO
ALLOW MAXIMUM ADVANTAGE TO BE TAKEN OF DEVICE AND PROCESS
OVERLAP FOR A GIVEN BLOCK SIZE.
 - CONTROL CARDS NEED NOT BE PREPARED IF THE ASSUMED PARAMETERS
OF THE PROGRAM MEET JOB REQUIREMENTS. /FOR EXAMPLE, THE
TAPE TO PRINTER PROGRAM IS PRESET TO DATA DISPLAY MODE
FOR UP TO A 1000 BYTE BLOCK WITH SINGLE SPACING. THESE
ASSUMED PARAMETERS CAN BE ALTERED BY THE USER TO SUIT
ANY PERMANENT SCHEME HE EMPLOYS IN HIS INSTALLATION./
 - 7- AND/OR 9-TRACK TAPE DRIVES MAY BE USED.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
OR 2501 CARD READER... OR 2520 CARD READ PUNCH... OR 2540
CARD READ PUNCH.
- FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR
1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH... 2400
SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/...
- THE 2520 FULL MODELS MUST HAVE ENGINEERING CHANGES 811840
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

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BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
MANUAL C24-5026... OPERATING GUIDE C24-5027.
MACHINE READABLE - ASSEMBLED DECK IN OBJECT FORM ON A
7-TRACK OR 9-TRACK DTR WHICH WILL BE SUPPLIED,
THE DECK MAY ALSO BE OBTAINED IN CARD FORM.

DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK TAPES ARE
REQUESTED. THE 9-TRACK TAPE WILL BE SUPPLIED IF 7-TRACK IS
NOT SPECIFIED ON THE REQUEST CARD.

THE PROGRAM WILL BE MAINTAINED IN THE FORM ORIGINALLY REQUESTED.

360P-UT-051 CARD TO TAPE
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-051

THIS PROGRAM TRANSFERS THE CONTENTS OF A CARD FILE FROM
CARD TO TAPE. THE CARDS MAY BE PUNCHED IN EITHER EBCDIC OR
BINARY. THE INPUT RECORDS MUST BE FIXED-LENGTH UNBLOCKED,
AND EACH LOGICAL RECORD MUST FIT ON ONE CARD. THE MAXIMUM
SIZE RECORD IS 80 BYTES FOR EXTENDED BCD AND 160 BYTES FOR
BINARY.

THESE FILES MAY BE COPIED, REBLOCKED, FIELD-SELECTED, OR
REBLOCKED AND FIELD-SELECTED. AN OPTION IS AVAILABLE FOR
SPECIFYING THE NUMBER OF LOGICAL RECORDS TO BE BYPASSED
BEFORE PROCESSING STARTS.

THE FEATURES ARE-

- JOB DESCRIPTION MESSAGES MAY BE PRINTED OR SUPPRESSED
USING UPSI JOB-CONTROL CARD OPTION.
- THE 1052 IS ASSIGNED THROUGH SYSLOG.
- USER FILE LABEL ROUTINE COMMUNICATION AND LINKAGE IS
PERFORMED THROUGH GENERAL REGISTERS.
- ABILITY TO LOG A FILE LABEL WHEN LABEL DISCREPANCIES
OCCUR.
- WRITING OF INITIAL TAPE MARK ON AN UNLABELED OUTPUT FILE
MAY BE PREVENTED USING UPSI JOB-CONTROL CARD OPTION.
- FIELD SELECTION INSTRUCTIONS ARE GENERATED INTO UPPER
STORAGE TO ENSURE FASTEST POSSIBLE MANIPULATION OF DATA.
- I/O AREA ASSIGNMENTS ARE COMPUTED BASED ON AVAILABLE
STORAGE SPACE AND SIZE OF INPUT AND OUTPUT BLOCKS TO
ALLOW MAXIMUM ADVANTAGE TO BE TAKEN OF DEVICE AND PROCESS
OVERLAP FOR A GIVEN BLOCK SIZE.
- CONTROL CARDS NEED NOT BE PREPARED IF THE ASSUMED PARAMETERS
OF THE PROGRAM MEET JOB REQUIREMENTS.
- 7- AND/OR 9-TRACK TAPE DRIVES MAY BE USED.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540
CARD READ PUNCH.

- FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
PRINTER /CONTINUOUS FORMS ONLY... OR 1443 PRINTER... OR
1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400
SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.
- *THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
MANUAL C24-5026... OPERATING GUIDE C24-5027.
MACHINE READABLE - ASSEMBLED DECK IN OBJECT FORM ON A
7-TRACK OR 9-TRACK DTR WHICH WILL BE SUPPLIED.

DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK TAPES ARE
REQUESTED. THE 9-TRACK TAPE WILL BE SUPPLIED IF 7-TRACK IS
NOT SPECIFIED ON THE REQUEST CARD.

MODIFICATIONS WILL BE DISTRIBUTED ON 9-TRACK OR 7-TRACK DTR.

360P-UT-052 TAPE TO PRINTER
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-052

THIS PROGRAM CAN DISPLAY A TAPE FILE IN TWO FORMATS- DATA
DISPLAY AND DATA LIST.
DATA DISPLAY PROVIDES A BYTE-FOR-BYTE REPRESENTATION OF THE
DATA FILE. THIS FORMAT CAN HANDLE FIXED, VARIABLE, AND
UNDEFINED RECORDS.
DATA LIST PROVIDES A SIMPLE EDITED REPRESENTATION OF THE FILE.
INPUT RECORDS FOR THIS FORMAT MUST BE FIXED OR VARIABLE
LENGTH, AND THE FIELD-SELECT OPTION MAY BE USED. AN OPTION
IS AVAILABLE FOR SPECIFYING THE NUMBER OF LOGICAL RECORDS
TO BE BYPASSED BEFORE PRINTING STARTS.

THE FEATURES ARE-

- JOB DESCRIPTION MESSAGES MAY BE PRINTED OR SUPPRESSED
USING UPSI JOB-CONTROL CARD OPTION.
- THE 1052 IS ASSIGNED THROUGH SYSLOG. USER FILE LABEL
ROUTINE COMMUNICATION AND LINKAGE IS NOW PERFORMED
THROUGH GENERAL REGISTERS.
- ABILITY TO LOG A FILE LABEL WHEN LABEL DISCREPANCIES OCCUR.
- FIRST CHARACTER FORMS CONTROL.
- FIELD SELECTION CAPABILITIES FOR VARIABLE LENGTH RECORDS.
- SUPPORT FOR MULTI-FILE REELS ON LABELED AND UNLABELED
INPUT TAPES.
- FIELD SELECTION INSTRUCTIONS ARE GENERATED INTO UPPER
STORAGE TO ENSURE FASTEST POSSIBLE MANIPULATION OF DATA.
- I/O AREA ASSIGNMENTS ARE COMPUTED BASED ON AVAILABLE
STORAGE SPACE AND SIZE OF INPUT AND OUTPUT BLOCKS TO
ALLOW MAXIMUM ADVANTAGE TO BE TAKEN OF DEVICE AND PROCESS
OVERLAP FOR A GIVEN BLOCK SIZE.
- CONTROL CARDS NEED NOT BE PREPARED IF THE ASSUMED
PARAMETERS OF THE PROGRAM MEET JOB REQUIREMENTS.
/FOR EXAMPLE, THE PROGRAM IS PRESET TO DATA DISPLAY MODE
FOR UP TO A 1000 BYTE BLOCK WITH SINGLE SPACING. THESE
ASSUMED PARAMETERS CAN BE ALTERED BY THE USER TO SUIT
ANY PERMANENT SCHEME HE EMPLOYS IN HIS INSTALLATION/.
- 7- AND/OR 9-TRACK TAPE DRIVES MAY BE USED.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540
CARD READ PUNCH.

- FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404

CONTINUED FROM PRIOR COLUMN--

PRINTER /CONTINUOUS FORMS ONLY... OR 1443 PRINTER... OR
1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400
SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
MANUAL C24-5026... OPERATING GUIDE C24-5027.
MACHINE READABLE - ASSEMBLED DECK IN OBJECT FORM ON A
7-TRACK OR 9-TRACK DTR WHICH WILL BE SUPPLIED.

DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK TAPES ARE
REQUESTED. THE 9-TRACK TAPE WILL BE SUPPLIED IF 7-TRACK IS
NOT SPECIFIED ON THE REQUEST CARD.

MODIFICATIONS WILL BE DISTRIBUTED ON 9-TRACK OR 7-TRACK DTR.

360P-UT-053 TAPE TO CARD
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-053

THIS PROGRAM TRANSFERS THE CONTENTS OF A TAPE FILE TO A
CARD FILE. THE OUTPUT FILE MAY BE IN EITHER EBCDIC OR BINARY.
EACH LOGICAL OUTPUT RECORD MUST FIT INTO ONE CARD /80 BYTES
FOR EXTENDED BCD OR 160 BYTES FOR BINARY/. UNLESS ONLY A
PORTION OF THE INPUT RECORD IS TRANSFERRED THROUGH THE
FIELD-SELECT OR REBLOCK-AND-FIELD-SELECT OPTION, THE INPUT
RECORD SIZE WILL BE RESTRICTED TO 80 OR 160. INPUT RECORDS
TO THE PROGRAM MUST BE FIXED LENGTH.
THESE FILES MAY BE COPIED, REBLOCKED, FIELD-SELECTED, OR
REBLOCKED AND FIELD-SELECTED. BLOCKED INPUT RECORDS MUST BE
REBLOCKED. AN OPTION IS AVAILABLE FOR SPECIFYING THE NUMBER
OF LOGICAL RECORDS TO BE BYPASSED BEFORE PUNCHING STARTS.

THE FEATURES ARE-

- JOB DESCRIPTION MESSAGES MAY BE PRINTED OR SUPPRESSED
USING UPSI JOB-CONTROL CARD OPTION.
- THE 1052 IS ASSIGNED THROUGH SYSLOG.
- USER FILE LABEL ROUTINE COMMUNICATION AND LINKAGE IS
PERFORMED THROUGH GENERAL REGISTERS.
- ABILITY TO LOG A FILE LABEL WHEN LABEL DISCREPANCIES OCCUR.
- PUNCH-CHECK ERROR RECOVERY FOR 2540 CARD READ PUNCH.
- FIRST CHARACTER STACKER SELECT.
- SUPPORT FOR MULTI-FILE REELS ON LABELED AND UNLABELED
INPUT TAPES.
- FIELD SELECTION INSTRUCTIONS ARE GENERATED INTO UPPER
STORAGE TO ENSURE FASTEST POSSIBLE MANIPULATION OF DATA.
- I/O AREA ASSIGNMENTS ARE COMPUTED BASED ON AVAILABLE
STORAGE SPACE AND SIZE OF INPUT AND OUTPUT BLOCKS TO ALLOW
MAXIMUM ADVANTAGE TO BE TAKEN OF DEVICE AND PROCESS
OVERLAP FOR A GIVEN BLOCK SIZE.
- CONTROL CARDS NEED NOT BE PREPARED IF THE ASSUMED PARAMETERS
OF THE PROGRAM MEET JOB REQUIREMENTS.
- 7- AND/OR 9-TRACK TAPE DRIVES MAY BE USED.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH...
OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540
CARD READ PUNCH.

- FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE
SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404
PRINTER /CONTINUOUS FORMS ONLY... OR 1443 PRINTER... OR
1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400
SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.
- *THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839
/ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS
MANUAL C24-5026... OPERATING GUIDE C24-5027.
MACHINE READABLE - ASSEMBLED DECK IN OBJECT FORM ON A
7-TRACK OR 9-TRACK DTR WHICH WILL BE SUPPLIED.
THE DECK MAY ALSO BE OBTAINED IN CARD FORM.

DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK TAPES ARE
REQUESTED. THE 9-TRACK TAPE WILL BE SUPPLIED IF 7-TRACK IS
NOT SPECIFIED ON THE REQUEST CARD.
THE PROGRAM WILL BE MAINTAINED IN TAPE FORM ONLY, IF THE
PROGRAM IS REQUESTED IN CARD FORM THE USER MUST SPECIFY WHETHER
MAINTENANCE IS REQUIRED ON 9- OR 7-TRACK DTR.

360P-UT-054 TAPE TO TAPE
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-054

THIS PROGRAM TRANSFERS A FILE FROM ONE OR MORE TAPE REELS
TO ONE OR MORE OTHER REELS. THE FILES MAY BE COPIED, REBLOCKED,
FIELD-SELECTED, OR REBLOCKED AND FIELD-SELECTED. IF THE
REBLOCK OR FIELD-SELECT OPTIONS ARE USED, THE INPUT RECORDS MUST
BE FIXED OR VARIABLE LENGTH. AN OPTION IS AVAILABLE FOR
SPECIFYING THE NUMBER OF LOGICAL RECORDS TO BE BYPASSED
BEFORE THE COPY FUNCTION IS INITIATED.

THE FEATURES ARE-

- JOB DESCRIPTION MESSAGES FOR ALL PROGRAMS MAY BE PRINTED
OR SUPPRESSED USING UPSI JOB-CONTROL CARD OPTION.
- THE 1052 IS ASSIGNED THROUGH SYSLOG.
- USER FILE LABEL ROUTINE COMMUNICATION AND LINKAGE IS
PERFORMED THROUGH GENERAL REGISTERS.
- ABILITY TO LOG A FILE LABEL WHEN LABEL DISCREPANCIES OCCUR.
- WRITING OF INITIAL TAPE MARK ON AN UNLABELED OUTPUT FILE
MAY BE PREVENTED USING UPSI JOB-CONTROL CARD OPTION.
- FIELD SELECTION CAPABILITIES FOR VARIABLE LENGTH RECORDS.
- BLOCKING AND DEBLOCKING OF VARIABLE LENGTH RECORDS.
- SUPPORT FOR MULTI-FILE REELS ON LABELED AND UNLABELED
INPUT TAPES.
- FIELD SELECTION INSTRUCTIONS ARE GENERATED INTO UPPER
STORAGE TO ENSURE FASTEST POSSIBLE MANIPULATION OF DATA.
- I/O AREA ASSIGNMENTS ARE COMPUTED BASED ON AVAILABLE
STORAGE SPACE AND SIZE OF INPUT AND OUTPUT BLOCKS TO ALLOW
MAXIMUM ADVANTAGE TO BE TAKEN OF DEVICE AND PROCESS
OVERLAP FOR A GIVEN BLOCK SIZE.
- CONTROL CARDS NEED NOT BE PREPARED IF THE ASSUMED PARAMETERS
OF THE PROGRAM MEET JOB REQUIREMENTS.
- 7- AND/OR 9-TRACK TAPE DRIVES MAY BE USED.

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MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404 PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR 1052 PRINTER KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

BASIC PROGRAM MATERIAL -
 DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-5026... OPERATING GUIDE C24-5027.
 MACHINE READABLE - ASSEMBLED DECK IN OBJECT FORM ON A 7-TRACK OR 9-TRACK DTR WHICH WILL BE SUPPLIED.

DATA CONVERSION FEATURE IS REQUIRED IF 7-TRACK TAPES ARE REQUESTED. THE 9-TRACK TAPE WILL BE SUPPLIED IF 7-TRACK IS NOT SPECIFIED ON THE REQUEST CARD.

MODIFICATIONS WILL BE DISTRIBUTED ON 9-TRACK OR 7-TRACK DTR.

360P-UT-055 BASIC PROGRAMMING SUPPORT MULTIPLE UTILITY PROGRAMS

ORDER THROUGH LOCAL IBM BRANCH OFFICE

SPECIFY FILE NUMBER 360P-UT-055

ALLOWS ONE TO THREE UTILITY OPERATIONS TO BE PERFORMED SIMULTANEOUSLY. THE OPERATIONS WHICH CAN BE PERFORMED ARE CARD-TO-TAPE, TAPE-TO-PRINTER, AND TAPE-TO-CARD. ANY COMBINATION OF UTILITY OPERATIONS MAY BE INITIALLY SELECTED /E.G. TWO TAPE-TO-PRINTER AND ONE CARD-TO-TAPE OPERATION/.

- 1/ CARD-TO-TAPE
 TRANSFERS BINARY OR EBCDIC DATA FROM CARDS TO MAGNETIC TAPE.
- 2/ TAPE-TO-PRINTER
 TRANSFERS DATA FROM MAGNETIC TAPE TO PRINTER. THE DATA MAY BE LISTED /ONE LOGICAL RECORD PER LINE/. THE OPERATION WILL ALSO RECOGNIZE THE FIRST CHARACTER OF A RECORD AS A FORMS CONTROL CHARACTER ON FORMATTED TAPES.
- 3/ TAPE-TO-CARD
 TRANSFERS DATA FROM MAGNETIC TAPE TO CARDS. DATA CAN BE PUNCHED IN EBCDIC OR BINARY.

THE MULTIPLE UTILITY PROGRAM ASSIGNS I/O AREAS BASED ON THE SIZE OF INPUT AND OUTPUT BLOCKS. THIS FEATURE ALLOWS MAXIMUM PROGRAM EFFICIENCY THROUGH DEVICE AND PROCESSING OVERLAP. THE ASSIGNMENT IS DYNAMIC IN THE MULTIPLE UTILITY ENVIRONMENT, THUS GIVING MAXIMUM EFFICIENCY AT ALL TIMES.

THE MULTIPLE UTILITY PROGRAM WILL PROCESS 7 AND/OR 9-TRACK TAPES.

MINIMUM SYSTEM REQUIREMENTS - 8K MAIN STORAGE... 1442 OR 2540 OR 2501 CARD-READ-PUNCH OR 2520 MODEL B1 CARD-READ-PUNCH OR 2520 MODELS B2 AND B3 CARD PUNCH FOR PROG., LOADING AND CONTROL CARDS... ONE OR MORE 1443- OR 1404 /CONTINUOUS FORMS ONLY/ PRINTERS... SYSLOG DEVICE /TYPEWRITER OR PRINTER, 1052 PRINTER KEYBOARD IS REQUIRED FOR THE MULTIPLE UTILITY PROGRAM... OPERATES ON SYSTEMS WITH MULTIPLEXOR ONLY, OR WITH MULTIPLEXOR CHANNEL AND SELECTOR CHANNEL. 2400 SERIES MAGNETIC TAPE UNITS, MODELS 4, 5 AND 6 MAY ALSO BE USED AS INPUT AND/OR OUTPUT DEVICES.

BASIC PROGRAM MATERIAL -
 DOCUMENTATION - PROGRAM WRITE-UP...PROGRAM MATERIAL LIST... UTILITY PROGRAMS MANUAL...OPERATING GUIDE.
 MACHINE READABLE - OBJECT DECK IN CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL PROGRAM MATERIAL - SYMBOLIC DECK ASSEMBLING INSTRUCTIONS... SOURCE DECKS AVAILABLE ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD. WHEN ORDERING THIS PROGRAM ON TAPE, EITHER 9-TRACK OR 7-TRACK MUST BE SPECIFIED ON THE PROGRAM REQUEST CARD. IF NOT SPECIFIED 9-TRACK WILL BE SUPPLIED. DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-056 BPS STORAGE PRINT PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE

SPECIFY FILE NUMBER 360P-UT-056

A PROGRAM THAT PRODUCES A PRINTOUT OF STORAGE AND REGISTERS TO AID THE USER IN LOCATING THE REASON/S/ FOR A PROGRAM MALFUNCTION. MINIMUM SYSTEM REQUIREMENTS- 8K OF MAIN STORAGE... MINIMUM SYSTEM REQUIREMENTS- 8K OF MAIN STORAGE... 2520-B1 OR 2540 CARD READER PUNCH FOR PROGRAM LOADING AND CONTROL CARDS... ONE OR MORE 1443, 1403, OR 1404 /CONTINUOUS FORMS ONLY/ PRINTERS... 2501 CARD READER MAY ALSO BE USED.

BASIC PROGRAM MATERIAL -
 DOCUMENTATION - PROGRAM MATERIAL LIST... UTILITY PROGRAMS MANUAL C24-5026... OPERATING GUIDE C24-5027.
 MACHINE READABLE - STORAGE PRINT ASSEMBLED DECK.

360P-UT-057 BPS INITIALIZE TAPE PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE

SPECIFY FILE NUMBER 360P-UT-057

IN ORDER TO PERFORM IBM STANDARD LABEL CHECKING ON TAPES, IBM STANDARD VOLUME LABELS MUST BE PRESENT. THIS PROGRAM PLACES VOLUME LABELS ON TAPE. THE INITIALIZE TAPE PROGRAM PREPARES UP TO EIGHT VOLUME LABELS, ONE DUMMY HEADER LABEL /HDR1 FOLLOWED BY BINARY ZERO/S/ AND A TAPE MARK ON ANY NUMBER OF TAPES SUPPLIED. NO LABEL CHECKING IS PERFORMED.

THE USER HAS TWO OPTIONS FOR CREATING THE VOLUME LABELS ON TAPE. 1. A SINGLE CONTROL CARD CAN BE USED TO PROVIDE /FOR EXAMPLE/ THE STARTING VOLUME SERIAL NUMBER, THE OWNER NAME AND ADDRESS CODE, AND THE PROTECTION CODE. THIS INFORMATION WILL BE WRITTEN ON THE FIRST TAPE SUPPLIED. EACH SUCCEEDING TAPE WILL HAVE THE SAME VOLUME LABEL WRITTEN ON IT WITH THE EXCEPTION THAT THE SERIAL NUMBER WILL BE INCREMENTED BY ONE.

2. FROM ONE TO EIGHT VOLUME LABEL TAPE CARDS CAN BE USED AS A SET TO WRITE UNIQUE VOLUME LABEL/S/ ON EACH TAPE INITIALIZED. THIS CARD IS THE EXACT IMAGE OF THE 80 CHARACTER LABEL. THIS OPTION SHOULD BE USED WHEN THE VOLUME SERIAL NUMBER FIELD CONTAINS ANY ALPHANUMERIC VALUES.

FOLLOWING THE VOLUME LABEL/S/, A DUMMY HEADER LABEL IS WRITTEN, FOLLOWED BY A TAPE MARK. THIS COMPLETES INITIALIZATION. THE

CONTINUED FROM PRIOR COLUMN--

TAPES MAY THEN BE EITHER REQUOND OR REWOUND AND UNLOADED AS THE USER SPECIFIED.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH.
 - FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404 PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR 1052 PRINTER-KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839 /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
 DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-5026... OPERATING GUIDE, C24-5027.
 MACHINE READABLE - ASSEMBLED DECK MAY BE OBTAINED ON 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ OR 9-TRACK DTR.

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

MODIFICATIONS WILL BE DISTRIBUTED ON 9-TRACK OR 7-TRACK DTR.

360P-UT-061 COPY DISK TO TAPE AND RESTORE TAPE TO DISK

ORDER THROUGH LOCAL IBM BRANCH OFFICE

SPECIFY FILE NUMBER 360P-UT-061

THIS PROGRAM CONSISTS OF TWO SEPARATE DECKS, ONE TO COPY A DISK ONTO ONE OR MORE TAPES., AND THE OTHER TO RESTORE A DISK FROM THE PREVIOUS TAPES. THE PROGRAM WILL COPY AND RESTORE A DISK IN ONE OF TWO WAYS-
 - COPY AND RESTORE VOLUME - WITH THIS OPTION ONE ENTIRE DISK PACK IS COPIED AND RESTORED, INCLUDING RO, IPL RECORDS, DATA RECORDS, VOLUME LABEL/S/, AND THE VTDC.
 - COPY AND RESTORE FILE - WITH THIS OPTION, ONE DATA FILE MAY BE COPIED AND RESTORED. THE FILE MAY CONSIST OF MORE THAN ONE VOLUME. RO/S ARE COPIED FOR THE AREA OCCUPIED BY THE FILE, AND IPL RECORDS MAY BE OPTIONALLY COPIED.

THE PROGRAM ASSIGNS I/O AREAS BASED ON THE SIZE OF CORE STORAGE. I/O CORRELATION IS PERFORMED IF CORE STORAGE IS EQUAL TO OR GREATER THAN 16K AND CHANNEL ASSIGNMENT PERMITS. THE RESTORED RECORDS OCCUPY AREAS OF THE 2311 IDENTICAL TO THE ORIGINAL FILE.

PERFORMANCE- THE PERFORMANCE FIGURES BELOW ARE BASED ON THE FOLLOWING MACHINE CONFIGURATIONS-

- 8K SYSTEM/360 MODEL 90.
- 2540 CARD READ/PUNCH.
- FOR 360P-UT-061, A PRINTER /AS DESCRIBED IN MINIMUM SYSTEM REQUIREMENTS/, ONE 2311 DISK DRIVE AND ONE 2400 SERIES 9-TRACK MAGNETIC TAPE DRIVE /90KC/, BOTH ATTACHED TO THE SELECTOR CHANNEL.

THE FIGURES ARE ALSO BASED UPON PROCESSING A 1316 DISK PACK ON WHICH EACH TRACK CONTAINS 9 DATA RECORDS OF 300 BYTES EACH.
 - COPY DISK TO TAPE REQUIRES APPROXIMATELY 4 MINUTES IF NO ERRORS OCCUR.
 - RESTORE TAPE TO DISK REQUIRES APPROXIMATELY 5.5 MINUTES IF NO ERRORS OCCUR.

USAGE CONSIDERATIONS-

- NO RECORD ID /COUNT FIELD/ MAY BE REPEATED ON A TRACK.
- RO MUST BE WRITTEN ACCORDING TO IBM STANDARDS.
- /K SUB L EQUALS O, D SUB L EQUALS B/.
- NO ID /COUNT FIELD/ OTHER THAN RO MAY CONTAIN A RECORD NUMBER INDICATION OF ZERO.
- A FILE COPIED TO TAPE ON A MACHINE SIZE OF 16K OR GREATER CANNOT BE RESTORED TO DISK ON A MACHINE SMALLER THAN 16K.
- 1316 DISK PACKS MUST HAVE BEEN INITIALIZED WITH STANDARD HOME ADDRESSES, RO/S AND A VOLUME LABEL, ACCORDING TO IBM STANDARDS. THE DISK PACK MAY HAVE BEEN USED BETWEEN INITIALIZATION AND RESTORING A FILE FROM TAPE.

MINIMUM SYSTEM REQUIREMENTS-

- 8,192 BYTES OF MAIN STORAGE...
- A CARD READER /1442, 2501, 2520 MODEL B1, OR 2540/ FOR PROGRAM LOADING AND CONTROL CARDS...
- AT LEAST ONE 2311 AND ONE 2400 SERIES TAPE DRIVE /IF 7-TRACK TAPE THE DATA CONVERSION FEATURE MUST BE PRESENT/...
- AN IBM 1403, 1445 OR 1404 /CONTINUOUS FORMS ONLY/ PRINTER OR AN IBM 1052 CONSOLE PRINTER FOR PROGRAM LOGGING AND DIAGNOSTIC MESSAGES.

THIS PROGRAM HAS THE SAME ENGINEERING CHANGE LEVEL REQUIREMENTS AS IBM SYSTEM/360 DISK OPERATING SYSTEM.

BASIC PROGRAM MATERIAL -
 DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS. C24-3363... OPERATING GUIDE, C24-3392.

MACHINE READABLE - ONE 9-TRACK OR ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR CONTAINING THE ASSEMBLED DECKS.

NOTE- WHEN ORDERING THE REQUESTOR MUST SPECIFY WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK DTR WILL BE FORWARDED. DTRS WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-062 BPS COPY DISK TO CARD AND RESTORE CARD TO DISK

ORDER THROUGH LOCAL IBM BRANCH OFFICE

SPECIFY FILE NUMBER 360P-UT-062

BPS/360 COPY DISK TO CARD AND RESTORE CARD TO DISK CONSISTS OF TWO DECKS, ONE TO COPY A DISK ONTO CARDS., AND THE OTHER TO RESTORE A DISK FROM THOSE CARDS. THE PROGRAM COPIES AND RESTORES A DISK IN ONE OF TWO WAYS-
 - COPY AND RESTORE VOLUME - WITH THIS OPTION ONE ENTIRE DISK PACK WILL BE COPIED AND RESTORED, INCLUDING RO, IPL RECORDS, DATA RECORDS, VOLUME LABEL/S/, AND THE VTDC.
 - COPY AND RESTORE FILE - WITH THIS OPTION, ONE DATA FILE MAY BE COPIED AND RESTORED. THE FILE MAY CONSIST OF MORE THAN ONE VOLUME. RO/S ARE COPIED FOR THE AREA OCCUPIED BY THE FILE, AND IPL RECORDS MAY BE OPTIONALLY COPIED.

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THE PROGRAM WILL ASSIGN I/O AREAS BASED ON THE SIZE OF CORE STORAGE. I/O OVERLAP WILL BE PERFORMED IF THE CORE STORAGE IS EQUAL TO OR GREATER THAN 16K AND CHANNEL ASSIGNMENT PERMITS. THE RESTORED RECORDS WILL OCCUPY AREAS OF THE 2311 IDENTICAL TO THE ORIGINAL FILE. AN OPTION IS AVAILABLE IN BOTH THE COPY DECK AND THE RESTORE DECK TO RESTART AT THE BEGINNING OF ANY TRACK THAT HAS BEEN PROCESSED, OR, IN THE CASE OF THE CONSECUTIVE OPEN AT THE BEGINNING OF THE PACK, IF THE PROGRAM HAS BEEN TERMINATED PRIOR TO COMPLETION.

THE PERFORMANCE FIGURES CONTAINED IN THIS SECTION ARE BASED ON THE FOLLOWING MACHINE CONFIGURATION -- SYSTEM/360, MODEL 30 WITH 8K OF MAIN STORAGE... A 2540 CARD READ/PUNCH... A PRINTER /AS DESCRIBED IN MINIMUM SYSTEM REQUIREMENTS/... ONE 2311 DISK DRIVE AND ONE 2540 PUNCH. THE PERFORMANCE IS FURTHER BASED UPON PROCESSING A 1316 DISK PACK ON WHICH EACH TRACK CONTAINS NINE DATA RECORDS OF 300 BYTES EACH... COPY DISK TO CARD RUNS AT APPROXIMATELY 300 CPM IF NO ERRORS OCCUR... RESTORE CARD TO DISK RUNS AT APPROXIMATELY 1000 CPM IF NO ERRORS OCCUR.

MINIMUM SYSTEM REQUIREMENTS-- 8,192 BYTES OF MAIN STORAGE... A CARD READER FOR PROGRAM LOADING AND CONTROL CARD READING /1442, 2501, 2520 MODEL 81, OR 2540/... APPROPRIATE INPUT/OUTPUT DEVICES -- AT LEAST ONE 2311 AND ONE PUNCH /2540, 2520, AND 1442/... A 1403, 1443, 1445, OR 1404 /CONTINUOUS FORMS ONLY/ PRINTER OR A 1052 PRINTER KEYBOARD FOR PROGRAM LOGGING AND DIAGNOSTIC MESSAGES. THIS PROGRAM HAS THE SAME ENGINEERING CHANGE LEVEL REQUIREMENTS AS SYSTEM/360 DISK OPERATING SYSTEM.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS, C24-3363... OPERATING GUIDE, C24-3392.
MACHINE READABLE -- THE ASSEMBLED DECKS MAY BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE-- WHEN ORDERING THIS PROGRAM ON DTR THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -- NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-063 BPS CARD TO DISK
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-063

THE CARD-TO-DISK PROGRAM TRANSFERS THE CONTENTS OF A CARD FILE FROM CARDS TO AN AREA OF DISK. THE CARDS MAY BE PUNCHED IN EXTENDED BINARY CODED DECIMAL OR IN BINARY. THE INPUT RECORDS MUST BE FIXED-LENGTH UNBLOCKED, AND EACH LOGICAL RECORD MUST FIT ON ONE CARD. THE MAXIMUM-SIZE INPUT RECORD IS 80 BYTES, OR 160 FOR BINARY. THESE FILES MAY BE SIMPLY COPIED, BLOCK BY BLOCK, OR REORGANIZED BY ALTERING THE NUMBER OF RECORDS IN THE BLOCK /REBLOCKING/, OR REORGANIZED BY DELETING OR RE-POSITIONING THE FIELDS WITHIN THE RECORD /FIELD SELECTING/ AS WELL AS REBLOCKING.

MINIMUM SYSTEM REQUIREMENTS -- 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS-- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH.
- FOR PROGRAM OPERATION-- INPUT/OUTPUT DEVICES REQUIRED BY THE SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES-- 1403 PRINTER... OR 1404 PRINTER /CONTINUOUS FORMS ONLY/... OR 1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE-- 2520 CARD PUNCH*... 2311 DISK STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839 /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3363... OPERATING GUIDE C24-3392.
MACHINE READABLE -- ASSEMBLED DECKS MAY BE OBTAINED IN CARD FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE-- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -- NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-064 BPS DISK TO CARD
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-064

THE DISK-TO-CARD PROGRAM TRANSFERS THE CONTENTS OF A DISK FILE TO A CARD FILE. THE OUTPUT FILE MAY BE PUNCHED IN EITHER EXTENDED BINARY CODED DECIMAL OR BINARY. EACH LOGICAL-OUTPUT RECORD MUST FIT ON ONE CARD /I.E., 80 BYTES FOR EXTENDED BCD OR 160 BYTES FOR BINARY/. UNLESS ONLY A PORTION OF THE INPUT RECORD IS TRANSFERRED THROUGH THE FIELD-SELECT OPTION, THE INPUT-RECORD SIZE MUST BE RESTRICTED TO 80 OR 160. INPUT RECORDS TO THIS PROGRAM MUST BE FIXED LENGTH. FILES IN THIS PROGRAM MAY BE COPIED, REBLOCKED, FIELD SELECTED, OR REBLOCKED AND FIELD SELECTED.

MINIMUM SYSTEM REQUIREMENTS -- 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS-- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH.
- FOR PROGRAM OPERATION -- INPUT/OUTPUT DEVICES REQUIRED BY THE SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES-- 1403 PRINTER... OR 1404 PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR 1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE-- 2520 CARD PUNCH*... 2311 DISK STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839 /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3363... OPERATING GUIDE C24-3392.
MACHINE READABLE -- ASSEMBLED DECKS MAY BE OBTAINED IN CARD FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

CONTINUED FROM PRIOR COLUMN--

NOTE-- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -- NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-065 BPS DISK TO TAPE
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-065

THE DISK-TO-TAPE PROGRAM TRANSFERS A FILE FROM ONE OR MORE DISK UNITS TO ONE OR MORE TAPE UNITS. THESE FILES MAY BE COPIED, REBLOCKED, FIELD SELECTED, OR REBLOCKED AND FIELD SELECTED. IF THE FIELD-SELECT OR REBLOCK OPTIONS ARE TO BE USED, THE INPUT RECORDS MUST BE FIXED-LENGTH. THE DATA PORTION OF THE OUTPUT TAPE IS PRECEDED BY A TAPE MARK.

MINIMUM SYSTEM REQUIREMENTS -- 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS-- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH.
- FOR PROGRAM OPERATION-- INPUT/OUTPUT DEVICES REQUIRED BY THE SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES-- 1403 PRINTER... OR 1404 PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR 1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE-- 2520 CARD PUNCH*... 2311 DISK STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839 /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3363... OPERATING GUIDE C24-3392.
MACHINE READABLE -- ASSEMBLED DECKS MAY BE OBTAINED ON 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ OR 9-TRACK DTR.

NOTE-- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -- NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-066 BPS TAPE TO DISK
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-066

THE TAPE-TO-DISK PROGRAM TRANSFERS A FILE FROM ONE OR MORE TAPE REELS TO A MAXIMUM OF FIVE DISK UNITS. THESE FILES MAY BE COPIED, FIELD SELECTED, OR REBLOCKED AND FIELD SELECTED. IF THE FIELD-SELECT OR REBLOCK OPTIONS ARE TO BE USED, THE INPUT RECORDS MUST BE FIXED LENGTH.

MINIMUM SYSTEM REQUIREMENTS -- 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS-- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH.
- FOR PROGRAM OPERATION-- INPUT/OUTPUT DEVICES REQUIRED BY THE SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES-- 1403 PRINTER... OR 1404 PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR 1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE-- 2520 CARD PUNCH*... 2311 DISK STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839 /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3363... OPERATING GUIDE C24-3392.
MACHINE READABLE -- ASSEMBLED DECK MAY BE OBTAINED ON 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ OR 9-TRACK DTR.

WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -- NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-067 BPS DISK TO DISK
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-067

THE DISK-TO-DISK PROGRAM TRANSFERS A FILE BETWEEN DISK UNITS, OR BETWEEN AREAS OF THE SAME UNIT. A MAXIMUM OF SIX DRIVES CAN BE ASSIGNED BY ASSIGNING ONE AS INPUT, ONE AS OUTPUT, AND THE REMAINING AS BOTH INPUT AND OUTPUT. USING THE SAME DEVICE FOR INPUT AND OUTPUT CAN CAUSE A REDUCTION IN PERFORMANCE. FILES CAN BE COPIED, REBLOCKED, FIELD SELECTED, OR REBLOCKED AND FIELD SELECTED. IF THE FIELD-SELECT OR REBLOCK OPTIONS ARE TO BE USED, THE INPUT RECORDS MUST BE FIXED LENGTH.

MINIMUM SYSTEM REQUIREMENTS -- 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS-- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH.
- FOR PROGRAM OPERATION-- INPUT/OUTPUT DEVICES REQUIRED BY THE SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES-- 1403 PRINTER... OR 1404 PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR 1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE-- 2520 CARD PUNCH*... 2311 DISK STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839 /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3363... OPERATING GUIDE C24-3392.
MACHINE READABLE -- ASSEMBLED DECKS MAY BE OBTAINED IN CARD FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE-- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -- NO TAPE SUBMITTAL IS REQUIRED.

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360P-UT-068 BPS CLEAR DISK ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360P-UT-068

THE CLEAR DISK PROGRAM CLEARS ONE OR MORE AREAS OF IBM 2311 DISK STORAGE, AND ESTABLISHES A PRE-FORMATTED TRACK CONTAINING AN INDICATED BASE THROUGHOUT THE AREA CLEARED. FOR EACH TRACK CLEARED, RECORDS ARE FORMATTED TO THE END OF THE TRACK. THE MAXIMUM NUMBER OF RECORDS DEPENDS ON THE SIZE OF THE RECORDS. THE AREA TO BE CLEARED CAN BE AS SMALL AS ONE TRACK OR UP TO A MAXIMUM OF A COMPLETE DISK PACK. AS MANY AS FIVE AREAS CAN BE DESIGNATED TO BE CLEARED WITH ONE RUN OF THIS PROGRAM. WHEN AN AREA OF DISK IS CLEARED, FIXED-LENGTH BLOCKS CONTAINING COUNT, KEY, AND DATA AREAS ARE ESTABLISHED ON THE DISK. THE INFORMATION DEFINING THE KEY AND DATA AREAS IS INDICATED IN THE UTILITY-MODIFIER CARD, OR, IF A UTILITY-MODIFIER CARD IS NOT ENTERED, ASSUMED VALUES ARE MADE. THE KEY AND DATA AREAS DEFINED ARE FILLED WITH A USER-DEFINED CHARACTER. LABEL-CHECKING IS DONE TO DETERMINE IF THE AREA TO BE CLEARED CONTAINS ALL OR PART OF AN UNEXPIRED FILE. EXPIRED LABELS FOR THE AREA TO BE CLEARED ARE DELETED FROM THE VTOC.

MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH.
- FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404 PRINTER /CONTINUOUS FORMS ONLY... OR 1443 PRINTER... OR 1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839 /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3363... OPERATING GUIDE C24-3392.
MACHINE READABLE - ASSEMBLED DECKS MAY BE OBTAINED IN CARD FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-069 BPS INITIALIZE DISK ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360P-UT-069

THE INITIALIZE DISK PROGRAM PREPARES FROM ONE TO FIVE COMPLETE DISK PACKS FOR USE ON IBM 2311 DISK DRIVES. THE PREPARATION OF A PACK CONSISTS OF THE FOLLOWING-
- VTOC LABEL CHECK
- HOME-ADDRESS GENERATION
- SURFACE ANALYSIS AND TRACK DESCRIPTOR /RO/ RECORD GENERATION
- VOLUME-LABEL CREATION
- IPL AND VTOC FORMAT CREATION

VTOC LABEL CHECK- BEFORE A PACK IS INITIALIZED, IT IS CHECKED TO SEE IF ANY LABELS PRESENT IN THE VTOC ARE EXPIRED. IF THE FILE HAS NOT EXPIRED, A MESSAGE IS PRINTED TO THE USER. IF THE USER WISHES TO INITIALIZE THE DISK PACK AFTER RECEIVING THE MESSAGE, HE CAN BYPASS THE LABEL AND CONTINUE TO PROCESS. IF THE USER DOES NOT WISH TO BYPASS THE PACK/S/ WITH UNEXPIRED LABELS, THE PACK OR PACKS ARE DELETED FROM THE JOB.

HOME-ADDRESS GENERATION- FIVE BYTES OF THE SEVEN-BYTE HOME ADDRESS ARE WRITTEN BY THE PROGRAM IN BINARY REPRESENTATION. IF THE HOME-ADDRESS CANNOT BE WRITTEN ON A TRACK, A MESSAGE IS PRINTED TO IDENTIFY EACH HOME-ADDRESS THAT CANNOT BE WRITTEN. IF A HOME-ADDRESS CANNOT BE WRITTEN FOR EVERY TRACK OF A PACK, THAT PACK IS DELETED FROM THE JOB.

SURFACE ANALYSIS AND TRACK DESCRIPTOR /RO/ RECORD GENERATION- SURFACE ANALYSIS IS PERFORMED FIRST ON THE ALTERNATE CYLINDERS /200, 201, AND 202/. WHEN A TRACK ON AN ALTERNATE CYLINDER IS FOUND TO BE DEFECTIVE, THE TRACK IS FLAGGED AS DEFECTIVE AND CANNOT BE ASSIGNED AS AN ALTERNATE TRACK. SURFACE ANALYSIS IS THEN PERFORMED ON ALL REMAINING TRACKS. IF A TRACK IS DETECTED TO HAVE A DEFECTIVE SURFACE AREA UPON WHICH DATA CANNOT BE WRITTEN, AN ALTERNATE TRACK IS ESTABLISHED TO RECORD THE DATA. A MESSAGE IS PRINTED TO NOTIFY THE USER OF DEFECTIVE TRACKS. PROCESSING IS TERMINATED AFTER DETECTION OF THE THIRTY-FIRST DEFECTIVE TRACK /30 ALTERNATE TRACKS/. THE DEFECTIVE TRACKS ARE LOGGED TO PROVIDE A RECORD OF THE CONDITION OF EACH PACK PROCESSED. WHEN ANALYSIS HAS SHOWN THAT A TRACK IS NOT DEFECTIVE, THE TRACK DESCRIPTOR RECORD /RO/ IS WRITTEN. IF THE TRACK-DESCRIPTOR RECORD CANNOT BE WRITTEN ON A TRACK, A MESSAGE IS PRINTED TO IDENTIFY THE ERROR. THE PROGRAM CONTINUES ANALYSIS AND GENERATION TO LOG ANY OTHER DEFECTIVE TRACKS. THE PACK ON WHICH THE ERROR OCCURS IS DELETED FROM THE JOB.

VOLUME-LABEL CREATION- THROUGH THE USE OF A CONTROL CARD UNIQUE TO THIS PROGRAM, A VOLUME LABEL IS CREATED IN THE STANDARD FORMAT /VOL1/ FOR EACH PACK PROCESSED. THE VOLUME LABEL IS WRITTEN ON CYLINDER ZERO, TRACK ZERO, RECORD THREE OF EACH DISK PACK. SEVERAL ADDITIONAL /VOL2-VOL8/ USER VOLUME LABELS CAN BE CREATED, IF DESIRED, AND WILL BE PLACED IN RECORDS FOUR THROUGH TEN.

IPL FORMAT CREATION- THIS PROGRAM FORMATS TWO IPL RECORDS. THESE RECORDS ARE WRITTEN ON CYLINDER ZERO, TRACK ZERO, RECORDS ONE AND TWO. RECORD ONE IS WRITTEN WITH A 24-BYTE DATA FIELD OF BINARY ZEROS. RECORD TWO IS WRITTEN WITH A 144-BYTE DATA FIELD OF BINARY ZEROS.

VTOC FORMAT CREATION- THE INITIALIZE DISK PROGRAM PRE-FORMATS THE VOLUME TABLE OF CONTENTS /VTOC/. THE LOCATION ON THE DISK IN WHICH THE VTOC IS TO BE PLACED IS INDICATED IN A CONTROL CARD. THE STANDARD LOCATION OF THE VTOC IS ON CYLINDER ZERO IMMEDIATELY FOLLOWING THE VOLUME LABEL/S/, AND EXTENDING TO THE END OF THE CYLINDER. HOWEVER, THE VTOC CAN APPEAR ON ANY CYLINDER /INCLUDING ALTERNATE CYLINDERS/, BUT CANNOT EXCEED CYLINDER BOUNDARIES. A VTOC PLACED ANYWHERE OTHER THAN IN THE STANDARD LOCATION CAN BE ANY NUMBER OF TRACKS DESIRED ON THE CYLINDER.

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MINIMUM SYSTEM REQUIREMENTS - 8,192 POSITIONS OF CORE STORAGE.
- FOR PROGRAM LOADING AND CONTROL CARDS- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH.
- FOR PROGRAM OPERATION- INPUT/OUTPUT DEVICES REQUIRED BY THE SPECIFIC PROGRAM.
- FOR LOGGING AND ERROR MESSAGES- 1403 PRINTER... OR 1404 PRINTER /CONTINUOUS FORMS ONLY... OR 1443 PRINTER... OR 1052 PRINTER-KEYBOARD.
- SUPPORTED DEVICES ALSO INCLUDE- 2520 CARD PUNCH*... 2311 DISK STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.
*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839 /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3363... OPERATING GUIDE C24-3392.
MACHINE READABLE - ASSEMBLED DECKS MAY BE OBTAINED IN CARD FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE PROVIDED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-071 BPS COPY DATA CELL TO TAPE AND RESTORE TAPE TO DATA CELL ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360P-UT-071

BPS/360 DASD UTILITY PROGRAM, COPY DATA CELL TO TAPE AND RESTORE TAPE TO DATA CELL CONSISTS OF TWO DECKS; ONE TO COPY A DATA CELL ONTO ONE OR MORE TAPES, AND THE OTHER TO RESTORE A DATA CELL FROM THE TAPES/S/. THE PROGRAM COPIES AND RESTORES A DATA CELL IN ONE OF TWO WAYS-
- COPY AND RESTORE VOLUME - WITH THIS OPTION ONE ENTIRE DATA CELL WILL BE COPIED AND RESTORED, INCLUDING RO, IPL RECORDS, DATA RECORDS, VOLUME LABEL/S/, AND THE VTOC.
- COPY AND RESTORE FILE - WITH THIS OPTION ONE DATA FILE MAY BE COPIED AND RESTORED. THE FILE MAY CONSIST OF MORE THAN ONE VOLUME. RO/S ARE COPIED FOR THE AREA OCCUPIED BY THE FILE, AND IPL RECORDS MAY BE OPTIONALLY COPIED.

THE PROGRAM WILL ASSIGN I/O AREAS BASED ON THE SIZE OF MAIN STORAGE. I/O OVERLAP WILL BE PERFORMED IF THE MAIN STORAGE IS EQUAL TO OR GREATER THAN 16K AND CHANNEL ASSIGNMENT PERMITS. THE RESTORED RECORDS WILL OCCUPY AREAS OF THE 2321 IDENTICAL TO THE ORIGINAL FILE. AN OPTION IS AVAILABLE TO CHECKPOINT AND RESTART DURING PROGRAM EXECUTION. AN ADDITIONAL TAPE DRIVE IS REQUIRED TO SUPPORT THIS OPTION.

THE PERFORMANCE FIGURES CONTAINED IN THIS SECTION ARE BASED ON THE FOLLOWING MACHINE CONFIGURATION -- SYSTEM/360, MODEL 30 WITH 16 OF MAIN STORAGE... ONE 2400 SERIES MOD 3 TAPE DRIVE... A PRINTER /AS DESCRIBED IN THE SYSTEM REQUIREMENTS/... ONE 2321 DATA CELL DRIVE. THE PERFORMANCE IS FURTHER BASED UPON PROCESSING A COMPLETE 3021 DATA CELL ON WHICH EACH TRACK CONTAINS FIVE DATA RECORDS OF 300 BYTES EACH... COPY DATA CELL TO TAPE TAKES APPROXIMATELY 40 MINUTES IF NO ERRORS OCCUR... RESTORE TAPE TO DATA CELL TAKES APPROXIMATELY 80 MINUTES IF NO ERRORS OCCUR.

MINIMUM SYSTEM REQUIREMENTS- 16,384 BYTES OF MAIN STORAGE... A CARD READER FOR PROGRAM LOADING AND CONTROL CARD READING, /1442, 2501, 2520, AND 2540/... APPROPRIATE INPUT/OUTPUT DEVICES -- ONE 2321 AND ONE 2400 SERIES TAPE DRIVE /IF 7-TRACK TAPE THE DATA CONVERSION FEATURE MUST BE PRESENT/... A 1403, 1443, 1445, OR 1404 /CONTINUOUS FORM ONLY/ PRINTER, OR 1404 WITH KEYBOARD FOR PROGRAM LOGGING AND DIAGNOSTIC MESSAGES. THIS PROGRAM HAS THE SAME ENGINEERING CHANGE LEVEL REQUIREMENTS AS SYSTEM/360 DISK OPERATING SYSTEM.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... SPECIFICATIONS, C24-3363... OPERATING GUIDE, C24-3392.
MACHINE READABLE - THE ASSEMBLED DECKS MAY BE OBTAINED ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR

NOTE- WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-072 COPY DISK TO DISK ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360P-UT-072

THIS PROGRAM CONSISTS OF ONE DECK THAT COPIES ONE DISK TO ANOTHER. IT PERFORMS THE IDENTICAL FUNCTIONS OF 360P-UT-061, WITH THE EXCEPTION THAT THERE IS NO INTERMEDIATE STORAGE MEDIUM USED. TWO DISK DRIVES ARE REQUIRED. FILES MAY NOT BE COPIED FROM ONE AREA TO ANOTHER ON THE SAME PACK.

PERFORMANCE- THE PERFORMANCE FIGURES BELOW ARE BASED ON THE FOLLOWING MACHINE CONFIGURATIONS-
- BK SYSTEM/360 MODEL 30.
- 2540 CARD READ/PUNCH.
- FOR 360P-UT-072, TWO 2311 DISK DRIVES, BOTH ATTACHED TO THE SELECTOR CHANNEL.

THE FIGURES ARE ALSO BASED UPON PROCESSING A 1316 DISK PACK ON WHICH EACH TRACK CONTAINS 9 DATA RECORDS OF 300 BYTES EACH.
- APPROXIMATELY 4 MINUTES ARE REQUIRED TO COPY DISK TO DISK IF NO ERRORS OCCUR.

USAGE CONSIDERATIONS-
- NO RECORD ID /COUNT FIELD/ MAY BE REPEATED ON A TRACK.
- RO MUST BE WRITTEN ACCORDING TO IBM STANDARDS.
- /K SUB 1 EQUALS 0, D SUB 1 EQUALS 8/.
- NO ID /COUNT FIELD/ OTHER THAN RO MAY CONTAIN A RECORD NUMBER INDICATION OF ZERO.
- A FILE COPIED TO TAPE ON A MACHINE SIZE OF 16K OR GREATER CANNOT BE RESTORED TO DISK ON A MACHINE SMALLER THAN 16K.
- 1316 DISK PACKS MUST HAVE BEEN INITIALIZED WITH STANDARD HOME ADDRESSES, RO/S AND A VOLUME LABEL, ACCORDING TO IBM STANDARDS. THE DISK PACK MAY HAVE BEEN USED BETWEEN INITIALIZATION AND RESTORING A FILE FROM TAPE.

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MINIMUM SYSTEM REQUIREMENTS--
 - 8,192 BYTES OF MAIN STORAGE...
 - A CARD READER /1442, 2501, 2520 MODEL B1, OR 2540/ FOR PROGRAM LOADING AND CONTROL CARDS...
 - TWO 2311/S, ONE FOR INPUT AND ONE FOR OUTPUT...
 - AN IBM 1403, 1443, 1445 OR 1404 /CONTINUOUS FORMS ONLY/ PRINTER OR AN IBM 1052 CONSOLE PRINTER FOR PROGRAM LOGGING AND DIAGNOSTIC MESSAGES.
 THIS PROGRAM HAS THE SAME ENGINEERING CHANGE LEVEL REQUIREMENTS AS IBM SYSTEM/360 DISK OPERATING SYSTEM.

BASIC PROGRAM MATERIAL --
 DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS, C24-3363... OPERATING GUIDE, C24-3392.
 MACHINE READABLE -- ONE 9-TRACK OR ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR CONTAINING THE ASSEMBLED DECKS.

NOTE-- WHEN ORDERING THE REQUESTOR MUST SPECIFY WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK DTR WILL BE FORWARDED. DTRS WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -- NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-073 BPS DISK TO PRINTER
 ORDER THROUGH LOCAL IBM BRANCH OFFICE
 SPECIFY FILE NUMBER 360P-UT-073

THE DISK-TO-PRINTER PROGRAM CAN DISPLAY A DISK FILE IN TWO DIFFERENT FORMATS-- DATA-DISPLAY AND DATA-LIST. DATA-DISPLAY PROVIDES A VISUAL PICTURE OF THE DATA WHERE EVERY BYTE APPEARS IN THE PRINTED OUTPUT. THIS FORMAT CAN HANDLE FIXED, VARIABLE, AND UNDEFINED RECORDS. DATA-LIST PROVIDES A SIMPLE EDITED LIST OF THE FILE INPUT RECORDS MUST BE FIXED LENGTH, AND THE FIELD SELECT OPTION CAN BE USED. THE INPUT FILE CAN COME FROM A MAXIMUM OF FIVE DISK UNITS.

MINIMUM SYSTEM REQUIREMENTS -- 8,192 POSITIONS OF CORE STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS-- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH*.
 - FOR PROGRAM OPERATION--INPUT/OUTPUT DEVICES REQUIRED BY THE SPECIFIC PROGRAM.
 - FOR LOGGING AND ERROR MESSAGES-- 1403 PRINTER... OR 1404 PRINTER /CONTINUOUS FORMS ONLY/... OR 1443 PRINTER... OR 1052 PRINTER--KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE-- 2520 CARD PUNCH*... 2311 DISK STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839 /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL --
 DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3363... OPERATING GUIDE C24-3392.
 MACHINE READABLE -- ASSEMBLED DECKS MAY BE OBTAINED IN CARD FORM, OR ON A 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE-- WHEN ORDERING THIS PROGRAM ON TAPE THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -- NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-098 ALTERNATE TRACK ASSIGNMENT
 ORDER THROUGH LOCAL IBM BRANCH OFFICE
 SPECIFY FILE NUMBER 360P-UT-098

THIS PROGRAM IS DESIGNED TO ASSIGN AN ALTERNATE TRACK TO A DEFECTIVE TRACK ON AN IBM 2311 DISK PACK AT ANY TIME OTHER THAN WHEN INITIALIZING THE PACK.
 WHEN A DEFECTIVE TRACK IS ENCOUNTERED, THE VOLUME TABLE OF CONTENTS IS CHECKED TO DETERMINE THE NEXT ALTERNATE TRACK TO BE ASSIGNED. IF AN ALTERNATE TRACK IS AVAILABLE, THE RECORDS CONTAINED ON THE DEFECTIVE TRACK ARE TRANSFERRED TO IT.
 SURFACE ANALYSIS IS PERFORMED ON THE TRACK IN ERROR AFTER ALL RECORDS HAVE BEEN TRANSFERRED TO THE ALTERNATE TRACK. IF THE /HOME ADDRESS AND/OR THE TRACK DESCRIPTOR RECORD /RO/ AREA/S/ IS DEFECTIVE, ALL RECORDS ASSOCIATED WITH THE TRACK IN ERROR ARE PRINTED, AND THE PROGRAM IS TERMINATED. *IF THESE AREAS ARE NOT DEFECTIVE, BUT A PERMANENT ERROR EXISTS ELSEWHERE ON THE TRACK, THE DATA RECORDS REMAIN ON THE ALTERNATE TRACK, AND THE JOB IS COMPLETED. IF THE ERROR IS ONLY TEMPORARY, THE DATA RECORDS ARE TRANSFERRED BACK TO THE ORIGINALLY DEFECTIVE TRACK.
 AN INDICATION IS GIVEN TO SHOW WHERE ERRORS OCCUR AND THE ACTION THAT IS TO BE TAKEN. AN OPTION IS AVAILABLE ALLOWING ALL RECORDS, OR ONLY THE INVALID RECORDS TRANSFERRED TO AN ALTERNATE TRACK, TO BE PRINTED ON THE PRINTER, OR ON THE PRINTER--KEYBOARD. IF AN ERROR IS FOUND IN THE HOME ADDRESS OR RO AREA, THIS OPTION IS IGNORED AND ALL RECORDS ARE PRINTED.

MINIMUM SYSTEM REQUIREMENTS-- 8,192 POSITIONS OF CORE STORAGE...
 A CARD READER /1442, 2501, 2520, OR 2540/ FOR PROGRAM LOADING AND CONTROL CARDS... A SYSLOG DEVICE /1403, 1404, OR 1443 PRINTER OR 1052 PRINTER--KEYBOARD/ FOR LOGGING AND ERROR MESSAGES... A 2311 DISK STORAGE UNIT.

BASIC PROGRAM MATERIAL --
 DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL C24-3363... OPERATING GUIDE C24-3392.
 MACHINE READABLE -- ASSEMBLED DECKS MAY BE OBTAINED IN CARD FORM, OR ON A 7- OR 9-TRACK DTR.
 A 9-TRACK DTR WILL BE FORWARDED UNLESS 7-TRACK IS SPECIFICALLY REQUESTED. THE DTR WILL BE SUPPLIED BY PROGRAM INFORMATION.

360P-UT-202 S/360 BPS UTILITY PROGRAM -- TAPE COMPARE
 ORDER THROUGH LOCAL IBM BRANCH OFFICE
 SPECIFY FILE NUMBER 360P-UT-202

TAPE COMPARE COMPARES TWO FILES FROM TWO OR MORE TAPE REELS TO ENSURE THAT THE FILES ARE IDENTICAL. THE NUMBER OF REELS IN EACH FILE NEED NOT BE EQUAL. REELS CONTAINING FIXED, VARIABLE, OR UNDEFINED RECORD LENGTHS MAY BE COMPARED. PHYSICAL RECORDS WHICH DO NOT COMPARE ARE PRINTED WITH AN INDEX OF THE BYTES THAT DO NOT MATCH AND THE CORRESPONDING PHYSICAL RECORD NUMBER. A USER ROUTINE MAY BE SUPPLIED FOR PROCESSING RECORDS THAT ARE NOT IDENTICAL. WHEN POSSIBLE, TWO INPUT AREAS ARE ASSIGNED TO EACH TAPE TO ALLOW OVERLAP OF PROCESSING WITH PHYSICAL I/O IF CHANNEL ASSIGNMENTS PERMIT. THE COMPARE OPERATION MAY BE TERMINATED AT ANY TIME BY PRESSING THE 1052 REQUEST KEY OR

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CONSOLE STOP KEY. A COMPARE OPERATION FOR A NEW FILE CAN BE INITIATED BY SUPPLYING THE CORRECT CONTROL CARD AND FOLLOWING THE RESTART PROCEDURES.

MINIMUM SYSTEM REQUIREMENTS-- 8K OF MAIN STORAGE... A CARD READER FOR PROGRAM LOADING AND CONTROL CARDS... APPROPRIATE INPUT/OUTPUT DEVICES... SYSLOG DEVICE /MAY BE 1052 PRINTER KEYBOARD OR A PRINTER/. THE SELECTOR CHANNEL IS NOT REQUIRED FOR THE TAPE COMPARE PROGRAM.

BASIC PROGRAM MATERIAL --
 DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL, C24-5026... OPERATING GUIDE, C24-5027.
 MACHINE READABLE -- THE ASSEMBLED DECK IS AVAILABLE ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/

WHEN ORDERING THIS PROGRAM THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -- NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-203 S/360 BPS UTILITY PROGRAM -- MULTIPLE DISK TO PRINTER
 ORDER THROUGH LOCAL IBM BRANCH OFFICE
 SPECIFY FILE NUMBER 360P-UT-203

MULTIPLE DISK TO PRINTER ALLOWS FROM ONE TO THREE DISK-TO-PRINTER FUNCTIONS TO BE PERFORMED SIMULTANEOUSLY. EACH FUNCTION IS CAPABLE OF PRINTING /IN CHARACTER MODE/ FIXED LENGTH RECORDS WITH OR WITHOUT KEY FIELDS. THE RECORDS MAY BE EITHER BLOCKED OR UNBLOCKED IF KEY FIELDS ARE ABSENT. IF THEY ARE PRESENT, THE RECORDS MUST BE UNBLOCKED. ONE PRINTER AND ONE DISK UNIT MUST BE ON-LINE FOR EACH SEPARATE FUNCTION BEING PERFORMED. A NEW FUNCTION MAY BE STARTED AT ANY TIME WHILE OTHER FUNCTIONS ARE IN PROCESS. WHEN THE JOB OF ANY FUNCTION IS COMPLETE, A NEW JOB MAY BE INITIATED FOR THAT FUNCTION. THE MULTIPLE DISK TO PRINTER PROGRAM MAKES EFFICIENT USE OF CORE STORAGE WHEN ASSIGNING I/O AREAS. TO ALLOW FOR A MAXIMUM AVAILABLE I/O AREA, ACTIVE I/O AREAS ARE ASSIGNED CONTIGUOUSLY. WHEN POSSIBLE, TWO DISK INPUT AREAS ARE ASSIGNED FOR EACH FUNCTION TO ALLOW OVERLAP OF INPUT WITH PROCESSING AND OUTPUT.

MINIMUM SYSTEM REQUIREMENTS -- 16K OF MAIN STORAGE.
 - FOR PROGRAM LOADING AND CONTROL CARDS-- 1442 CARD READ PUNCH... OR 2501 CARD READER... OR 2520 CARD READ PUNCH*... OR 2540 CARD READ PUNCH*.
 - FOR PROGRAM OPERATION-- THE DISK UNIT/S/ MUST BE ATTACHED TO A SELECTOR CHANNEL... THE PRINTER/S/ MUST BE ATTACHED TO A MULTIPLEXOR CHANNEL.
 - FOR LOGGING AND ERROR MESSAGES-- 1052 PRINTER--KEYBOARD.
 - SUPPORTED DEVICES ALSO INCLUDE-- 2520 CARD PUNCH*... 2311 DISK STORAGE DRIVE... 2400 SERIES TAPE UNIT /WITH OR WITHOUT THE 7-TRACK FEATURE/.

*THE 2520 /ALL MODELS/ MUST HAVE ENGINEERING CHANGES 811839 /ECA 25/ AND 811842 /ECA 20/ INSTALLED.

BASIC PROGRAM MATERIAL --
 DOCUMENTATION -- PROGRAM MATERIAL LIST... SPECIFICATIONS MANUAL... OPERATING GUIDE.
 MACHINE READABLE -- UTILITY PROGRAM IN OBJECT FORM. AVAILABLE IN CARDS OR ON TAPE, EITHER 9-TRACK OR 7-TRACK DTR.
 THE 7-TRACK DTR REQUIRES THE DATA CONVERSION FEATURE.
 NOTE-- WHEN ORDERING THIS PROGRAM ON TAPE, 7 OR 9-TRACK MUST BE INDICATED ON THE REQUEST CARD. IF IS NOT 9-TRACK WILL BE SENT. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT -- NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-204 BPS INITIALIZE DATA CELL
 ORDER THROUGH LOCAL IBM BRANCH OFFICE
 SPECIFY FILE NUMBER 360P-UT-204

SYSTEM/360 BPS INITIALIZE DATA CELL, PREPARES FROM ONE TO FIVE DATA CELLS FOR USE ON ANY 2321 DATA CELL DRIVE. THE PROGRAM INITIALIZES THE DATA CELLS WITH A METHOD COMPATIBLE TO OPERATING SYSTEM/360. THE PREPARATION OF EACH OF THESE CELLS CONSISTS OF--

- VTDC LABEL CHECKING.
- HOME ADDRESS AND TRACK-DESCRIPTOR RECORD /RO/ GENERATION.
- SURFACE ANALYSIS AND INITIALIZATION VERIFICATION.
- IPL, VOLUME-LABEL, AND VTDC FORMAT CREATION.

TWO TYPES OF CONTROL INFORMATION ARE REQUIRED BY THE PROGRAM-- JOB CONTROL--CARD INFORMATION, AND UTILITY--CONTROL INFORMATION. THE JOB CONTROL--CARD INFORMATION RELATES TO THE CHANNEL AND UNIT ASSIGNMENT AND PHYSICAL DEVICE DESCRIPTION. UTILITY--CONTROL INFORMATION IS PROVIDED IN THE UTILITY MODIFIER STATEMENT AND THE LABEL CONTROL--CARD SET, SPECIFIES WHICH DATA CELL/S/ IS TO BE INITIALIZED, AND PROVIDES THE LABELING INFORMATION FOR VTDC AND VOLUME LABEL CREATION. VTDC LABEL CHECKING-- BEFORE A CELL IS INITIALIZED, A CHECK IS PERFORMED TO SEE IF A VTDC IS PRESENT. IF THE CELL HAS BEEN PREVIOUSLY INITIALIZED AND THE VTDC IS PRESENT, ANY LABELS IN THE VTDC ARE CHECKED TO SEE IF THE FILES ON THE DATA CELL HAVE EXPIRED. IF ANY FILES HAVE NOT EXPIRED, A MESSAGE IS PRINTED. IF THE USER STILL WISHES TO INITIALIZE THE CELL AFTER RECEIVING THE MESSAGE, HE CAN BYPASS THE LABEL CONDITION AND CONTINUE TO PROCESS. IF THE USER DOES NOT WISH TO BYPASS THE CONDITION, THAT CELL MAY BE DELETED FROM THE JOB.

HOME ADDRESS GENERATION-- A BINARY, FIVE-BYTE HOME ADDRESS IS WRITTEN ON EVERY TRACK BY THE PROGRAM. THE FIVE BYTES WRITTEN ARE-- FLAG, SUBCELL NUMBER, STRIP /FINGER/ NUMBER, CYLINDER /HEAD BAR/ NUMBER, AND TRACK /ELEMENT/ NUMBER. THE FLAG BYTE, WHICH IS PROPAGATED TO THE FLAG BYTE OF EACH RECORD ON THE TRACK, IS USED TO INDICATE THE CONDITION /DEFECTIVE OR NOT DEFECTIVE/ OF THE TRACK, AND WHETHER OR NOT IT HAS BEEN ASSIGNED AS AN ALTERNATE TRACK.

TRACK DESCRIPTOR /RO/ GENERATION-- A TRACK DESCRIPTOR RECORD OR RECORD ZERO /RO/ IS WRITTEN AS THE FIRST RECORD FOLLOWING THE HOME ADDRESS. IT IS DIVIDED INTO TWO PARTS-- COUNT AND DATA. IF AN ERROR OCCURS IN THE HOME ADDRESS OR RO AREA, THE HOME ADDRESS AND RECORD ZERO ARE ADVANCED 800 BYTES AND ARE REWRITTEN. THE TRACK IS THEN FLAGGED DEFECTIVE, AND AN ALTERNATE TRACK IS ASSIGNED. IF AN ERROR OCCURS AT THIS TIME, THE PROGRAM IS TERMINATED.

SURFACE ANALYSIS AND INITIALIZATION VERIFICATION-- SURFACE ANALYSIS IS PERFORMED FIRST IN AN ALTERNATE TRACK AREA CONSISTING OF 400 TRACKS. TRACKS IN THIS AREA FOUND TO BE DEFECTIVE ARE FLAGGED AND CANNOT BE ASSIGNED AS ALTERNATE TRACKS. SURFACE ANALYSIS IS THEN PERFORMED ON ALL REMAINING TRACKS OF THE CELL. IF DEFECTIVE ONES ARE ENCOUNTERED, ALTERNATE ONES ARE ESTABLISHED IN THE ALTERNATE TRACK AREA. IF THERE ARE NO MORE ALTERNATE TRACKS AVAILABLE, THE CELL IS

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DELETED FROM FURTHER PROCESSING. MESSAGES ARE PRINTED ON SYSLOG TO NOTIFY THE USER OF DEFECTIVE TRACKS, ASSIGNED ALTERNATE TRACKS, AND THEIR LOCATIONS. AN INITIALIZATION VERIFICATION ROUTINE ENSURES THAT THE HOME ADDRESS AND TRACK DESCRIPTOR RECORD HAVE BEEN WRITTEN ON EACH TRACK, AND THAT SURFACE ANALYSIS HAS BEEN PERFORMED ON EVERY TRACK.

IPL-FORMAT CREATION- THE PROGRAM FORMATS TWO IPL RECORDS. THESE ARE WRITTEN ON CYLINDER ZERO, TRACK ZERO, RECORDS ONE AND TWO. RECORD ONE IS WRITTEN WITH A 24-BYTE DATA FIELD OF BINARY ZEROS. RECORD TWO IS WRITTEN WITH A 144-BYTE DATA FIELD OF BINARY ZEROS.

VOLUME LABEL CREATION- USING A CONTROL CARD UNIQUE TO THE PROGRAM, A VOLUME LABEL IS CREATED IN THE STANDARD FORMAT /VOL1/ FOR EACH CELL PROCESSED. SEVEN ADDITIONAL USER VOLUME LABELS /VOL2-VOL8/ CAN BE CREATED, IF DESIRED.

VTOC-FORMAT CREATION- THE PROGRAM PRE-FORMATS THE VOLUME TABLE OF CONTENTS /VTOC/, RESERVING THE FIRST TWO RECORD LOCATIONS IN IT FOR THE VOLUME TABLE OF CONTENTS - DATA SET CONTROL BLOCK /VTOC - DSCB/ LABEL, AND THE SPACE-MANAGEMENT LABEL. THE LOCATION ON THE CELL IN WHICH THE VTOC IS TO BE PLACED IS INDICATED IN A CONTROL CARD. THE STANDARD LOCATION IS ON CYLINDER ZERO IMMEDIATELY FOLLOWING THE VOLUME LABEL/S/, AND EXTENDING TO THE END OF THE CYLINDER. THE VTOC CAN, HOWEVER, APPEAR ON ANY CYLINDER /EXCLUDING ALTERNATE CYLINDERS/, BUT CANNOT EXCEED CYLINDER BOUNDARIES.

MINIMUM SYSTEM REQUIREMENTS- 16K BYTES OF CORE STORAGE... CARD READER /1442, 2501, 2520, OR 2540/ FOR PROGRAM LOADING AND CONTROL CARDS... SYSLOG DEVICE /1403, 1404 OR 1443 PRINTER, OR 1052 PRINTER-KEYBOARD/ FOR LOGGING AND ERROR MESSAGES... ONE 2321 DATA CELL.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... SUPPORT SPECIFICATIONS-DASD UTILITY PROGRAMS C24-3363... OPERATING GUIDE-DASD UTILITY PROGRAMS C24-3392. MACHINE READABLE - THE ASSEMBLED DECK IN CARD FORM OR ON A 7- OR 9-TRACK DISTRIBUTION TAPE REEL WHICH WILL BE SUPPLIED BY PROGRAM INFORMATION. THE DATA CONVERSION FEATURE IS REQUIRED FOR 7-TRACK OPERATION. UNLESS 7-TRACK IS SPECIFICALLY REQUESTED THE 9-TRACK DTR WILL BE SENT.

360P-UT-212 ALTERNATE TRACK ASSIGNMENT /2321/

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-212

THE BPS/360 ALTERNATE TRACK ASSIGNMENT /2321/ IS DESIGNED TO ASSIGN AN ALTERNATE TRACK TO A DEFECTIVE TRACK ON A 2321 DATA CELL AT ANY TIME OTHER THAN WHEN INITIALIZING THE CELL. WHEN A DEFECTIVE TRACK IS ENCOUNTERED, THE VOLUME TABLE OF CONTENTS IS CHECKED TO DETERMINE THE NEXT ALTERNATE TRACK TO BE ASSIGNED. IF AN ALTERNATE TRACK IS NOT AVAILABLE, THE CONDITION IS LOGGED AND THE JOB IS TERMINATED. IF AN ALTERNATE TRACK IS AVAILABLE, THE RECORD CONTAINED ON THE DEFECTIVE TRACK ARE TRANSFERRED TO IT. AN INDICATION IS GIVEN TO SHOW WHERE ERRORS OCCUR AND THE ACTION TAKEN. AN OPTION IS AVAILABLE ALLOWING EITHER ALL RECORDS, OR ONLY THE INVALID RECORDS WHICH ARE TRANSFERRED TO AN ALTERNATE TRACK, TO BE PRINTED ON THE ASSIGNED LOGGING DEVICE. IF AN ERROR IS FOUND IN THE HOME ADDRESS OR TRACK DESCRIPTOR RECORD AREAS, THIS OPTION IS IGNORED AND ALL RECORDS ARE PRINTED AS THEY ARE TRANSFERRED. SURFACE ANALYSIS IS PERFORMED ON THE TRACK IN ERROR AFTER ALL RECORDS HAVE BEEN TRANSFERRED TO THE ALTERNATE TRACK. IF THE HOME ADDRESS OR TRACK DESCRIPTOR RECORD AREAS ARE NOT DEFECTIVE, BUT A PERMANENT ERROR EXISTS ELSEWHERE ON THE TRACK, THE DEFECTIVE TRACK POINTS TO THE ALTERNATE TRACK, AND THE JOB IS COMPLETED. IF THE ERROR IS ONLY TEMPORARY, THE RECORDS ARE TRANSFERRED FROM THE ALTERNATE TRACK BACK TO THE ORIGINALLY DEFECTIVE TRACK. IF THE HOME ADDRESS OR TRACK DESCRIPTOR RECORD AREAS ARE DEFECTIVE, THE HOME ADDRESS AND TRACK DESCRIPTOR RECORD ARE ADVANCED 800 BYTES AND ARE REWRITTEN TO ALLOW THE TRACK TO BE FLAGGED DEFECTIVE. IF AN ERROR OCCURS WHILE ATTEMPTING TO ADVANCE THESE AREAS, THE PROGRAM IS TERMINATED. IF NO ERROR OCCURS, THE DEFECTIVE TRACK POINTS TO THE ALTERNATE TRACK AND THE JOB IS COMPLETED.

MINIMUM SYSTEM REQUIREMENTS- 16,384 BYTES OF MAIN STORAGE... CARD READER /1442, 2501, 2520 B1, OR 2540/ FOR PROGRAM LOADING AND CONTROL CARDS... A SYSLOG DEVICE /1403, 1404, OR 1443 PRINTER, OR 1052 PRINTER-KEYBOARD/ FOR LOGGING AND ERROR MESSAGES... A 2321 DATA CELL DRIVE AND 2841 CONTROL UNIT. ENGINEERING CHANGE CONSIDERATIONS- 2841 CONTROL UNIT ENGINEERING CHANGE LEVEL 413160 OR HIGHER IS A PREREQUISITE FOR USE OF VERSION 1 OF THE ALTERNATE TRACK ASSIGNMENT /2321/ PROGRAM. ENGINEERING CHANGE 811839 AND 811842 MUST BE INSTALLED ON A 2520 USED AS A CARD READER.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... DASD UTILITY PROGRAMS SPECIFICATIONS MANUAL C24-3363... OPERATING GUIDE C24-3392. MACHINE READABLE - ASSEMBLED DECK IN CARD FORM OR ON ONE 9- OR 7-TRACK DTR /DATA CONVERSION FEATURE REQUIRED/. IF TRACK REQUIREMENT IS NOT INDICATED A 9-TRACK DTR WILL BE SENT. THE DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-213 DIRECT ACCESS STORAGE DEVICE INITIALIZATION PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360P-UT-213

THE SYSTEM/360 DIRECT ACCESS STORAGE DEVICE INITIALIZATION PROGRAM IS PROVIDED FOR USERS OF SYSTEM/360 MODEL 40 AND 50 1410/7010 EMULATOR PROGRAMS WHO REQUIRE INITIALIZATION OF 2302 DISK STORAGE UNITS. IT IS IDENTICAL TO THE DASDI PROGRAM CONTAINED IN THE SYSTEM/360 OPERATING SYSTEM INDEPENDENT UTILITIES /360S-UT-507/. DASDI HAS BEEN PACKAGED AS A SEPARATE PROGRAM FOR DISTRIBUTION TO NON-USERS OF THE SYSTEM/360 OPERATING SYSTEM.

THE SYSTEM/360 DASDI UTILITY PROGRAM PERFORMS TWO SEPARATE FUNCTIONS. IT INITIALIZES 2302 DISK STORAGE UNITS, AND ASSIGNS ALTERNATE TRACKS ON THE 2302. A SINGLE DASDI JOB CAN INITIALIZE ONE 2302 MODULE AND ASSIGN ALTERNATES FOR SPECIFIED TRACKS ON ONE MODULE.

MINIMUM SYSTEM REQUIREMENTS- THIS PROGRAM MAY BE USED TO INITIALIZE 2302 DISK STORAGE UNITS ON ANY SYSTEM/360 MEETING THE MINIMUM SYSTEM REQUIREMENTS OF EITHER THE SYSTEM/360 MODEL 40 OR 50 1410/7010 EMULATOR PROGRAMS, 360C-EU-726 AND 360C-EU-728.

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BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... O/S UTILITIES PROGRAMS MANUAL C28-6586. MACHINE READABLE - OBJECT DECK IN CARD FORM OR ON A 7- OR 9-TRACK DTR. THE DATA CONVERSION FEATURE IS REQUIRED FOR 7-TRACK USERS.

IF TRACK REQUIREMENT IS NOT SPECIFIED, 9-TRACK WILL BE SUPPLIED. THE DTR /DISTRIBUTION TAPE REEL/ WILL BE SUPPLIED - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-214 OS/360 DUMP/RESTORE ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360P-UT-214

DUMP/RESTORE DUMPS THE DATA CONTENTS OF A DIRECT-ACCESS VOLUME ONTO A 2311 DISK STORAGE VOLUME OR A MAGNETIC TAPE AND RESTORES THE DATA CONTENTS TO A DIRECT-ACCESS VOLUME THAT RESIDES ON THE SAME TYPE DEVICE AS THE SOURCE VOLUME. THIS PROGRAM IS INTENDED FOR THE OS/360 USER. NON-OS/360 USERS SHOULD NOT MISTAKENLY ORDER THIS AS BPS UTILITIES.

MINIMUM SYSTEM REQUIREMENTS- A 32K SYSTEM/360, A 2301 ON THE SYSTEM REQUIRES 64K.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... OS/360 UTILITY PROGRAMS MANUAL, C28-6586. MACHINE READABLE - OBJECT DECK AVAILABLE ON CARDS OR 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON DTR THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

360P-UT-215 OS/360 RECOVER/REPLACE ORDER THROUGH LOCAL IBM BRANCH OFFICE SPECIFY FILE NUMBER 360P-UT-215

RECOVER/REPLACE ATTEMPTS TO READ DATA FROM A BAD TRACK AND, AFTER THE OPERATOR HAS CORRECTED THE DATA, REPLACES IT ON AN ALTERNATE TRACK OF THE DIRECT-ACCESS DEVICE. THIS PROGRAM IS INTENDED FOR THE OS/360 USER. NON-OS/360 USERS SHOULD NOT MISTAKENLY ORDER THIS AS BPS UTILITIES.

MINIMUM SYSTEM REQUIREMENTS- A 32K SYSTEM/360.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... OS/360 UTILITY PROGRAMS MANUAL, C28-6586. MACHINE READABLE - OBJECT DECK AVAILABLE ON CARDS OR 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.

NOTE- WHEN ORDERING THIS PROGRAM ON DTR THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT - NO TAPE SUBMITTAL IS REQUIRED.

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360S IBM OPERATING SYSTEM/360 ORDER THROUGH LOCAL IBM BRANCH OFFICE USE OS/360 ORDER FORM NO. 120-1411.

IBM OPERATING SYSTEM/360 COMBINES IN ONE INTEGRATED PACKAGE ADDITIONAL FACILITIES ALONG WITH MANY FEATURES OF PREVIOUS OPERATING SYSTEMS.

SOME OUTSTANDING FEATURES OF OS/360 ARE-
- MANAGEMENT OF DIRECT ACCESS SPACE ALLOCATION, MINIMIZING MANUAL CONTROL PROCEDURES. SEQUENTIALLY ORGANIZED DATA MAY BE AUTOMATICALLY STORED ON TAPE OR DISK.
- MULTI-PURPOSE PROGRAM LIBRARY, PROVIDING IN ONE LIBRARY THE SAME FUNCTIONS PREVIOUSLY PROVIDED BY SEPARATE RELOCATABLE AND CORE IMAGE LIBRARIES.
- DYNAMIC LINKAGE TO RELOCATABLE PROGRAM MODULES, PROVIDING FLEXIBILITY IN APPLICATION PROGRAM DESIGN.

A DESCRIPTION OF EACH COMPONENT, THE PROGRAM DOCUMENTATION, AND ORDERING PROCEDURE FOLLOWS. THESE SHOULD BE USED AS GUIDES FOR ORDERING THE PROPER ITEMS TO MEET INDIVIDUAL REQUIREMENTS.

IBM OPERATING SYSTEM/360-

THE OPERATING SYSTEM IS DESIGNED IN MODULAR FORM TO FIT A WIDE RANGE OF SYSTEM/360 CONFIGURATIONS AND APPLICATIONS FOR MODELS 30, 40, 50, 65 AND 75, BEGINNING AT 64K BYTES OF MAIN STORAGE. SEE SECTIONS TITLED ,,SYSTEM GENERATION,,, ,,STARTER SYSTEM,,, AND ,,MINIMUM ENGINEERING CHANGE REQUIREMENTS,,, FOR IMPORTANT DETAILS. THE CONTROL PROGRAM SUPERVISES THE EXECUTION OF PROCESSING PROGRAMS, CONTROLS THE LOCATION, STORAGE AND RETRIEVAL OF DATA, AND SCHEDULES THE USE OF SYSTEM RESOURCES FOR CONTINUOUS JOB PROCESSING. THE PROCESSING PROGRAMS INCLUDE THE ASSEMBLER, COMPILERS FOR FORTRAN IV AND COBOL, SORT/MERGE AND A VARIETY OF SERVICE PROGRAMS.

OPERATING SYSTEM/360 REQUIRES A CONSOLE, DEVICES FOR THE INPUT JOB STREAM AND SYSTEM MESSAGES, AND ON-LINE DIRECT-ACCESS STORAGE RESIDENCE FOR THE SYSTEM PROGRAM LIBRARY AND OTHER SYSTEM DATA SETS. THE AMOUNT OF DIRECT ACCESS STORAGE NEEDED DEPENDS UPON:

1. OS OPTIONS SELECTED /SEE STORAGE ESTIMATES MANUAL-C28-6551/
 2. SYSTEM GENERATION AND MAINTENANCE CONSIDERATIONS.
 3. CUSTOMER REQUIREMENTS FOR BOTH PROGRAM AND DATA STORAGE.
- A PORTION OF MAIN STORAGE MUST BE ALLOCATED FOR USE BY THE CONTROL PROGRAM. THE AMOUNT VARIES ACCORDING TO THE CONTROL FUNCTIONS SELECTED BY THE USER.

CONTROL PROGRAM

THE VARIOUS CONTROL PROGRAM CONFIGURATIONS EACH CONSIST OF A COMBINATION OF A SUPERVISOR, A SCHEDULER, AND SELECTED DATA MANAGEMENT FUNCTIONS. ANY CONTROL PROGRAM CONFIGURATION SUPPORTS ALL LANGUAGE COMPILERS, ALL SERVICE PROGRAMS AND TESTRAN CAPABILITY.

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PRIMARY CONTROL PROGRAM - 360S-CI-50S

THE PRIMARY CONTROL PROGRAM IS THE BASE OF ALL CONTROL PROGRAM CONFIGURATIONS. WHEN GENERATING A SYSTEM, FUNCTIONAL CAPABILITY MAY BE SELECTED IN A VARIETY OF COMBINATIONS AND ADDED TO THOSE INCLUDED IN THE PRIMARY CONTROL PROGRAM TO PRODUCE ADDITIONAL CAPABILITIES. BOTH A SUPERVISOR AND SCHEDULER ARE INCLUDED IN THE PRIMARY CONTROL PROGRAM /WHICH IS FREQUENTLY CALLED THE SEQUENTIAL SCHEDULING SYSTEM/.

THE SUPERVISOR IN GENERAL CONTROLS THE USE OF THE CPU, I/O, AND MAIN STORAGE AUTOMATICALLY AND, AS REQUESTED BY A USER, THROUGH SYSTEM MACRO-INSTRUCTIONS. THE PRIMARY SUPERVISOR PROVIDES --

- CONTROL OF A SINGLE TASK.
- OVERLAP OF CPU OPERATIONS WITH I/O CHANNEL ACTIVITY.
- QUEUING OF I/O REQUESTS FOR CHANNEL USE.
- SUPERVISION AND PROCESSING OF ALL TYPES OF INTERRUPTIONS.
- DYNAMIC ALLOCATION OF MAIN STORAGE FOR LOAD MODULES.
- SYNCHRONOUS OVERLAY SUPERVISOR.
- BLOCK LOADING OF RELOCATABLE PROGRAMS.
- ERROR CHECKING AND STANDARD I/O ERROR RECOVERY PROCEDURES.
- MULTIPROGRAMMING WITH A FIXED NUMBER OF TASKS /OPTION 2/.
- CHECKPOINT/RESTART SUPPORT FOR USER PROGRAMS IN PCP AND MFT.
- SYSTEM ENVIRONMENT RECORDING, THE RECORDED INFORMATION, I/O ERROR COUNTS STORED ON SYSTEMS RESIDENCE AND CPU OR CHANNEL ERROR LOG-OUT INFORMATION IN MAIN STORAGE IS TRANSCRIBED BY STAND-ALONE CE DIAGNOSTIC PROGRAMS OR, THIS FUNCTION CAN BE PERFORMED ON MODELS 40, 50 AND 65 BY ONE OF THE FOLLOWING COMPONENTS--
- .SERO, SER1 AND EREP FOR THE MODEL 40 - 360S-DN-527.
- .SERO, SER1 AND EREP FOR THE MODEL 50 - 360S-DN-528.
- .SERO, SER1 AND EREP FOR THE MODEL 65 - 360S-DN-529.
- .SERO, SER1 AND EREP FOR THE MODEL 75 - 360S-DN-530.

SERVICES AVAILABLE TO USER PROGRAMS THROUGH SYSTEM

MACRO-INSTRUCTIONS INCLUDE --

- LOCATING A NAMED PROGRAM.
- DYNAMICALLY LOADING AND TRANSFERRING CONTROL TO A NAMED PROGRAM.
- EXITS FOR SELECTED PROGRAM INTERRUPTIONS.
- SAVING REGISTERS AT THE START OF A SUBROUTINE.
- RETURNING TO THE CALLING ROUTINE OR NEXT HIGHER CONTROL LEVEL.
- WAITING FOR THE COMPLETION OF AN EVENT.
- WAITING FOR THE COMPLETION OF MULTIPLE EVENTS /OPTION 1/.
- POSTING THE COMPLETION OF AN EVENT.
- IDENTIFYING AN IMBEDDED SUBPROGRAM TO THE SUPERVISOR /OPTION 3/.
- DYNAMICALLY ALLOCATING OR RELEASING VARIABLE AMOUNTS OF MAIN STORAGE.
- WRITING A MESSAGE TO THE OPERATOR WITH OR WITHOUT A REPLY REQUESTED.
- REQUESTING THE TIME OF DAY /OPTION 6A/.
- SETTING THE TIMER TO INTERRUPT AFTER SOME TIME INTERVAL /OPTION 6B/.
- TESTING OR RESETTING THE TIME INTERVAL PREVIOUSLY REQUESTED /OPTION 6B/.

THE OPTIONS ABOVE ARE DESCRIBED IN IBM SYSTEM/360 OPERATING SYSTEM. STORAGE ESTIMATES MANUAL C28-6551.

THE SCHEDULER IN GENERAL REGULATES THE FLOW OF JOBS THROUGH THE COMPUTING SYSTEM, PROVIDES FOR I/O DEVICE ASSIGNMENTS, AND SERVES AS THE INTERFACE BETWEEN USER AND SYSTEM THROUGH THE JOB CONTROL LANGUAGE, OPERATOR COMMANDS, AND CONSOLE MESSAGES.

THE PRIMARY CONTROL PROGRAM INCLUDES THE SEQUENTIAL SCHEDULER.

- THE SEQUENTIAL SCHEDULER IS NOT RESIDENT, BUT IS BROUGHT INTO MAIN STORAGE BETWEEN JOB STEPS. THIS SCHEDULER SUPPORTS --
- A SINGLE INPUT JOB STREAM /UNBLOCKED RECORDS ONLY/.
- SEQUENTIAL PROCESSING OF JOB STEPS.
- READING AND INTERPRETING OF CONTROL STATEMENTS USING ALL FEATURES OF THE JOB CONTROL LANGUAGE EXCEPT THOSE THAT PERTAIN TO PRIORITY, SYSTEM LOG, MESSAGE EXCEPT, JOB STEP TIMING OR WRITERS.
- ASSIGNMENT OF INPUT/OUTPUT DEVICES.
- ALTERNATE CONSOLE /OPTION 7/ OR COMPOSITE CONSOLE /OPTION 8/.
- FREQUENTLY USED SETS OF JOB CONTROL STATEMENTS MAY BE STORED IN A PROCEDURE LIBRARY. ANY TIME THAT PROCEDURE IS TO BE EXECUTED, THE USER NEED ONLY SPECIFY THE PROCEDURE NAME.

GRAPHIC PROGRAMMING SERVICES - 360S-IO-523

THE IBM 2250 GRAPHIC PROGRAMMING SERVICES CONSIST OF A MEANS FOR CREATING THE DATA USED BY IBM 2250 DISPLAY UNITS TO GENERATE DISPLAYS, AND THE GRAPHICS ACCESS METHOD FOR USE WITH THESE DISPLAY UNITS. THE GRAPHIC ACCESS METHOD INCLUDES READ/WRITE LEVEL INPUT/OUTPUT MACRO-INSTRUCTIONS, FACILITIES FOR SHARING THE GRAPHIC-DEVICE BUFFER AMONG DISPLAY UNITS, AND ROUTINES FOR UTILIZING THE MAN-MACHINE COMMUNICATION CAPABILITY OF THE 2250. THE MAJOR TYPES OF FACILITIES PROVIDED BY OS/360 GRAPHIC PROGRAMMING SERVICES ARE --

- MACRO-INSTRUCTIONS FOR GENERATING THE ORDERS AND DATA THAT CONSTITUTE A ,,PROGRAM,, FOR THE GRAPHIC DEVICE.
- COUNTERS THAT KEEP TRACK OF CERTAIN CONDITIONS DURING ASSEMBLY OF THE ABOVE MACRO-INSTRUCTIONS.
- PROBLEM ORIENTED ROUTINES /PROBS/ WHICH, WHEN CALLED AT EXECUTION TIME, CONSTRUCT GRAPHIC ORDER PROGRAM SEGMENTS FOR PRODUCING COMMONLY USED TYPES OF IMAGES.
- DATA HANDLING FACILITIES FOR COMBINING GRAPHIC ORDER PROGRAM SEGMENTS INTO A UNIFIED GRAPHIC ORDER PROGRAM IN MAIN STORAGE, READY FOR TRANSMISSION TO THE GRAPHIC DEVICE BUFFER. THESE FACILITIES CAN ALSO MEASURE OR LIMIT THE SIZE OF A STRING OF GRAPHIC ORDERS AND DATA.
- INPUT/OUTPUT MACRO-INSTRUCTIONS FOR TRANSMISSION OF THE GRAPHIC ORDER PROGRAM TO THE BUFFER, FOR TRANSMISSION OF CONTROL COMMANDS TO THE GRAPHIC DEVICE, AND FOR TRANSMISSION OF DATA, ORIGINATED BY A USER AT A 2250 KEYBOARD, FROM THE BUFFER INTO MAIN STORAGE.
- BUFFER MANAGEMENT FACILITIES FOR ALLOCATING PORTIONS OF THE GRAPHIC DEVICE BUFFER AMONG THE DEVICES SHARING IT.
- ATTENTION HANDLING FACILITIES THAT HELP THE PROGRAMMER TO MAKE EFFICIENT USE OF THE 2250 AS AN INSTRUMENT FOR MAN-MACHINE COMMUNICATION.

GRAPHIC PROGRAMMING SERVICES SUPPORT THE IBM 2250 DISPLAY UNIT, MODELS 1, 2 AND 3 AND THE IBM 2840 DISPLAY CONTROL WHICH IS WITH MODELS 2 AND 3.

SYSTEMS ENVIRONMENT RECORDING SERO, SER1 AND EREP FOR

- MODEL 40 - 360S-DN-527
- MODEL 50 - 360S-DN-528
- MODEL 65 - 360S-DN-529
- MODEL 75 - 360S-DN-530

SERO IS AN OPTIONAL FUNCTION DESIGNED TO COLLECT, FORMAT AND WRITE ON THE SYS1, LOG REC DATA SET THE DATA ISSUED AS A RESULT OF A MALFUNCTION WITHIN THE CPU OR A CHANNEL. IT CONSISTS OF A RESIDENT AND NON-RESIDENT MODULE WITH THE NON-RESIDENT MODULE BEING LOADED INTO THE PROBLEM PROGRAM AREA WITH REGARD TO WHAT WAS PREVIOUSLY THERE. SERO DOES NOT USE ANY OS/360 FACILITIES TO COLLECT DATA AND TO WRITE THE ENVIRONMENT RECORD. IT HAS ITS OWN I/O PROGRAMMING. IT TERMINATES THE SYSTEM IN WAIT STATE AT THE END OF ITS OPERATION.

SER1, AS SERO, IS AN OPTIONAL FUNCTION DESIGNED TO COLLECT, FORMAT AND WRITE ON THE SYS1, LOG REC DATA SET THE DATA ISSUED AS A RESULT OF A MACHINE MALFUNCTION WITHIN THE CPU OR A CHANNEL. HOWEVER, IT IS COMPLETELY RESIDENT AND USES OS/360 FACILITIES SUCH AS EXCP, ABEND, WTOR AND PURGE. ALSO, IT ATTEMPTS TO DETERMINE THE EFFECT AND EXTENT OF THE DAMAGE CAUSED BY THE MALFUNCTION AND TO IDENTIFY THE FAILURE WITHIN A SPECIFIC TASK. IF IT DETERMINES THE FAILURE HAS NOT DAMAGED THE SUPERVISOR AND CAN BE RELATED TO A TASK IT TERMINATES THAT TASK USING OS/360 ABEND FACILITIES. IF THE SUPERVISOR IS FOUND DAMAGED, IT TERMINATES THE SYSTEM WAIT STATE, AS IN SERO. IT IS RECOMMENDED THAT EITHER SERO OR SER1 BE INCLUDED IN ALL OS/360 SYSTEMS USED ON MODEL 75S.

EREP IS A UTILITY PROGRAM OPERATING AS A PROBLEM PROGRAM UNDER OS/360. IT IS USED TO RETRIEVE COMPLETELY OR SELECTIVELY, EDIT AND OUTPUT THE ENVIRONMENT RECORDS THAT HAVE BEEN STORED ON THE SYS1, LOG REC DATA SET BY THE ENVIRONMENT RECORDING PROGRAMS OBR, SDR, SERO AND SER1.

DATA MANAGEMENT

DATA MANAGEMENT- THE CONTROL PROGRAM FUNCTIONS PROVIDED FOR THE MANAGEMENT OF DATA REMOTE EFFICIENCY IN THE USE OF I/O DEVICES, AND ALLOW AN UNPRECEDENTED DEGREE OF INDEPENDENCE FROM CONSIDERATION OF DEVICE AND DATA CHARACTERISTICS. TO ATTAIN THESE OBJECTIVES, DATA MANAGEMENT FACILITIES HAVE BEEN DESIGNED TO PROVIDE SYSTEMATIC AND EFFECTIVE MEANS OF CLASSIFYING, IDENTIFYING, STORING, CATALOGING, AND RETRIEVING ALL DATA - INCLUDING LOADABLE PROGRAMS - PROCESSED BY THE OPERATING SYSTEM.

DATA MANAGEMENT FACILITIES CAN BE GROUPED INTO TWO MAJOR CATEGORIES- DATA SET CONTROL AND DATA ACCESS.

DATA SET CONTROL-

PRIMARY DATA MANAGEMENT - 360S-DN-508

THESE FUNCTIONS CONTROL ALL DATA IN THE SYSTEM AND REGULATE THE USE OF DATA SETS. THEY INCLUDE PROVISION FOR--

- DATA SET LOCATION CONTROL, SUPPORTED BY A POWERFUL CATALOGING SYSTEM, ENABLING PROGRAMMERS TO RETRIEVE DATA AND PROGRAMS BY SYMBOLIC NAME ALONE, WITHOUT SPECIFYING VOLUME SERIAL NUMBER OR LOCATION ON THAT VOLUME.
- CLASS AND ALLOW AN UNPRECEDENTED DEGREE OF INDEPENDENCE FROM CONSIDERATION OF DEVICE AND DATA CHARACTERISTICS.
- A SYSTEM OF LABELS AND LABEL CHECKING. /USE 360P-UT-057, A STAND ALONE PROGRAM, TO WRITE INITIAL TAPE VOLUME LABELS./
- SUCCESSIVE GENERATIONS OF RELATED DATA SETS, CONTROLLED BY A GENERATION DATA GROUP FEATURE.
- CONTROL OF DIRECT ACCESS STORAGE SPACE ALLOCATIONS.

ALLOCATING SPECIFIC SPACE OR ANY AVAILABLE SPACE AS REQUESTED BY THE PROGRAMMER WHEN THE ORIGINAL SPACE PROVIDED IS NOT ADEQUATE, AN AUTOMATIC EXTENSION OF SPACE IS PROVIDED, IF REQUESTED.

DATA ACCESS

THE DATA ACCESS FACILITIES PROVIDED BY THE OPERATING SYSTEM ARE A MAJOR EXPANSION OF THE INPUT/OUTPUT CONTROL SYSTEM /IOCS/ OF PREVIOUS OPERATING SYSTEMS. THE INPUT/OUTPUT ROUTINES PROVIDED EFFICIENTLY SCHEDULE AND CONTROL THE TRANSFER OF DATA BETWEEN MAIN STORAGE AND INPUT/OUTPUT DEVICES. THESE ROUTINES ARE LOADED INTO MAIN STORAGE AT THE TIME THEY ARE NEEDED, AND THEY ARE RELEASED FROM MAIN STORAGE WHEN NO LONGER REQUIRED. THE PROGRAMMER CAN SELECT FROM VARIOUS DATA ACCESS METHODS TO OBTAIN FACILITIES TAILORED TO HIS PROCESSING REQUIREMENTS. EACH ACCESS METHOD SUPPLIES A COMPREHENSIVE SET OF MACRO-INSTRUCTIONS THAT PERMIT THE PROGRAMMER TO SPECIFY INPUT/OUTPUT REQUESTS WITH A MINIMUM OF EFFORT. ACCESS METHODS PROVIDE FOR--

- DEVICE INDEPENDENCE.
- READING AND WRITING DATA RANDOMLY AND SEQUENTIALLY.
- BLOCKING AND DEBLOCKING RECORDS.
- OVERLAPPING READING/WRITING AND PROCESSING OPERATIONS.
- DETECTING ERROR CONDITIONS AND CORRECTING THEM WHEN POSSIBLE.

ACCESS METHODS

BASIC SEQUENTIAL ACCESS METHOD - BSAM /360S-DN-508/

BSAM-DATA IS SEQUENTIALLY ORGANIZED. PHYSICAL BLOCKS OF DATA ARE STORED OR RETRIEVED. THE PROGRAM MAY CONTINUE IMMEDIATELY FOLLOWING THE READ OR WRITE MACRO BEFORE THE INPUT OR OUTPUT OPERATION IS COMPLETED. MACRO-INSTRUCTIONS ARE PROVIDED TO SYNCHRONIZE I/O WITH THE PROBLEM PROGRAM.

QUEUED SEQUENTIAL ACCESS METHOD - QSAM /360S-DN-508/

QSAM-DATA IS SEQUENTIALLY ORGANIZED. LOGICAL RECORDS ARE RETRIEVED OR STORED WHEN REQUESTED. THE ACCESS METHOD ANTICIPATES THE NEED FOR RECORDS BASED ON THEIR SEQUENTIAL ORDER, AND NORMALLY WILL HAVE THE DESIRED RECORD IN MAIN STORAGE, READY FOR USE, BEFORE THE REQUEST FOR RETRIEVAL. WHEN STORING DATA, THE PROGRAM NORMALLY WILL CONTINUE AS IF THE RECORD HAD BEEN WRITTEN IMMEDIATELY, ALTHOUGH THE ACCESS METHODS ROUTINES MAY BLOCK IT WITH OTHER LOGICAL RECORDS, AND DEFER THE ACTUAL STORING UNTIL THE OUTPUT BUFFER HAS BEEN FILLED.

INDEXED SEQUENTIAL ACCESS METHODS - ISAM /360S-IO-526/

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QUEUED INDEXED SEQUENTIAL ACCESS METHOD - QISAM - RECORDS IN DIRECT ACCESS STORAGE ARE STORED AND RETRIEVED IN A LOGICAL SEQUENCE BASED ON SOME DATA KEY OR CONTROL FIELD OF THE RECORDS. A MULTI-LEVEL SET OF INDEXES RELATING DATA KEYS OF RECORDS TO PHYSICAL ADDRESS IS AUTOMATICALLY BUILT AND MAINTAINED. QISAM IS USED TO CREATE AN INDEXED SEQUENTIAL DATA SET, AND TO RETRIEVE AND UPDATE RECORDS SEQUENTIALLY FROM SUCH A DATA SET. SYNCHRONIZATION OF THE PROGRAM WITH THE COMPLETION OF INPUT/OUTPUT TRANSFER, AND RECORD BLOCKING/DEBLOCKING ARE AUTOMATIC.

BASIC INDEXED SEQUENTIAL ACCESS METHOD - BISAM - THIS ACCESS METHOD STORES AND RETRIEVES RECORDS IN RANDOM SEQUENCE FROM AN INDEXED SEQUENTIAL DATA SET. SELECTIVE READING IS PERFORMED BY USING THE READ MACRO-INSTRUCTION, AND SPECIFYING THE KEY OF THE LOGICAL RECORD TO BE RETRIEVED. INDIVIDUAL RECORDS CAN BE REPLACED OR NEW RECORDS ADDED RANDOMLY. A SYNCHRONOUS OVERLAP OF INPUT/OUTPUT AND COMPUTATION MAY BE ACCOMPLISHED USING BISAM.

BASIC PARTITIONED ACCESS METHOD - BPAM /3605-DM-508/

BPAM- THIS METHOD IS DESIGNED FOR EFFICIENT STORAGE AND RETRIEVAL OF DISCRETE SEQUENCES OF DATA /MEMBERS/ BELONGING TO THE SAME DATA SET ON A DIRECT-ACCESS DEVICE. EACH MEMBER HAS A SIMPLE NAME. THE DATA SET INCLUDES A DIRECTORY THAT RELATES THE MEMBER NAME WITH THE ADDRESS WHERE THE SEQUENCE BEGINS. MEMBERS MAY BE ADDED TO A PARTITIONED DATA SET AS LONG AS SPACE IS AVAILABLE.

BASIC DIRECT ACCESS METHOD - BDAM /3605-DM-509/

BDAM-RECORDS WITHIN A DATA SET ARE ORGANIZED ON DIRECT-ACCESS VOLUMES IN ANY MANNER CHOSEN BY THE PROGRAMMER. STORAGE OR RETRIEVAL OF A RECORD IS BY ACTUAL ADDRESS OR BY RELATIVE ADDRESS WITHIN THE DATA SET. THIS ADDRESS CAN BE THAT OF THE DESIRED RECORD OR A STARTING POINT WITHIN THE DATA SET, WHERE A SEARCH FOR THE RECORD, BASED ON A DATA KEY FURNISHED BY THE PROGRAMMER, BEGINS. ADDRESSES ARE ALSO USED BY BDAM AS STARTING POINTS FOR SEARCHING FOR AVAILABLE SPACE FOR NEW RECORDS. SEARCHING FOR AN EXISTING RECORD OR AVAILABLE SPACE IS LIMITED TO ONE TRACK. BDAM EXTENSIONS PROVIDE FOR MULTIVOLUME DATA SETS, DYNAMIC BUFFERING, EXTENDED SEARCH AND THE CHECK MACRO.

BASIC TELECOMMUNICATIONS ACCESS METHOD - BTAM /3605-CQ-513/

THE BTAM FACILITIES ARE DESIGNED TO PROVIDE THE BASIC TOOLS REQUIRED TO WRITE A TELECOMMUNICATIONS PROGRAM. THESE INCLUDE MACRO FACILITIES FOR CREATING TERMINAL LISTS AND PERFORMING THE FOLLOWING OPERATIONS -

- POLLING TERMINALS
- RECEIVING MESSAGES
- ADDRESSING TERMINALS
- TRANSMITTING MESSAGES
- CHANGING THE STATUS OF TERMINAL LISTS
- DYNAMIC BUFFERING
- COMMUNICATION SERVICEABILITY FACILITIES
- CODE TRANSLATION

QUEUED TELECOMMUNICATIONS ACCESS METHOD - QTAM /3605-CQ-519/

QTAM SUPPORTS A VARIETY OF APPLICATIONS SUCH AS MESSAGE SWITCHING, INQUIRY AND TRANSACTION PROCESSING. THE FACILITIES INCLUDE A COMPREHENSIVE SET OF MESSAGE CONTROL AND EDITING ROUTINES THAT RELIEVE THE PROGRAMMER ASSIGNED THE SPECIALIZED PROGRAMMING OTHERWISE REQUIRED FOR SUCH AN APPLICATION. THESE ROUTINES CAN BE ASSEMBLED INTO AN INTEGRAL MESSAGE CONTROL PROGRAM WHICH IS DESIGNED TO MEET THE EXACT REQUIREMENTS OF AN INSTALLATION.

QTAM SUPPORTS - 1031, 1032, 1033, 1035, 1052 TERMINAL CONSOLE, 1054, 1055, 1056, 1057, 1058, 1062, 2740, REMOTELY CONNECTED 2260 DISPLAY, AT+T 8383 SELECTIVE CALLING STATION, WESTERN UNION PLAN 115A OUTSTATION, AT+T MODEL 330R 35 TYPEWRITER DIAL SERVICE.

LANGUAGE COMPILERS

LANGUAGE COMPILERS AND THE ASSEMBLER COMPILER SYMBOLIC SOURCE PROGRAMS /SOURCE MODULES/ INTO OBJECT PROGRAMS /OBJECT MODULES/. ASSEMBLER E, COBOL E AND FORTRAN IV /E LEVEL SUBSET/ ALLOW FOR UNBLOCKED RECORDS ONLY /ON SYSTEM INPUT AND OBJECT MODULE OUTPUT/.

ASSEMBLER E - 3605-AS-036

THE ASSEMBLER PERMITS THE SOLUTION OF PROBLEMS TO BE EXPRESSED IN CONVENIENT STATEMENTS CORRESPONDING TO THE SYSTEM/360 MACHINE LANGUAGE. THE MINIMUM MAIN STORAGE REQUIREMENT IS 18K BYTES, BUT THE ASSEMBLER TAKES ADVANTAGE OF ADDITIONAL MAIN STORAGE BY EXPANDING THE SIZE OF CERTAIN TABLES CONSTRUCTED DURING THE ASSEMBLY PROCESS.

THE ASSEMBLER PROVIDES--

- A. MACRO-INSTRUCTIONS -- THE MACRO-INSTRUCTIONS CAPABILITY PROVIDED BY THE ASSEMBLER IS A POWERFUL PROGRAMMING TOOL. IT IS FLEXIBLE AND EASY TO USE, AND PERMITS NEW LANGUAGE CAPABILITIES TO BE DEFINED AS NEW OR EXPANDED APPLICATIONS ARE DEVELOPED.
 - B. TESTRAN MACRO-INSTRUCTIONS -- THE ASSEMBLER ALLOWS THE COMPLETE TESTRAN MACRO-INSTRUCTION PROCESSING.
 - C. CONDITIONAL ASSEMBLY STATEMENTS -- CONDITIONAL ASSEMBLY STATEMENTS CAN BE USED WITHIN A MACRO DEFINITION OR IN A SOURCE PROGRAM TO ALTER THE SEQUENCE IN WHICH STATEMENTS ARE PROCESSED, OR TO SPECIFY SELECTIVE ASSEMBLY OF INSTRUCTIONS.
 - D. DEVTYPE -- ALLOWS THE ASSEMBLER PROGRAMMER TO REQUEST INFORMATION /VIA PROGRAMMING/ RELATING TO THE CHARACTERISTICS OF I/O DEVICES IN USE, ALLOWING A PROGRAMMED SELECTION OF BLOCKING AND OTHER FACTORS THAT WILL OPTIMIZE PERFORMANCE.
- SYSTEM REQUIREMENTS - THE ASSEMBLER USES THE STANDARD INSTRUCTION SET. OBJECT PROGRAMS MAY USE ANY INSTRUCTION SET. IN ADDITION TO THE STANDARD REQUIREMENTS FOR A DASD SYSTEM RESIDENCE, THE ASSEMBLER REQUIRES SPACE IN AUXILIARY STORAGE FOR THE FOLLOWING DATA SETS--
- SYSTEM INPUT.
 - THREE INTERMEDIATE /WORK STORAGE/.
 - MACRO-INSTRUCTION LIBRARY /THIS REQUIREMENT MAY BE SATISFIED BY DASD SYSTEM RESIDENCE OR PRIVATE LIBRARY. THE PRIVATE LIBRARY MAY CONTAIN ASSEMBLER LANGUAGE STATEMENTS TO BE CALLED BY THE COPY ASSEMBLER INSTRUCTION AND/OR THE USER'S PRIVATE MACRO DEFINITIONS/.
 - PRINT OUTPUT.
 - EITHER OBJECT MODULE OR PUNCH OUTPUT /SELECTABLE THROUGH THE JOB CONTROL LANGUAGE/.

ALGOL F - 3605-AL-531

ALGOL F, AN ALGEBRAIC LANGUAGE COMPILER, ENCOMPASSES THE ECMA SUBSET OF ALGOL AS WELL AS THE IFIP SUBSET. THE RECURSIVE USE OF PROCEDURES ABILITY IS PROVIDED BEYOND THE ECMA SUBSET. SINCE THERE ARE NO PLAN TO IMPROVE OR ADD ADDITIONAL CAPABILITIES TO THE ALGOL PROCESSOR IT IS RECOMMENDED THAT PL/I OR FORTRAN BE USED IN ITS PLACE WHERE POSSIBLE.

ALGOL F LIBRARY - 3605-LM-532

WHEN PROCESSING THE SOURCE PROGRAM, THE COMPILER DETECTS AND SPECIFIES ANY ROUTINES THAT NEED TO BE COMBINED WITH THE GENERATED OBJECT MODULE BEFORE IT CAN BE EXECUTED. THESE ROUTINES ARE CONTAINED IN THE OS/360 ALGOL F LIBRARY - A PARTITIONED DATA SET WITH THE EXTERNAL NAME SYS1:ALGLIB. THE ROUTINES ARE IN LOAD MODULE FORM AND THE LINKAGE EDITOR COMBINES THEM WITH THE OBJECT MODULE TO PRODUCE AN EXECUTABLE LOAD MODULE. THERE ARE THREE TYPES OF ROUTINES - FIXED STORAGE AREA, MATHEMATICAL AND INPUT/OUTPUT ROUTINES. ADDITIONALLY, AN ERROR ROUTINE, STORED ON THE OS/360 LINK LIBRARY IS CALLED AT EXECUTION TIME IF AN ERROR OCCURS.

ASSEMBLER F - 3605-AS-037

THE ASSEMBLER F, PERMITS PROGRAMS TO BE EXPRESSED IN CONVENIENT STATEMENTS CORRESPONDING TO THE SYSTEM/360 MACHINE LANGUAGE. THE MINIMUM MAIN STORAGE REQUIREMENT IS 44K BYTES, BUT THE ASSEMBLER TAKES ADVANTAGE OF ADDITIONAL MAIN STORAGE BY EXPANDING THE SIZE OF CERTAIN TABLES CONSTRUCTED DURING THE ASSEMBLY PROCESS. THE ASSEMBLER PROVIDES--

- MACRO INSTRUCTIONS- THE MACRO INSTRUCTIONS USED BY ASSEMBLER F ARE THE SAME AS THOSE FOR ASSEMBLER E.
- PSEUDO REGISTERS- MULTIPLE COMMON AREAS MAY BE SHARED BY SEPARATELY ASSEMBLED SUBROUTINES THAT ARE PROCESSED TOGETHER BY THE LINKAGE EDITOR. SPACE FOR EACH UNIQUELY NAMED COMMON AREA IS ASSIGNED DYNAMICALLY AT PROGRAM EXECUTION TIME.
- DUAL OUTPUT- BOTH OBJECT MODULE AND PUNCH OUTPUT DURING THE SAME ASSEMBLY IS SUPPORTED.
- BLOCKED INPUTS- SYSIN AND SYS1:MACLIB MAY BE BLOCKED TO SIGNIFICANTLY IMPROVE PERFORMANCE.
- PUNCH ERROR RECOVERY- ASSEMBLER F PROVIDES PUNCH ERROR RECOVERY WHEN 3 BUFFERS ARE ASSIGNED TO SYSYPUNCH.
- DEVTYPE -- ALLOWS THE ASSEMBLER PROGRAMMER TO REQUEST INFORMATION /VIA PROGRAMMING/ RELATING TO THE CHARACTERISTICS OF I/O DEVICES IN USE, ALLOWING A PROGRAMMED SELECTION OF BLOCKING AND OTHER FACTORS THAT WILL OPTIMIZE PERFORMANCE.

COBOL E - 3605-CO-503

OPERATING SYSTEM/360 COBOL PROVIDES IMPORTANT NEW FEATURES THAT REDUCE THE COST OF PROGRAMMING AND EXTEND THE USE OF THE LANGUAGE TO NEW AREAS OF APPLICATION. THE MINIMUM MAIN STORAGE REQUIREMENT IS 17K BYTES, BUT THE COMPILER WILL TAKE ADVANTAGE OF ADDITIONAL AVAILABLE MAIN STORAGE BY EXPANDING THE SIZE OF INPUT/OUTPUT BUFFER AREAS AND TABLES CONSTRUCTED DURING THE COMPILATION PROCESS.

LANGUAGE FEATURES-- AMONG THE NEW FEATURES FURNISHED BY BOTH COBOL COMPILERS ARE--

- FLOATING POINT FACILITY.
 - DEBUGGING SOURCE STATEMENTS.
 - DEBUGGING PACKETS THAT MAY BE COMPILED TOGETHER WITH THE SOURCE PROGRAM AND EXECUTED AT OBJECT TIME WITHOUT ALTERATIONS TO THE ORIGINAL SOURCE PROGRAM.
 - COPY AND INCLUDE FROM A USER'S SOURCE PROGRAM LIBRARY.
 - SUBPROGRAM FACILITY.
- SYSTEM REQUIREMENTS - THE COBOL COMPILER AND OBJECT PROGRAMS USE THE STANDARD INSTRUCTION SET AND THE DECIMAL ARITHMETIC OPTION. THE FLOATING POINT ARITHMETIC OPTION IS ALSO REQUIRED IF FLOATING POINT LITERALS, DATA ITEMS, OR NON-INTEGER EXPONENTS ARE USED.
- IN ADDITION TO THE STANDARD OS/360 REQUIREMENT FOR DASD SYSTEM RESIDENCE, THE COMPILER REQUIRES SPACE IN AUXILIARY STORAGE FOR DATA SETS. THE COBOL E REQUIREMENT IS FOR --
- SYSTEM INPUT.
 - THREE INTERMEDIATES OF THE SAME TYPE. /WORK STORAGE/.
 - ONE INTERMEDIATE FOR SOURCE PROGRAM LIBRARY FACILITY /SEE NOTE./
 - PRINT OUTPUT.
 - EITHER OBJECT MODULE OR PUNCH OUTPUT /SEE NOTE./
 - COBOL SOURCE COPY LIBRARY /DASD/ /SEE NOTE./
- NOTE-- THESE SYSTEM REQUIREMENTS ARE SELECTABLE THROUGH THE JOB CONTROL LANGUAGE.

COBOL E LIBRARY - 3605-LM-504

THE COBOL LIBRARY CONSISTS OF SUBROUTINES CALLED BY THE COMPILER TO PERFORM CONVERSIONS, COMPLEX ARITHMETIC OPERATIONS AND CERTAIN I/O FUNCTIONS FOR THE COBOL VERBS ACCEPT AND DISPLAY.

NOTE-- THE INITIAL VERSION OF THE COBOL E COMPILER CONTAINS RESTRICTIONS THAT MAY AFFECT SOME CUSTOMERS. THE RESTRICTION DETAILS ARE STATED IN A LIST DISTRIBUTED WITH EACH SYSTEM.

COBOL F - 3605-CO-524

COBOL F OFFERS, IN ADDITION TO THE FEATURES OF COBOL E, THE FOLLOWING IMPORTANT FEATURES -

- DIRECT ACCESS STATEMENTS
 - INVERTED PRINT EDIT
 - SORT VERB
 - REPORT WRITER FEATURE
 - EXTENDED SOURCE PROGRAM LIBRARY FACILITY
 - STERLING CONVERSION
 - CORRESPONDING OPTION
- NOTES ON COBOL F -
- MODEL 65 REQUIRES EC LEVEL 705226 WHEN USED FOR COBOL F COMPILATIONS.
 - COMPILATION SPEED IS PARTLY DEPENDENT UPON THE AMOUNT OF MAIN STORAGE ALLOTTED TO THE COMPILER. COMPILATION TIME MAY BE REDUCED BY ALLOTTING MORE MAIN STORAGE TO THE COMPILER FOR LARGER PROGRAMS FOR WHICH THE COMPILER MUST ,,SPILL,, INTERNAL WORK TABLES ON EXTERNAL DEVICES.
 - THE MINIMUM MAIN STORAGE REQUIREMENT OF COBOL F IS 80K. THE MINIMUM CPU SIZE REQUIRED FOR COBOL F IS STILL 100K BYTES /MODEL 67/.

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COBOL F LIBRARY - 360S-LM-525

THE COBOL F LIBRARY CONTAINS SUBROUTINES WHICH FALL INTO THE FOLLOWING FIVE MAJOR CATEGORIES -

- CONVERSION ROUTINES
- ARITHMETIC VERB ROUTINES
- INPUT/OUTPUT VERB ROUTINES
- SORT FEATURE INTERFACE ROUTINES
- OTHER VERB ROUTINES

FORTRAN IV E LEVEL SUBSET - 360S-FO-092

THE E LEVEL SUBSET SUPPORTS THE PROPOSED ASA BASIC FORTRAN LANGUAGE. THE E LEVEL SUBSET PROVIDES LANGUAGE EXTENSIONS BEYOND ASA BASIC FORTRAN, INCLUDING -

- DOUBLE-PRECISION ARITHMETIC.
- MIXED-MODE ARITHMETIC.
- ABILITY TO REPLACE THE H FORMAT SPECIFICATION BY ENCLOSING APOSTROPHES.
- THE T-SPECIFICATION, PERMITTING PRINTED OUTPUT TO BEGIN AT ANY PRINT POSITION.
- ARRAYS OF UP TO THREE DIMENSIONS.
- P-SCALE FACTORS IN FORMAT STATEMENTS.

THE FORTRAN COMPILER PROVIDES--

- OPTIMIZED BALANCE BETWEEN COMPILER PERFORMANCE AND OBJECT PROGRAM EFFICIENCY IN BOTH MAIN STORAGE USE AND PERFORMANCE.
- SUPPORT OF THE SEQUENTIAL ACCESS METHOD /BSAM/.
- SUPPORT OF THE DIRECT ACCESS METHOD /DAM-FIXED LENGTH ONLY/.
- A COMPILE TIME OPTION WHICH WILL ALLOW THE INTRODUCTION OF SOURCE PROGRAMS IN EITHER BCD OR EBCDIC CHARACTER CODES. THE OUTPUT OF THE COMPILERS--SOURCE LISTINGS AND LITERAL DATA IN THE OBJECT PROGRAMS--WILL UTILIZE THE ORIGINAL, UNTRANSLATED CHARACTER CODES. AT OBJECT TIME, LITERAL, A-FORMAT, AND H-FORMAT INPUT AND OUTPUT DATA WILL NOT BE TRANSLATED. D-, E-, F-, AND I-FORMAT INPUT DATA MAY BE IN EITHER BCD OR EBCDIC CODE REPRESENTATION.
- THE MINIMUM MAIN STORAGE REQUIREMENT IS 15K BYTES.
- THE MAXIMUM ARRAY SIZE IS 128K BYTES, THE MAXIMUM DATA STORAGE IS 192K BYTES.

SYSTEM REQUIREMENTS - THE COMPILER AND OBJECT PROGRAMS REQUIRE THE STANDARD INSTRUCTION SET AND THE FLOATING POINT OPTION. IN ADDITION TO THE STANDARD SYSTEM RESIDENCE SPACE IN AUXILIARY STORAGE IS REQUIRED FOR THE FOLLOWING DATA SETS -

- SYSTEM INPUT.
- TWO INTERMEDIATE /WORK STORAGE/.
- PRINT OUTPUT.
- PUNCH OUTPUT.
- OBJECT MODULE.

FORTRAN IV-H - 360S-FO-500

THE H COMPILER PROVIDES THE FOLLOWING EXTENSIONS TO THE LANGUAGE BEYOND USA FORTRAN -

- IMPLICIT STATEMENT ALLOWING EXTENDED IMPLICIT CLASSIFICATION BY FIRST CHARACTER OF A NAME.
- AN EXTENDED TYPE STATEMENT, INCLUDING LENGTH SPECIFICATION.
- G-CONVERSION, EXTENDED TO COVER ALL NUMERIC AND LOGICAL DATA TYPES.
- MULTIPLE ENTRY POINTS TO SUBPROGRAMS, AND NON-STANDARD RETURNS FROM SUBROUTINES.
- ARRAYS OF UP TO SEVEN DIMENSIONS.
- PAUSE STATEMENT EXTENDED TO PERMIT OUTPUT OF MESSAGES.
- NAMELIST STATEMENT PERMITTING I/O AND CONVERSION WITHOUT EXPLICIT I/O LIST AND FORMAT STATEMENT.
- EXTENDED SUBSCRIPTS.
- HEXADECIMAL CONSTANTS AND FORMAT CODE.

THE H COMPILER OFFERS THE USER THE ABILITY TO PRODUCE HIGHLY EFFICIENT CODE.

FORTRAN IV-G - 360S-FO-520

THE G COMPILER PROVIDES THE FOLLOWING EXTENSIONS BEYOND USA FORTRAN, IN ADDITION TO THOSE LISTED UNDER H -

- DEBUGGING FEATURES.
- SUPPORT OF BOAM

FORTRAN IV LIBRARY - 360S-LM-501

THIS LIBRARY CONTAINS THE RELOCATABLE SUBPROGRAMS AND SERVES FORTRAN IV E, G AND H.

SERVICE PROGRAMS

SERVICE PROGRAMS PROVIDE FUNCTIONS RANGING FROM STANDARD UTILITY SERVICES TO PROGRAM MODULE LINKING AND EDITING, AND AN EXTREMELY FLEXIBLE SORT/MERGE.

PL/IF - 360S-NL-511

THE PL/IF COMPILER PROVIDES MANY NEW AND SIGNIFICANT FACILITIES IN A SINGLE HIGH LEVEL LANGUAGE, FEATURES PROVIDED ARE--

- RECORD I/O... ALLOWS COLLECTIONS OF I/O DATA TO BE PROCESSED AS RECORDS. ALLOWS THE EFFICIENT TRANSMISSION OF DATA IN INTERNAL FORMAT WITHOUT CONVERSION.
- COMPILE TIME FACILITIES... ALLOWS THE CONDITIONAL MODIFICATION OF PL/I SOURCE PROGRAMS AT COMPILATION. MODIFICATIONS CAN BE SELECTED FROM A PREVIOUSLY PREPARED AND STORED LIBRARY.
- DATA INITIALIZATION... ARRAYS /TABLES/ OF DATA IN STATIC STORAGE CAN BE INITIALIZED USING THE INITIAL ATTRIBUTE. ARRAYS OF DYNAMIC LABEL VARIABLES MAY BE INITIALIZED BY USING THE ELEMENTS AS STATEMENT LABELS.
- PRINTED OUTPUT CONTROL... ALLOWS FOR THE USE OF PAGESIZE AND LINESIZE OPTIONS. THESE OPTIONS PERMIT IMPROVED CONTROL BY THE PROGRAMMER IN THE FORMAT OF PRINTED OUTPUT PRODUCED IN THE STREAM I/O.
- RECURSION... THE PREFERRED AND STANDARD MATHEMATICAL RECURSION IS PROVIDED.
- OPERATORS... USERS MAY SPECIFY THE OPERATORS ,NOT GREATER THAN, , AND ,NOT LESS THAN, REPRESENTED BY THEIR STANDARD SYMBOLS IN THE G CHARACTER SET, AND BY NG AND NL IN THE *B CHARACTER SET.
- PAPER TAPE SUPPORT... CAN BE USED FOR PL/I SOURCE PROGRAM INPUT, AND CONSECUTIVE DATA SET INPUT TO THE PL/I OBJECT PROGRAM.

ADDITIONAL FEATURES PROVIDED ARE--

- IMPROVED PRINT FILE FORMATTING...
 1. NON-SPLITTING OF NUMERIC DATA ACROSS LINE BOUNDARIES.
 2. IMPLEMENTATION DEFINED TABLING FOR ALL DATA ITEMS IN LIST/DATA DIRECTED OUTPUT.
- OBJECT TIME ERROR HANDLING...
 1. SOURCE PROGRAM STATEMENT NUMBERS ARE PROVIDED WITH OBJECT

CONTINUED FROM PRIOR COLUMN--

- 2. SNAP OUTPUT CAN BE COMBINED WITH SYSTEM ACTION FOR ON STATEMENTS. THUS, A TRACE OF CALLS IS AUTOMATICALLY PROVIDED BEFORE EXECUTING THE STANDARD SYSTEM ACTION.
- 3. ADDITIONAL ON-VALUES ARE PROVIDED TO PINPOINT SPECIFIC CONVERSION ERRORS RECOGNIZED BY CONVERSION ON-CONDITION.

- COMPILER PRODUCED LISTS... DOUBLE COLUMN LISTINGS OF THE OBJECT PROGRAM ARE PROVIDED WHEN THE OPTION LIST IS SPECIFIED.

NOTES ON PL/IF -

- USE IN THE PL/I PROGRAM OF THE TIME BUILT-IN FUNCTION OR THE DELAY STATEMENT REQUIRES OPTION 6A /TIME/.
- OPTION 6A /TIME/ IS REQUIRED IF TIME OF COMPILATION IS TO BE PRINTED BY THE COMPILER.
- THE SPECIFICATION BY THE USER OF A REGIONAL OR INDEXED DATA SET ORGANIZATION, REQUIRES THE PRESENCE IN HIS GENERATED SYSTEM OF BOAM AND ISAM MODULES RESPECTIVELY. THE PRESENCE OF BSAM/ASAM IS ALWAYS REQUIRED.
- REASSEMBLY OF MODULES OF THE PL/I LIBRARY REQUIRE AN ASSEMBLY PROGRAM WITH PSEUDO-REGISTER SUPPORT. THE OS/360 F ASSEMBLER PROVIDES THIS.
- USE OF THE COMPILE TIME FEATURE WILL REQUIRE THE ADDITIONAL DATA SET SYSUT3, WHICH MAY BE EITHER A DASD OR MAGNETIC TAPE.

PL/IF LIBRARY - 360S-LM-512

THE PL/IF LIBRARY COMPUTATIONAL SUBROUTINES PROVIDE SUPPORT FOR THE OPERATORS AND FUNCTIONS OF THE PL/IF LANGUAGE IN THE FOLLOWING FOUR MAJOR CATEGORIES -

- EDIT AND CHARACTER STRINGS.
- ARITHMETIC.
- MATHEMATICAL.
- ARRAYS.

THESE SUBROUTINES HAVE BEEN DESIGNED TO ALLOW THEIR USE IN A MULTI-TASKING ENVIRONMENT.

LINKAGE EDITOR E - 360S-ED-510

THE OPERATOR SYSTEM LINKAGE EDITOR COMBINES SEPARATELY ASSEMBLED OR COMPILED OBJECT MODULES INTO A SINGLE LOAD MODULE THAT IS IN A FORMAT SUITABLE FOR LOADING BY THE CONTROL PROGRAM, AND EXECUTION. IT ALSO COMBINES PREVIOUSLY EDITED LOAD MODULES WITH EACH OTHER OR WITH OBJECT MODULES. ALTHOUGH LINKING OR COMBINING OF PROGRAM MODULES IS ITS PRIMARY FUNCTION, LINKAGE EDITOR ALSO--

- INCORPORATES MODULES FROM DATA SETS OTHER THAN THOSE IN ITS PRIMARY INPUT, EITHER AUTOMATICALLY OR UPON REQUEST.
- CONSTRUCTS AN OVERLAY PROGRAM FOR LOADING BY THE CONTROL PROGRAM.
- AIDS PROGRAM MODIFICATION BY REPLACING AND DELETING CONTROL SECTIONS AS DIRECTED BY LINKAGE EDITOR CONTROL STATEMENTS.
- DEFINES THE STORAGE REQUIREMENTS FOR THE COMMON CONTROL SECTIONS GENERATED BY ASSEMBLERS AND COMPILERS.
- PROVIDES PROCESSING OPTIONS AND LOGS DIAGNOSTIC ERROR MESSAGES.
- PROVIDES BLOCKED RECORDS ON SYSLMOD OF 3072 BYTES COMPATIBLE WITH LINKAGE EDITOR F /44K ONLY/.
- PROVIDES BLOCKED INPUT AND OUTPUT FROM SYSLIN, LINKLIB AND SYSPRINT.
- PROVIDES DOUBLE BUFFERING OF PRINCIPAL ELEMENTS.

THE MINIMUM MAIN STORAGE REQUIREMENT IS 15K BYTES. 18K AND 44K LINKAGE EDITORS ARE ALSO PROVIDED FOR IMPROVED PERFORMANCE, EACH EDITOR WILL TAKE ADVANTAGE OF ADDITIONAL AVAILABLE MAIN STORAGE TO INCREASE THE SIZE OF TABLES. THE LINKAGE EDITOR E HANDLES UNBLOCKED RECORDS ONLY.

SYSTEM REQUIREMENTS-- IN ADDITION TO THE STANDARD SYSTEM RESIDENCE, THE LINKAGE EDITOR REQUIRES SPACE IN AUXILIARY STORAGE FOR AT LEAST THE FOLLOWING DATA SETS - SYSTEM INPUT... ONE INTERMEDIATE - REQUIRES DASD... PRINT OUTPUT... OUTPUT LOAD MODULE - REQUIRES DASD. THERE MAY ALSO BE ONE OR MORE LIBRARY DATA SETS, REQUIRING DASD, AND ONE OR MORE OBJECT MODULE DATA SETS AS ADDITIONAL INPUT.

LINKAGE EDITOR F - 360S-ED-521

THE LINKAGE EDITOR F, PROVIDES IMPROVED PERFORMANCE THROUGH BLOCKING OF EDITED TEXT TO 3072 BYTES. INPUT MAY BE BLOCKED OR UNBLOCKED. THE NUMBER OF ALLOWABLE SYMBOLS IS INCREASED TO SUPPORT LARGER PROGRAMS.

NOTE-- THIS RELEASE CONTAINS RESTRICTIONS TO LINKAGE EDITOR F THAT MAY REQUIRE A SYSTEM LARGER THAN 64K TO PROCESS PROGRAMS THAT EXCEED ITS TEXT BUFFER CAPACITY. WHERE APPROPRIATE, LINKAGE EDITOR E CAN BE USED UNTIL THIS RESTRICTION IS REMOVED. SEE THE RELEASE 3 OS/360 PROSE FOR DETAILS. A LIBMAINT PARAMETER HAS BEEN ADDED TO THE SYSTEM GENERATION MACROS TO CONTROL WHICH LINKAGE EDITOR WILL BE USED TO GENERATE THE SYSTEM.

REPORT PROGRAM GENERATOR - 360S-RG-038

RPG IS A POWERFUL, HIGH LEVEL, PROBLEM-ORIENTED LANGUAGE, DESIGNED TO PROVIDE USERS WITH AN EFFICIENT, EASY-TO-USE TECHNIQUE FOR GENERATING PROGRAMS THAT CAN PERFORM THE FOLLOWING FUNCTIONS -

- OBTAIN DATA RECORDS FROM SINGLE OR MULTIPLE INPUT DATA SETS.
- CREATE FORMATTED PRINTED REPORTS.
- LINK TO USER SUBROUTINES WRITTEN IN SYSTEM/360 ASSEMBLER LANGUAGE.
- PERFORM CALCULATIONS ON DATA FROM INPUT RECORDS OR PROGRAM CREATED CONSTANTS.
- DO TABLE LOOKUP.
- CONTROL OPERATION WITH THE USE OF INDICATORS.
- BRANCH WITHIN CALCULATIONS.
- SEQUENCE CHECK INPUT RECORDS.
- EDIT OUTPUT REPORTS.
- OPERATE ON SPLIT CONTROL FIELDS.
- PROVIDE STERLING CONVERSION.
- HANDLE SEQUENTIAL DATA SETS /QSAM/.
- CREATE NEW DATA SETS /SEQUENTIAL/.
- USE THE DIRECT ACCESS METHOD /BOAM/.
- USE THE INDEXED SEQUENTIAL ACCESS /ISAM/.
- UPDATE DATA SETS IN PLACE /BOAM AND ISAM/.

THE RPG PROGRAM-- USES FUNCTIONS AVAILABLE IN OPERATING SYSTEM/360 ... COMPILES DIRECTLY TO RELOCATABLE MACHINE LANGUAGE... COMPATIBLE TO MODEL 20 TO BPS TO BOS TO TOS TO DOS... MINOR RE-EDUCATION FROM CURRENT SYSTEMS RPG TO OPERATING SYSTEM/360 RPG... NEW SRL IS REWRITTEN, EASIER TO USE... MODIFIED SPECIFICATION SHEETS FOR EASIER CODING.

SYSTEM REQUIREMENTS-- MODEL E 30 CPU... ONE MULTIPLEXOR CHANNEL WITH ONE 2540 CARD READ PUNCH USED FOR SYSTN, SYSPUNCH... ONE 1403 PRINTER, MODEL 3 USED FOR SYSPRINT... ONE SELECTOR CHANNEL WITH ONE 2311 DISK STORAGE DRIVE USED FOR SYSTEM RESIDENCE AND INTERMEDIATE /WORK/ DATA SETS. ALTHOUGH DESIGNED TO OPERATE AT THE 15K LEVEL, THE OS/360 RPG COMPILER WILL

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CONTINUED FROM PRIOR PAGE--

UTILIZE ADDITIONAL CORE STORAGE TO EXPAND INTERNAL TABLES. OPERATION OF OS/360 RPG ON THE MODEL 50 REQUIRES ENGINEERING CHANGE LEVEL 256907 TO BE INSTALLED. COMBINED FILE OPERATIONS APPLY TO THE 1442 CARD READ PUNCH ONLY. THE USER LABEL HANDLING FEATURE IN OS/360 RPG REQUIRES THE CORRESPONDING OS/360 DATA MANAGEMENT FEATURE, NOT YET AVAILABLE.

SORT/MERGE - 360S-SM-023

THE OPERATING SYSTEM SORT/MERGE IS DESIGNED TO SATISFY THE SORTING AND MERGING REQUIREMENTS OF BOTH TAPE-ORIENTED AND DASD-ORIENTED INSTALLATIONS. IT IS A GENERALIZED PROGRAM THAT WILL USE DIFFERENT SORTING AND MERGING TECHNIQUES, DEPENDING ON THE CONTROL INFORMATION SUPPLIED BY THE USER AND ON THE MAIN STORAGE AND THE SECONDARY STORAGE DEVICES AVAILABLE TO IT. THE MINIMUM MAIN STORAGE REQUIREMENT IS 17K BYTES., ADDITIONAL MAIN STORAGE WILL BE USED, WHERE APPROPRIATE, FOR PERFORMANCE IMPROVEMENT.

SIGNIFICANT FEATURES OF THE SORT/MERGE ARE--

- SORTING OR MERGING ON AS MANY AS TWELVE CONTROL DATA FIELDS.
 - COLLATING SEQUENCES AND DATA FORMAT CAN BE SPECIFIED SEPARATELY FOR EACH CONTROL FIELD.
 - SORT CHECKPOINT/RESTART FACILITY
 - DEVICE-INDEPENDENT INITIAL INPUT AND FINAL OUTPUT.
 - WITH ADDITIONAL MAIN STORAGE, AS MANY AS 32 TAPE UNITS OR 6 ACCESS MECHANISMS ON DASDS CAN BE USED FOR INTERMEDIATE STORAGE, AS WELL AS MULTIPLE INPUT AND OUTPUT DEVICES.
- SYSTEM REQUIREMENTS - IN ADDITION TO THE STANDARD SYSTEM RESIDENCE, THE SORT/MERGE REQUIRES, AS A MINIMUM, DEVICES FOR EACH OF THE FOLLOWING DATA SETS -
- SYSTEM INPUT.
 - THREE INTERMEDIATE STORAGE ON THE SAME DEVICE TYPE OR ONE DASD.
 - INITIAL INPUT AND FINAL OUTPUT /MAY BE SAME DEVICE/ OR THE INPUT DEVICE MAY ALSO BE USED FOR INTERMEDIATE STORAGE.
- NOTE- 9-TRACK INPUT REQUIRES 9-TRACK FOR OUTPUT AND INTERMEDIATE STORAGE /IF TAPE IS USED/.

TESTRAM - 360S-PT-516

TESTRAM STATEMENTS CAN BE GROUPED OR INTERSPERSED IN THE SOURCE MODULE AND WILL BE IDENTIFIED BY THE ASSEMBLER. THE ASSEMBLER WILL PRODUCE FROM THEM A SEPARATE, REPLACEABLE CONTROL SECTION WHICH CAN BE DELETED BY THE LINKAGE EDITOR. THESE STATEMENTS CAN ALSO BE ASSEMBLED SEPARATELY AND LINK EDITED WITH A PROGRAM TO BE TESTED.

THE TESTRAM EDITOR PROCESSES THE DATA PLACED IN AUXILIARY STORAGE BY TESTRAMS ON A PRECEDING TEST EXECUTION OR A LOAD MODULE. IT EDITS AND PRINTS THE DATA IN FORMAT INDICATED IN THE SYMBOL TABLE PRODUCED BY THE ASSEMBLER, UNLESS AN OVERRIDING FORMAT HAS BEEN SPECIFIED THROUGH TESTRAM MACRO-INSTRUCTIONS. THE TIME USED TO PROCESS TEST OUTPUT IS MINIMIZED BY--

- PREVENTING RUNAWAY TEST EXECUTION BY ALLOWING LIMITS TO BE PLACED ON THE QUANTITY OF TEST OUTPUT AND THE NUMBER OF TESTRAM MACRO-INSTRUCTIONS.
- ALLOWING SELECTIVE EDITING AND PRINTING OF TEST RESULTS ACCORDING TO ANY OF EIGHT PRIORITY CATEGORIES DESIGNATED BY THE PROGRAMMER.
- ALLOWING TEST OUTPUT EDITING AND PRINTING AT ANY CONVENIENT TIME AFTER TEST EXECUTION.

THE MINIMUM MAIN STORAGE REQUIRED FOR THE EDITOR IS 18K BYTES. SYSTEM REQUIREMENTS - SPACE IS REQUIRED IN AUXILIARY STORAGE FOR THE FOLLOWING DATA SETS -- SYSTEM INPUT... PRINT OUTPUT... TEST RESULTS FROM INTERPRETER... ONE INTERMEDIATE - REQUIRES DASD.

OPERATING SYSTEM/360 UTILITIES - 360S-UT-506

THE OPERATING SYSTEM/360 UTILITIES OPERATE WITH THE CONTROL PROGRAM AND PROVIDE THE FOLLOWING FEATURES--

- MOVING AND COPYING A DATA SET OR PART OF A DATA SET FROM ONE VOLUME TO ANOTHER.
- MOVING A DATA SET FROM ONE LOCATION TO ANOTHER ON THE SAME VOLUME.
- UNLOADING A DATA SET ONTO A REMOVABLE VOLUME AND LOADING IT AT A LATER TIME TO A DEVICE OF THE SAME TYPE AS THE ORIGINAL.
- THE COPY, MOVE, UNLOAD AND LOAD FUNCTIONS CAN BE ACCOMPLISHED ON GROUPS OF DATA SETS CATALOGED UNDER COMMON HIGH LEVEL QUALIFIERS.
- PRINTING OR PUNCHING A DATA SET, AND PRINTING INFORMATION CONTAINED IN THE CATALOG OR VOLUME TABLE OF CONTENTS.
- UPDATING SOURCE LANGUAGE PROGRAMS AND THE MACRO-INSTRUCTION LIBRARY.
- GENERATING A DATA SET BASED ON THE CONTENTS OF A SEQUENTIALLY ORGANIZED INPUT DATA SET. FIELDS WITHIN RECORDS MAY BE REPOSITIONED AND/OR CONVERTED AS SPECIFIED ACCORDING TO PROGRAMMER SPECIFICATIONS.
- BUILDING AND MODIFYING THE CATALOG DATA SET.
- ANALYZING THE CONTENTS OF THE SYSTEM LIBRARY WHEN UPDATING IS REQUIRED AND CREATING APPROPRIATE CONTROL STATEMENTS FOR SYSTEM MAINTENANCE.
- UNIVERSAL CHARACTER SET-- USER SUPPLIED CHARACTER SET CODES ARE LOADED INTO THE 2821 CONTROL UNIT. THIS UTILITY MAY BE SCHEDULED AS A JOB STEP OR INVOKED BY A USER TASK AT EXECUTION TIME.

THE MINIMUM MAIN STORAGE REQUIREMENT IS 18K BYTES. SYSTEM REQUIREMENTS - THE OPERATING SYSTEM UTILITIES REQUIRE THE STANDARD SYSTEM RESIDENCE DEVICE AND SPACE ON THE AUXILIARY STORAGE FOR THE FOLLOWING DATA SETS - SYSTEM INPUT... INTERMEDIATE STORAGE /VARIES WITH UTILITY/... PRINT OUTPUT.

INDEPENDENT UTILITIES - 360S-UT-507

THE INDEPENDENT UTILITIES DO NOT OPERATE WITH THE CONTROL PROGRAM, BUT THEY SUPPORT THE OPERATING SYSTEM WITH THE FOLLOWING SERVICES--

- INITIALIZING DASDS BY WRITING HOME ADDRESSES AND RECORD ZERO FOR EACH TRACK, CHECKING FOR DEFECTIVE TRACKS, INITIALIZING TRACKS TO ZERO, AND WRITING VOLUME LABELS AND VOLUME TABLES OF CONTENTS. UNLOADING AND LOADING DATA BETWEEN DASD AND A REMOVABLE VOLUME.

SYSTEM GENERATION

THIS IS THE PROCESS OF PREPARING A SPECIALLY TAILORED OPERATING SYSTEM TO MATCH THE MACHINE CONFIGURATION AND OPERATING SYSTEM OPTIONS SELECTED BY THE USER. THIS PROCESS USES THE OPERATING SYSTEM AND REQUIRES THE FOLLOWING PROGRAMS --

- CONTROL PROGRAM.
- DATA MANAGEMENT- DATA SET CONTROL, BSAM, QSAM, BPAM.
- ASSEMBLER.

CONTINUED FROM PRIOR COLUMN--

- LINKAGE EDITOR.
- UTILITIES.

PID WILL INCLUDE THE REQUIRED LIBRARIES /PARTITIONED DATA SETS/ WHICH CONTAIN THE OPERATING SYSTEM MODULES AND THE SYSTEM GENERATION MACRO-INSTRUCTIONS NEEDED FOR THE SYSTEM GENERATION PROCESS WHEN THE ABOVE PROGRAMS ARE ORDERED.

SYSTEM REQUIREMENTS

SYSTEM REQUIREMENTS- THE MINIMUM MAIN STORAGE REQUIREMENT, INCLUDING THE RESIDENT CONTROL PROGRAM NUCLEUS, IS 64K BYTES. OPERATING SYSTEM/360 CONFIGURATIONS CAN BE GENERATED TO RUN ON SYSTEMS WITH 32K BYTES OF MAIN STORAGE. HOWEVER, THESE 32K SYSTEMS CANNOT EXECUTE THE SYSTEM GENERATION PROCESS. THE OPERATING SYSTEM REQUIRES A MINIMUM OF ONE DASD BUT, FOR THIS PROCESS, TWO 2311 DISK STORAGE DRIVES ARE REQUIRED PLUS THREE 1316 DISK PACKS.

SYSTEM MAINTENANCE -- THE SAME SYSTEM REQUIREMENTS ARE REQUIRED FOR MAINTENANCE AS FOR GENERATION SINCE SOME CHANGES MAY REQUIRE A NEW SYSTEM GENERATION.

THIS AMOUNT OF DISK STORAGE WILL PERMIT THE GENERATION OF A SYSTEM WHICH INCLUDES --

- PRIMARY CONTROL PROGRAM.
- DATA MANAGEMENT- DATA SET CONTROL, BSAM, QSAM, BPAM, BDAH.
- ASSEMBLER E AND MACRO LIBRARY.
- FORTRAN IV /E-LEVEL SUBSET/.
- FORTRAN LIBRARY.
- COBOL E.
- COBOL LIBRARY.
- LINKAGE EDITOR E.
- TESTRAM.
- SORT/MERGE AND LIBRARY.
- UTILITIES.

THE INCLUSION OF ADDITIONAL FACILITIES MAY REQUIRE MORE DIRECT ACCESS STORAGE SPACE.

THE FOLLOWING LIST SHOWS THE REQUIRED SYSTEM ELEMENTS AND THE DEVICE TYPES WHICH MAY BE USED FOR EACH FUNCTION--

- PROCESSING UNIT FUNCTION- SYSTEM/360 MODEL 30, 40, 50, 65, OR 75 WITH MAIN STORAGE OF 64K BYTES OR MORE /F OR LARGER/.
- SYSTEM CONSOLE FUNCTION- 1052/2150. THE REQUIRED CONSOLE IS A 1052 WHICH MAY, BUT NEED NOT, BE CONNECTED VIA A 2150.
- CARD INPUT UNIT FUNCTION- 2540, 1442-NI, OR MAGNETIC TAPE /SEE NOTE 1/.
- PUNCHED OUTPUT UNIT FUNCTION- 2540, 1442-NI /A SINGLE 1442 CANNOT BE BOTH INPUT AND OUTPUT/, OR MAGNETIC TAPE /SEE NOTE 1/.
- PRINTED OUTPUT FUNCTION- 1403, 1404 /CONTINUOUS FORM ONLY/, 1443, OR MAGNETIC TAPE /SEE NOTE 1/.
- GENERATING SYSTEM RESIDENCE- 2311
- GENERATED SYSTEM RESIDENCE- 2311 /DIFFERENT UNIT FROM GENERATING SYSTEM RESIDENCE/.
- 2 INTERMEDIATE /WORK/ DATA SETS /DIRECT ACCESS REQUIRED/- 2311 /SEE NOTE 2/.
- 2 INTERMEDIATE /WORK/ DATA SETS /SEQUENTIAL/- 2311 OR MAGNETIC TAPE /SEE NOTE 1/.

NOTES-

1. MAGNETIC TAPE UNIT MAY BE 2400 - 9-TRACK, OR 2400 - 7-TRACK WITH DATA CONVERSION FEATURE /NO. 3228 OR NO. 3236/. MULTIPLE FUNCTIONS NOT PERMITTED ON A SINGLE TAPE DRIVE.
2. THESE INTERMEDIATE /WORK/ DATA SETS NORMALLY WILL BE PLACED ON THE SAME 2311 AS THE GENERATING SYSTEM RESIDENCE.

STARTER SYSTEM

STARTER SYSTEM FOR 2311 RESIDENCE - 360S-CI-514
STARTER SYSTEM FOR 2314 RESIDENCE - 360S-CI-534

TO ASSIST USERS PERFORMING THEIR INITIAL SYSTEM GENERATION, A STANDARDIZED ,,STARTER,, OPERATING SYSTEM IS AVAILABLE WITH INITIAL DISTRIBUTIONS OF PROGRAM MATERIALS FROM PID. THE STARTER SYSTEM HAS THE BASIC ELEMENTS NECESSARY FOR SYSTEM GENERATION, IN A FORM THAT WILL BE DIRECTLY USABLE BY A MAJORITY OF USERS. THE STARTER SYSTEM FUNCTIONS WITH A VARIETY OF DIFFERENT I/O UNITS AT ,,STANDARD,, ADDRESSES. USERS MAY USE THE STARTER SYSTEM TO PERFORM SYSTEM GENERATION IF THERE ARE APPROPRIATE MATCHING UNITS AND ADDRESSES IN THEIR OWN CONFIGURATION.

THE STARTER SYSTEM OPERATES ON A SYSTEM/360 HAVING 64K OR LARGER STORAGE. USERS WHOSE CONFIGURATIONS DO NOT MATCH CLOSELY ENOUGH TO PERMIT SYSTEM GENERATION SHOULD PLAN TO DO THEIR INITIAL SYSTEM GENERATION ON SOME SYSTEM HAVING OS/360 ALREADY INSTALLED. USERS SHOULD BE ENCOURAGED TO MATCH UNIT ADDRESS WITH THOSE OF THE STARTER SYSTEM TO THE GREATEST DEGREE PRACTICAL. UNIT ADDRESSES ARE ESTABLISHED AS PART OF THE NORMAL. PHYSICAL PLANNING AND CABLE ORDER PROCESS. THEREFORE, PHYSICAL INSTALLATION PLANS SHOULD BE REVIEWED WHERE APPROPRIATE.

STARTER SYSTEM CONFIGURATION -- THE FOLLOWING ARE THE PERMISSIBLE DEVICE ADDRESSES SUPPORTED BY THE STARTER SYSTEM, THE SYSTEM FUNCTIONS FOR WHICH THEY MAY BE USED, AND THE ADDRESS ASSIGNED TO EACH UNIT.

```
*****
***** CHOOSE FROM THE FOLLOWING *****
* * *****
*MIN* * * * * DEVICE ADDRESS *****
*REQ* FUNCTION * DEVICE *****
* * * * * *MPX * SEL * SEL * SEL *
* * * * * *CHANNEL*CHAN 1 *CHAN 2 *CHAN 3 *
*****
* 1 *SYSTEM CONSOLE*1052 *009,01F* *209,21F*309 *
* * * * * *2150/1052 *009,01F* *209,21F*309 *
*****
* 2 *STORAGE UNITS-*2311 * * *190-193*290-293* *
* *RES,DATA SETS * * * * *
*****
* * *1442 R/P# *00A * *20A * *
* 1 *SYSTEM INPUT *2540 READER*00C * *20F * *
* * * * * *2400 7TR-DC * *180,181*280,281* *
* * * * * *2400 9-TRK * *182-184*282-284* *
*****
* * *2540 PUNCH *00D * *20D * *
* 1 *PUNCH OUTPUT *1442 R/P# *00A * *20A * *
* * * * * *2400 7TR-DC * *180,181*280,281* *
* * * * * *2400 9-TRK * *182-184*282,284* *
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*****
*          *1443          *          *          *          *          *
* I *PRINT OUTPUT *1403 *          *          *          *          *
* *          *2400 7TR-DC*          *180,181*280,281*          *
* *          *2400 9-TRK *          *182-184*282-284*          *
*****
* *INTERMEDIATE *2311 *          *190-193*290-293*          *
* 2##*DATA SETS *2301 *          *1C0 *2C0 *          *
* *          *2400 9-TRK *          *182-184*282-284*          *
*****
* *INTERMEDIATE *2311 *          *190-193*290-293*          *
* 2##*DATA SETS *2301 *          *1C0 *2C0 *          *
* *          *2303 *          *197 *297 *          *
*****
* 1##*INT. DATA SETS*2314 *          *130-133*230-233*          *
*****
# A SINGLE 1442 MAY SERVE AS EITHER SYSTEM INPUT OR PUNCH
  OUTPUT, BUT NOT BOTH SIMULTANEOUSLY.
## THE SAME DIRECT ACCESS STORAGE DEVICES MAY SERVE FOR SYSTEM
  RESIDENCE AND SEQUENTIAL AND PARTITIONED DATA SETS IF
  SUFFICIENT SPACE IS AVAILABLE.
```

INPUT/OUTPUT DEVICE SUPPORT

THE FOLLOWING DEVICES ARE SUPPORTED BY THE PRIMARY CONTROL PROGRAM AND BY DATA MANAGEMENT FOR THE INDICATED SYSTEM FUNCTIONS.

- 1052 PRINTER-KEYBOARD-MAY BE USED AS A SYSTEM CONSOLE. /SEE NOTE/.
- 1403 PRINTER MODELS 2, 3, 7, N1 - MAY BE USED AS A SYSTEM CONSOLE... FOR PRINTED SYSTEM OUTPUT... FOR BSAM AND QSAM.
- 1404 PRINTER MODEL 2 WITH CONTINUOUS FORMS- USED FOR THE SAME SYSTEM FUNCTIONS AS THE 1403 ABOVE.
- 1442 CARD READ PUNCH MODEL N1- MAY BE USED AS A SYSTEM CONSOLE. /SEE NOTE/... FOR BSAM AND QSAM. THE 1442 CANNOT BE USED FOR BOTH SYSTEM INPUT AND PROBLEM OUTPUT SIMULTANEOUSLY, BUT MAY BE USED AS INPUT TO THE JOB STREAM.
- 1442 CARD PUNCH MODEL M2- MAY BE USED AS A SYSTEM CONSOLE /SEE NOTE/... FOR BSAM AND QSAM. MAY BE USED FOR SYSTEM OUTPUT.
- 1443 PRINTER MODEL N1- MAY BE USED FOR THE SAME SYSTEM FUNCTIONS AS THE 1403 ABOVE.
- 2301 DISK STORAGE DRIVE /MODELS 65 AND 75 ONLY/- MAY BE USED FOR SYSTEM RESIDENCE... BSAM, QSAM, BPAM AND BDM. THE MAXIMUM LENGTH TEXT RECORD WRITER BY LINKAGE EDITOR F ON THE SYSMOD DATA SET IS 3072 BYTES.
- 2311 DISK STORAGE DRIVE- MAY BE USED FOR SYSTEM RESIDENCE...
- 2314 DIRECT ACCESS STORAGE FACILITY- MAY BE USED FOR SYSTEM RESIDENCE. BSAM, QSAM, BPAM AND BDM.
- 2401 MAGNETIC TAPE UNIT MODELS 1, 2 AND 3- MAY BE USED FOR INPUT TO JOB STREAM... TO PREPARE FOR PRINTED SYSTEM OUTPUT... BSAM AND QSAM.
- 2402 MAGNETIC TAPE UNIT MODELS 1, 2 AND 3- MAY BE USED FOR THE SAME SYSTEM FUNCTIONS AS THE 2401 ABOVE.
- 2403 MAGNETIC TAPE UNIT AND CONTROL MODELS 1, 2 DRIVES 3- MAY BE USED FOR THE SAME SYSTEM FUNCTIONS AS THE 2401 ABOVE.
- 2404 MAGNETIC TAPE UNIT AND CONTROLS MODELS 1, 2 AND 3- MAY BE USED FOR THE SAME SYSTEM FUNCTIONS AS THE 2401 ABOVE.
- 2501 CARD READER- MAY BE USED AS A SYSTEM CONSOLE /SEE NOTE/... FOR BSAM AND QSAM. MAY BE USED AS INPUT TO THE JOB STREAM.
- 2520 CARD READ PUNCH- MAY BE USED AS A SYSTEM CONSOLE /SEE NOTE/... FOR BSAM AND QSAM. SUPPORTED FOR READ OR PUNCH, BUT NOT BOTH SIMULTANEOUSLY. FOR USE WITH SYSOUT /OPTION 12 ONLY/; NOT FOR SYSTEMS MESSAGES.
- 2540 CARD READ PUNCH- MAY BE USED AS INPUT TO THE JOB STREAM... AS A SYSTEM CONSOLE... AND FOR BSAM AND QSAM.
- 2671 PAPER TAPE READER- MAY BE USED FOR BSAM AND QSAM.
- 2870 MULTIPLEXER CHANNEL AND SUBSECTOR CHANNELS- ENABLES THE SIMULTANEOUS USE OF UP TO 4 SELECTOR SUBCHANNELS AND THE MULTIPLEXER CHANNEL. 2870 DOES NOT SUPPORT-BURST DEVICES ON THE MULTIPLEXER CHANNEL... CROSS CHANNEL DEVICES WITHIN THE 2870 OR BETWEEN THE 2870 AND ANOTHER CHANNEL... BYTE DEVICES WITH BURST MODE OPTIONS ARE SUPPORTED IN BYTE MODE ON THE MULTIPLEXER CHANNEL.

NOTE- A CONSOLE MUST CONSIST OF A PRINTER-KEYBOARD, OR A CARD READER AND LINE PRINTER COMBINATION TO SIMULATE THE ACTIONS OF A PRINTER-KEYBOARD.
BECAUSE OPERATING SYSTEM/360 REQUIRES DIRECT OPERATOR COMMUNICATION A PRINTER-KEYBOARD, OR THE CARD READER AND LINE PRINTER COMBINATION MUST BE AVAILABLE.

THE FOLLOWING SYSTEM, CONTROL UNIT AND I/O DEVICE FEATURES ARE SUPPORTED BY THE OPERATING SYSTEM. OTHER FEATURES, NOT LISTED, HAVE NO SPECIFIC PROGRAMMING SUPPORT., THEIR EXISTENCE IS IGNORED BY THE CONTROL PROGRAM. ATTEMPTS TO USE UNSUPPORTED FEATURES MAY CAUSE UNPREDICTABLE RESULTS. THIS LIST DOES NOT INCLUDE THOSE BASIC FEATURES WHICH ARE REQUIRED TO CONNECT A SUPPORTED DEVICE.

- CPU FEATURES-**
- DECIMAL ARITHMETIC /NO. 3237/. USED BY SOME COMPILERS.
 - FLOATING POINT ARITHMETIC /NO. 4427/. USED BY SOME COMPILERS.
 - INTERVAL TIMER /NO. 4760/. USED WITH OPTION 6.
 - SELECTOR CHANNELS /NUMBERS 6960, 6961, 6980, 6981, 6982/.
 - 2841 TWO-CHANNEL SWITCH /FEATURE CODE 8100/ ON A SINGLE CPU.
- I/O FEATURES-**
- 1442 CARD READ PUNCH MODEL N1. CARD IMAGE /NO. 1531/. FOR PROBLEM PROGRAM USE ONLY.
 - 1443 PRINTER MODEL N1. 24 ADDITIONAL PRINT POSITIONS /NO. 5558/.
 - 2401, 2402 MAGNETIC TAPE UNIT MODELS 1, 2, 3.

CONTINUED FROM PRIOR COLUMN--

- 2403, 2404 MAGNETIC TAPE UNIT AND CONTROL MODELS 1, 2, 3 AND - 2803, 2804 TAPE CONTROL MODEL 1. SIMULTANEOUS READ-WHILE-WRITE /NO. 7160, NO. 7161/. DATA CONVERSION /NO. 3228, NO. 3236/. REQUIRED FOR ALL 7-TRACK TAPES THAT RECORD BINARY DATA SUCH AS VARIABLE LENGTH /FORMAT V/ RECORDS AND ABNORMAL END DUMPS. THE INCLUSION OF 7-TRACK TAPES WITHOUT THIS FEATURE IS NOT RECOMMENDED.
- 7-TRACK COMPATIBILITY /NO. 7125, NO. 7126/. 16 DRIVE ADDRESSING /NO. 7185/.
- 2816 SWITCHING UNIT MODEL 1. ALL FEATURES FOR ADDITIONAL SWITCHING /NUMBERS 1050, 1051, 1052, 1055, 2285, 2286, 4455, 6392, 6393/.
- 2821 CONTROL UNIT MODEL 1, 4, 5. COLUMN BINARY /NO. 1990/. FOR PROBLEM PROGRAM USE ONLY.

THE NUMBER OF TAPES OR DISK PACKS NECESSARY TO OBTAIN THE PROGRAM MATERIAL MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPES SHOULD BE 2400 FEET IN LENGTH.

BASIC PROGRAM MATERIAL - THE FOLLOWING PUBLICATIONS APPROPRIATE TO THE COMPONENT ORDERED WILL BE SHIPPED WITH EACH INITIAL ORDER.

TITLE - IBM OPERATING SYSTEM/360	FORM NUMBER
COBOL /E/ PROGRAMMERS GUIDE	C24-5029
ASSEMBLER /F/ PROGRAMMERS GUIDE	C26-3756
GRAPHIC PROGRAMMING SERVICES FOR 2250 DISPLAY UNIT	C27-6909
GRAPHIC PROGRAMMING SERVICES FOR 2260 DISPLAY STATION /LOCAL/	C27-6912
MAINTENANCE /I/ SUBPROGRAMS	C27-6918
COBOL /F/ PROGRAMMERS GUIDE	C28-6380
LINKAGE EDITOR	C28-6538
JOB CONTROL LANGUAGE	C28-6539
OPERATORS GUIDE	C28-6540
SORT/MERGE	C28-6543
SYSTEM PROGRAMMERS GUIDE	C28-6550
STORAGE ESTIMATES	C28-6551
SYSTEM GENERATION	C28-6554
CHECKPOINT AND RESTART	C28-6656
UTILITY PROGRAMS	C28-6586
PL/IF SUBROUTINE LIBRARY	C28-6590
PL/IF PROGRAMMERS GUIDE	C28-6594
ASSEMBLER /E/ PROGRAMMERS GUIDE	C28-6595
FORTRAN IV /E/ LIBRARY SUBPROGRAMS	C28-6596
FORTRAN IV /E/ LIBRARY PROGRAMMERS GUIDE	C28-6602
FORTRAN IV /E/ PROGRAMMERS GUIDE	C28-6603
STARTER GUIDE	C28-6630
CONTROL PROGRAM MESSAGES AND COMPLETION CODES	C28-6631
FORTRAN IV LEVEL G PROGRAMMERS GUIDE	C28-6639
SUPERVISOR AND DATA MANAGEMENT SERVICES	C28-6646
SUPERVISOR AND DATA MGT. MACRO INSTRUCTIONS	C28-6647
TESTRAM	C28-6648
QTAM MESSAGE CONTROL PROGRAM	C30-2002
QTAM MESSAGE PROCESSING PROGRAM	C30-2003
BASIC TELECOMMUNICATIONS ACCESS METHOD	C30-2004
ALGOL F PROGRAMMERS GUIDE	C33-4000

THE FOLLOWING ITEMS WILL ALSO BE SHIPPED BY PID WHEN THE RELATED COMPONENT IS ORDERED - PROGRAM MATERIAL LIST... OS/360 PROSE.

WHEN ORDERING OS/360 FOR USE ON 2311 DISK DRIVES THE REQUESTOR MUST FOLLOW THE PROCEDURE DESCRIBED BELOW - ALL ORDERS MUST STATE THE NUMBER OF 2311 DRIVES AVAILABLE FOR SYSTEM GENERATION. FOR EXAMPLE-,,,4 DRIVES TO BE USED FOR SYSGEN,,, ANY USER HAVING MORE THAN 2 DRIVES AVAILABLE FOR SYSGEN MAY OBTAIN ALL OS/360 COMPONENTS ON THREE 1316 DISK PACKS OR THREE REELS OF MAGNETIC TAPE.

ALL ORDERS THAT STATE ,,2 DRIVES TO BE USED FOR SYSGEN,, WILL BE FILLED WITH A CUSTOMIZED PACKAGE, A DESCRIPTION OF WHICH FOLLOWS- A USER WITH 2 DRIVES AVAILABLE FOR SYSTEM GENERATION MUST ORDER THE INDIVIDUAL COMPONENTS HE REQUIRES. THESE COMPONENTS SHOULD BE SELECTED WITH THE FOLLOWING BASIC CONSIDERATIONS IN MIND

- A MINIMUM WORKABLE SET OF COMPONENTS IS INCLUDED THAT WILL MEET THE USERS NEEDS.
- ENOUGH UNALLOCATED WORK SPACE REMAINS ON EACH OF THE DISTRIBUTED DISK PACKS /OR REELS OF TAPE/ FOR THE SYSTEM GENERATION PROCESS. TABLE 1 CONTAINS THE COMPONENT SIZES AND MUST BE USED WHEN PREPARING THE ACTUAL ORDER.

TO SPEED UP ORDER FILLING AND PREVENT UNNECESSARY DELAYS, PID MAY DECIDE TO SEND EXTRA COMPONENTS, IN ADDITION TO THOSE LISTED ON THE ORDER FORM, IN WHICH CASE THERE WILL BE AT LEAST 500 TRACKS OF UNALLOCATED SPACE AVAILABLE.

WHEN ORDERING OS/360 FOR USE ON A 2314 DISK ACCESS STORAGE FACILITY THE REQUESTOR WILL RECEIVE THE ENTIRE OS/360 PACKAGE ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE. HOWEVER, IF THE 2314 USER DOES NOT HAVE TAPE CAPACITY BUT DOES HAVE TWO OR MORE 2311 DISK DRIVES HE MUST FOLLOW THE PROCEDURES DESCRIBED ABOVE FOR THE 2311 USER.

WORK SPACE CONSIDERATIONS - THE SYSTEM GENERATION PROCESS REQUIRES FIVE DIFFERENT INTERMEDIATE /WORK/ DATA SETS. THESE DATA SETS ARE DESCRIBED IN TABLE 2. THE ACTUAL SIZES REQUIRED DEPEND ON SPECIFIC SYSTEM GENERATION PARAMETERS. SPACE ALLOCATION IS UNDER CONTROL OF THE USER AS PART OF THE SYSTEM GENERATION PROCESS. ,,BASIC,, SPACE SHOWN IN THE TABLE HAS BEEN USED TO PERFORM GENERATIONS OF OS/360 CONFIGURATIONS. GENERATION OF LARGER CONFIGURATIONS MAKES USE OF THE SECONDARY ALLOCATION CAPABILITY OF THE SYSTEM. THERE IS NO FORMULA TO PREDICT WORK SPACE USE DURING SYSTEM GENERATION, OTHER THAN EXPERIENCE.

LISTED BELOW ARE ALL AVAILABLE OS/360 COMPONENTS AND THEIR SIZES.

TABLE 1
COMPONENT SIZES

*****	*DIST. VOL. LIB. SPACE /2311 TRKS/*	*****
*	DL1B01	* DL1B02# *
*****		*****
* S *		* *
* T *		* *
* A * S * S *		* * S * *
* R * S * Y * Y *		* S * S * S * Y *
* T * Y * S * S * Y *		* Y * Y * S * S * Y * *
* E * S * I * I *		* S * S * S * I * *
* R * I * *		* I * I * I * *
* * F * S * *		* * P * S * *
* S * C * 0 * P * R * M * G * M * A *		

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      * Y * O * R * L * O * O * E * A * M *
      * S * B * T * * * C * D * N * C * P *
      * T * L * L * L * L * L * L * L * L *
      * E * I * I * I * I * I * I * I * I *
*****
*COMPONENT NAME *3605- *NOTES* M * B * B * B * B * B * B *
*****
*STARTER SYSTEM *CI-514* 7 *651* * * * * * * * *
*****
*PRIMARY CONTROL *CI-505* 1,8 * * * * * 3*109*788*102*13*
*****
*PRIMARY DATA MGT*DM-508* * * * * * 58* *118* *
*****
*BDAM *DM-509* 5 * * * * * 8* * 3* *
*****
*ISAM *IO-526* 6 * * * * * 46* * 4* *
*****
*BTAM *CQ-513* * * * * * 6* * 43* *
*****
*QTAM *CQ-519* * * * * * 19* * 44* *
*****
*GRAPHIC PRG SER*IO-523* * * * * * 17* *120*23*
*****
*ASSEMBLER E *AS-036* 1 * * * * * 4* 43* * 10*
*****
*ASSEMBLER F *AS-037* 4,6 * * * * * 4* 38* * 10*
*****
*TESTRAN + EDITOR*PT-516* * * * * * 5* 25* * 52* *
*****
*SORT/MERGE *SM-023* * * * * * 10* * 2* 78* * 3*23*
*****
*LINKAGE EDITOR E*ED-510* 1,3 * * * * * 3* 30* * *
*****
*LINKAGE EDITOR F*ED-521* * * * * * 3* 23* * *
*****
*DS/360 UTILITIES*UT-506* 1 * * * * * 2* 79* * 12*
*****
*IND. UTILITIES *UT-507* 1 * * * * * * * * 49*
*****
*COBOL E *CO-503* 5,6 * * * * * 3* 99* * 29*
*****
*COBOL E LIBRARY *LM-504* * * * * * 10* * * *
*****
*COBOL F *CB-524* 5 * * * * * 3* 80* * 5*
*****
*COBOL F LIBRARY *LM-525* 3 * * * * * 9* * *
*****
*FORTRAN IV E *FD-092* 5 * * * * * 4* 30* * 8*
*****
*FORTRAN IV G *FD-520* 5 * * * * * 4* 24* * 7*
*****
*FORTRAN IV H *FD-500* * * * * * 4*206* * 7*
*****
*FORTRAN IV LIB. *LM-501* 3 * * * * * 28* * *
*****
*PL/I *NL-511* * * * * * 4*240* * 6*
*****
*PL/I LIBRARY *LM-512* 3 * * * * * 52* * 26* * *
*****
*RPG *RG-038* * * * * * 3* 52* * 5*
*****
*SERO, SERI MOD 40*DN-527* 2 * * * * * 12* * *
*****
*SERO, SERI MOD 50*DN-528* * * * * * 13* * *
*****
*SERO, SERI MOD 65*DN-529* 2 * * * * * 14* * *
*****
*SERO, SERI MOD 75*DN-530* 2 * * * * * 12* * *
*****
*ALGOL F *AL-531* * * * * * 4* 30* * 4*
*****
*ALGOL F LIBRARY *LM-532* 3 * * * * * 17* * *
*****

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DLIB01 IF SPACE IS AVAILABLE AND IF THE STARTER SYSTEM OR THE PRIMARY CONTROL PROGRAM OR BOTH ARE NOT ORDERED.

NOTES -

1. MINIMUM COMPONENT FOR A SYSTEM ABLE TO PERFORM SYSTEM GENERATION. SEE 650 NOTE 4 WHEN APPROPRIATE.
2. HIGHLY RECOMMENDED AS PART OF A MINIMUM SYSTEM.
3. USED BY AND REQUIRED WITH THE PRECEDING COMPONENT/S/ IN THE CHART.
4. ALTERNATIVE COMPONENT TO THE PRECEDING COMPONENT IN THE CHART. EITHER OR BOTH MAY BE SELECTED.
5. BDAM IS REQUIRED BY THE DIRECT ACCESS STATEMENTS OF COBOL, FORTRAN AND PL/I.
6. ISAM IS REQUIRED BY COBOL E AND PL/I OBJECT PROGRAMS USING THE INDEXED ORGANIZATION.
7. REQUIRED WITH INITIAL ORDER - SUBSEQUENT ORDERS MAY BE PROCESSED BY THE USERS OWN SYSTEM.
8. REQUIRED WITH ORDERS FOR PROCESSORS, SINCE THE SYS1. GENLIB CONTAINS THE RELATED SYSTEM GENERATION MACRO INSTRUCTIONS.

TABLE 2
WORK SPACE FOR SYSTEM GENERATION

***** TWO-DRIVE SYSGEN *****			
*DATA SET*NDRMAL LOCATION*	BASIC SPACE-TRACK*	REGARDING ALLOCATION*	
*SYSUT1 *	DLIB02 *	240 PRIMARY *MAY BE MAGNETIC TAPE*	
		10 SECONDARY *	
*SYSUT2 *	DLIB02 *	240 PRIMARY *MAY BE MAGNETIC TAPE*	
		10 SECONDARY *	
*SYSUT3 *	DLIB02 *	250 PRIMARY * MUST BE DASD *	
		10 SECONDARY *	
*OBJPDS *	DLIB01 *	40 PRIMARY * MUST BE DASD *	
		2 SECONDARY *	
		6 DIRECTORY *	
*FOR *	DLIB02 *	160	* SELF-ALLOCATED BY *
*REMOVE *			* THE UTILITY PROGRAM *
*UTILITY *			* ON THE SAME VOLUME *
			* SYSUT3 *

MAY BE PLACED ON DLIB02 IF SPACE IS AVAILABLE. A POSSIBLE VARIATION TO THE SYSGEN PROCESS PLACES SYSUT1 AND SYSUT2 ON TAPE, SYSUT3 ON DLIB02. IN THIS CASE, THE USERS **NEW SYSTEM** PACK MUST ALSO HAVE A SYSUT3 DATA SET, AND THE USER MUST MODIFY THE SYSGEN STAGE 11 JOB STREAM SLIGHTLY.

TO ORDER THE COMPONENTS THE NEW PROGRAM ORDER FORM **IBM PROGRAM ORDER FOR IBM SYSTEM/360 OPERATING SYSTEMS**, FORM NUMBER, 120-1411 MUST BE USED.

EACH COMPONENT FOR WHICH PROGRAM DOCUMENTATION AND MAINTENANCE MATERIAL IS REQUIRED MUST APPEAR ON THE ORDER FORM.

WHEN ORDERING DS/360 ON TAPE, EITHER 9-TRACK OR 7-TRACK MUST BE SPECIFIED ON THE ORDER FORM. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. ALL TAPES WILL BE COPIED AT 800 CPI.

THE NUMBER OF TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400 FEET IN LENGTH.

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3607-AS-001 S/360 MODEL 20 BASIC ASSEMBLER LANGUAGE

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 3607-AS-001

THE BASIC ASSEMBLER IS A SYMBOLIC SYSTEM DESIGNED TO SIMPLIFY THE PREPARATION OF PROGRAMS. IT TRANSLATES SOURCE PROGRAMS WRITTEN IN THE MODEL 20 BASIC ASSEMBLER SYMBOLIC LANGUAGE INTO MODEL 20 OBJECT PROGRAMS.

SIGNIFICANT LIMITATIONS- THE IBM SYSTEM/360 MODEL 20 BASIC ASSEMBLER LANGUAGE IS NOT FULLY COMPATIBLE WITH THE BASIC ASSEMBLER LANGUAGE FOR THE SYSTEM/360. OBJECT DECKS PRODUCED BY THE SYSTEM/360 MODEL 20 BASIC ASSEMBLER NORMALLY WILL NOT RUN ON A LARGER SYSTEM/360.

MINIMUM MACHINE REQUIREMENTS- FOR PROGRAM GENERATION- A 2020 PROCESSING UNIT, MODEL B, AND ONE OF THE FOLLOWING INPUT/OUTPUT CONFIGURATIONS /A/ A 2560 MFCM OR /B/ A 2520 CARD READ PUNCH, OR /C/ A 2501 CARD READER WITH A 2520 CARD PUNCH OR 1442 MODEL 5 CARD PUNCH, AND /D/ /OPTIONALLY/ A 2203 OR 1403 PRINTER.

FOR PROGRAM EXECUTION- THE INPUT/OUTPUT CONFIGURATION DEPENDS UPON PROCESSING REQUIREMENTS. IN ADDITION TO A 2020 PROCESSING UNIT, AT LEAST ONE INPUT/OUTPUT DEVICE SUCH AS A 2560 MFCM OR 2520 CARD READ PUNCH OR 2501 CARD READER MUST BE AVAILABLE.

NOTE- THE PROGRAM WILL RUN INDEPENDENTLY ON THE EC LEVEL OF MODEL 20 MACHINES PRESENTLY IN THE FIELD.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... BASIC ASSEMBLER LANGUAGE MANUAL C26-3602... OPERATING PROCEDURES MANUAL C26-3802.
MACHINE READABLE - PROGRAM DECK AND SAMPLE DECK

3607-CQ-003 INPUT OUTPUT CONTROL SYSTEM

FOR THE COMMUNICATIONS ADAPTER FOR MODEL 20
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 3607-CQ-003

CIOCS RELIEVES THE USER OF MUCH OF THE PROGRAMMING REQUIRED FOR EFFICIENT UTILIZATION OF THE SYSTEM/360 MODEL 20 COMMUNICATIONS ADAPTER. THE COMMUNICATIONS IOCS PROVIDES ROUTINES THAT PERFORM THE FOLLOWING FUNCTIONS-

- TRANSMISSION OF DATA /BCD-CHARACTERS/ BETWEEN A MODEL 20 CPU AND COMMUNICATIONS ADAPTER AND ONE OF THE FOLLOWING REMOTE TERMINALS-
 - 1009 DATA TRANSMISSION UNIT /FOR COMMUNICATION WITH IBM 1400 SERIES COMPUTERS/.
 - 1013 CARD TRANSMISSION TERMINAL.
 - 2701 DATA TRANSMISSION UNIT /FOR COMMUNICATION WITH IBM SYSTEM/360 MODEL 30, 40, 50, 65, OR 75/.
 - 7701 OR 7702 TAPE TRANSMISSION TERMINAL.
 - 7710 OR 7711 DATA COMMUNICATION UNIT.
 - 2020 PROCESSING UNIT WITH COMMUNICATIONS ADAPTER.
 - 1130 COMPUTER SYSTEM EQUIPPED WITH THE SYNCHRONOUS COMMUNICATIONS ADAPTER.
- ERROR DETECTION AND RESTART PROCEDURES.

CIOCS PROVIDES THE USER WITH MACRO-INSTRUCTIONS TO AVOID THE CODING OF COMPLETE ROUTINES FOR DATA TRANSMISSION. OTTSR STATEMENTS DEFINE THE TYPE OF TRANSMISSION; THE FUNCTION, DATA FORMAT AND OTHER SPECIAL REQUIREMENTS. THE MACRO INSTRUCTIONS INSERTED IN THE SOURCE PROGRAM WILL BE PROCESSED BY THE BASIC ASSEMBLER. THE DEFINITION STATEMENTS /OTTSR/ ARE INPUT TO A GENERATOR PROGRAM. FROM THE INFORMATION IN THESE STATEMENTS THE NECESSARY CODING IN SYMBOLIC LANGUAGE FOR THE DIFFERENT ROUTINES SERVICING THE COMMUNICATIONS ADAPTER AND THE OVERALL MONITORING CIOCS ROUTINE ARE DEVELOPED. THE CIOCS IS NORMALLY USED IN CONJUNCTION WITH THE MODEL 20 IOCS FOR PUNCHED CARD EQUIPMENT. THE USER MAY ASSEMBLE HIS SYMBOLIC IOCS/CIOCS PROGRAM AND HIS SOURCE PROGRAM EITHER SEPARATELY OR JOINTLY.

MINIMUM MACHINE REQUIREMENTS- FOR GENERATION AND ASSEMBLY OF CIOCS ROUTINES- A 2020 PROCESSING UNIT, MODEL B... TO EXECUTE MANY USER PROGRAMS A MODEL C2 /8,192 BYTES/ WILL BE NECESSARY. CORE REQUIREMENTS FOR THE EXECUTION OF A SPECIFIC PROGRAM MAY BE ESTIMATED BY USING BOTH SRL/S C26-3603-1 /IOCS/ AND C26-3606-1 /CIOCS/. THE USE OF ANY ADDITIONAL INPUT/OUTPUT DEVICES IS DICTATED BY THE REQUIREMENTS OF THE MAIN PROGRAM. PROPER EXECUTION OF OBJECT PROGRAMS FOR TRANSMISSION IN BCD-MODE REQUIRES EC 12100 ON THE PROCESSING UNIT.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... CIOCS MANUAL C26-3606... OPERATING PROCEDURES MANUAL C24-9004.
MACHINE READABLE - PROGRAM DECK /GENERATOR AND LIBRARY/... TWO SAMPLE DECKS /ONE FOR TRANSMIT AND ONE FOR RECEIVE OPERATIONS/.

3607-IO-002 S/360 MODEL 20 INPUT/OUTPUT CONTROL SYSTEM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 3607-IO-002

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SYSTEM/360 MODEL 20 INPUT/OUTPUT CONTROL SYSTEM RELIEVES THE USER OF MUCH OF THE PROGRAMMING REQUIRED FOR UTILIZATION OF THE SYSTEM/360 MODEL 20 INPUT/OUTPUT UNITS. THE PROGRAM PROVIDES ROUTINES THAT PERFORM THESE FUNCTIONS-- INPUT/OUTPUT FUNCTIONS AND SCHEDULING TO OPTIMIZE CPU OVERLAP ABILITY-- ERROR DETECTION AND RESTART PROCEDURES... CPU INTERRUPT HANDLING. IOCS PROVIDES THE USER WITH MACRO-INSTRUCTIONS TO AVOID THE CODING OF COMPLETE INPUT/OUTPUT ROUTINES INCLUDING DATA AND ERROR CHECKING. DTFSR STATEMENTS /DEFINITION STATEMENTS/ DEFINE THE DEVICE, THE FUNCTION, DATA FORMAT AND OTHER SPECIAL REQUIREMENTS. THE MACRO-INSTRUCTIONS INSERTED IN THE SOURCE PROGRAM WILL BE PROCESSED BY THE BASIC ASSEMBLER. THE DEFINITION STATEMENTS ARE INPUT TO A GENERATOR PROGRAM. FROM THE INFORMATION IN THESE STATEMENTS THE NECESSARY CODING IN SYMBOLIC LANGUAGE FOR THE DIFFERENT ROUTINES SERVICING THE I/O DEVICES AND THE OVERALL CONTROLLING OF IOCS ROUTINE ARE DEVELOPED. THIS SYMBOLIC OUTPUT OF THE GENERATOR IS ASSEMBLED IN CONJUNCTION WITH THE MAIN SOURCE PROGRAM OR SEPARATELY. THE I/O AREAS AS WELL AS THE EXIT-ROUTINES REFERRED TO BY THE DEFINITION STATEMENTS MUST BE DEFINED IN THE SOURCE PROGRAM.

MINIMUM SYSTEM REQUIREMENTS-- FOR PROGRAM GENERATION -- THE REQUIREMENTS ARE THE SAME AS THOSE FOR THE BASIC ASSEMBLER. NOTE-- IN A SYSTEM THAT HAS ONLY A 2520 CARD READ PUNCH AS CARD UNIT, ONLY PROGRAM ROUTINES REFERRING TO THIS UNIT AND TO A PRINTER MAY BE GENERATED. FOR OBJECT PROGRAM EXECUTION -- THE INPUT/OUTPUT CONFIGURATION DEPENDS UPON PROCESSING REQUIREMENTS. IN ADDITION TO A 4K SYSTEM/360 MODEL 20, AT LEAST ONE READING DEVICE SUCH AS A 2560 MFCM OR 2520 CARD READ PUNCH OR 2501 CARD READER MUST BE AVAILABLE.

BASIC PROGRAM MATERIAL -- DOCUMENTATION -- PROGRAM MATERIAL LIST... IOCS FOR PUNCHED-CARD EQUIPMENT MANUAL... OPERATING PROCEDURES. MACHINE READABLE -- PROGRAM DECK... SAMPLE DECK.

360T-ID-029 S/360 MODEL 20 INPUT/OUTPUT CONTROL SYSTEM FOR THE IBM 1419 MAGNETIC CHARACTER READER
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-ID-029

SYSTEM/360 MODEL 20 IOCS FOR THE 1419 MAGNETIC CHARACTER READER RELIEVES THE USER OF MUCH OF THE PROGRAMMING REQUIRED FOR THE EFFICIENT UTILIZATION OF THE S/360 MODEL 20 1419 MAGNETIC CHARACTER READER /MICR/. THE PROGRAM OPTIMIZES THROUGHPUT BY PROVIDING THE BEST BALANCE BETWEEN THE SPEED OF THE 1419 MICR AND A PRINTER. THE 1419 IOCS PROVIDES ROUTINES THAT PERFORM THE FOLLOWING FUNCTIONS--
- ENGAGING AND DISENGAGING THE 1419 MICR READER.
- READING OF MICR DOCUMENTS.
- SORTING ON FIELDS LOCATED IN THE FIRST 5.8 INCHES OF THE DOCUMENT.
- MAINTENANCE OF THE REVOLVING BUFFER.
- PRESENTING DATA FOR USER PROCESSING.
- SERVICING OF INTERRUPTS.
- TESTING OF FIELD VALIDITY INDICATORS AND I/O ERROR CHECKING.
- CONTROL AND OPTIMIZATION OF PRINT OPERATIONS.
- CONTROL OF THE SELECTIVE TAPE LISTING FEATURE /OPTIONAL/.
- CONTROL OF PROGRAMMABLE POCKET LIGHTS /OPTIONAL/.
- CONTROL OF THE BATCH NUMBERING FEATURE /OPTIONAL/.
- LINKAGE TO MODEL 20 IOCS FOR PUNCHED CARD EQUIPMENT AND TO MODEL 20 IOCS FOR THE COMMUNICATIONS ADAPTER /OPTIONAL/.

THE USER HAS TO PROVIDE A ROUTINE FOR POCKET SELECTION, WHICH IS ENTERED BY THE 1419 IOCS UNDER INTERRUPT CONTROL. THE CODING OF COMPLETE ROUTINES FOR THE 1419 MAGNETIC CHARACTER READER /MICR/ AND A PRINTER IS NOT NECESSARY SINCE THE 1419 IOCS PROVIDES THE USER WITH MACRO INSTRUCTIONS. DTFPD STATEMENTS DEFINE THE TYPE OF OPERATION, THE FUNCTIONS, DATA FORMAT AND OTHER SPECIAL REQUIREMENTS. THE MACRO INSTRUCTIONS INSERTED INTO THE SOURCE PROGRAM WILL BE PROCESSED BY THE BASIC ASSEMBLER. THE DEFINITION STATEMENTS /DTFPD/ ARE INPUT TO A GENERATOR PROGRAM. FROM THE INFORMATION IN THESE STATEMENTS THE NECESSARY CODING IN SYMBOLIC LANGUAGE FOR THE DIFFERENT ROUTINES SERVICING THE 1419 MICR, THE PRINTER AND THE OVERALL MONITORING 1419 IOCS ROUTINE ARE DEVELOPED. THE USER MAY ASSEMBLE HIS SYMBOLIC 1419 IOCS, CARD IOCS, COMMUNICATION IOCS PROGRAMS AND HIS SOURCE PROGRAM EITHER SEPARATELY OR WITH THE 1419 IOCS. IF HIS SOURCE PROGRAM IS IN CONNECTION WITH CARD AND/OR COMMUNICATION IOCS, THERE WILL BE NO TIME-SHARING BETWEEN THE 1419 IOCS AND THE OTHER IOCS ROUTINES.

PERFORMANCE IS DESCRIBED IN SRL ,,SYSTEM/360 MODEL 20 INPUT/OUTPUT CONTROL SYSTEM FOR THE 1419 MAGNETIC CHARACTER READER,, /C26-3607/. IF THE 1419 IOCS IS USED TOGETHER WITH THE CARD OR COMMUNICATION IOCS, CARD IOCS /360T-ID-002/ MUST BE AT LEAST VERSION 1 MODIFICATION LEVEL 3, AND COMMUNICATION IOCS /360T-CQ-003/ AT LEAST VERSION 1 MODIFICATION LEVEL 1. THE PROGRAM IS NOT UPWARDLY COMPATIBLE WITH SYSTEM/360 MODEL 30 AND HIGHER MODELS. THE DURATION OF USERS POCKET SELECTION ROUTINE MUST NOT EXCEED THE LIMITS DESCRIBED IN THE SRL, 1419 MAGNETIC CHARACTER READER /C26-3607/. USE OF INSTRUCTIONS EXCEEDING A DURATION OF 2.7 MILLISECONDS REQUIRES DISENGAGING OF THE 1419 MICR.

MINIMUM MACHINE REQUIREMENTS-- FOR GENERATION AND ASSEMBLY OF THE 1419 IOCS ROUTINES-- A 2020 PROCESSING UNIT, MODEL B, ONE CARD READING DEVICE /2501 MODEL A1 OR A2, 2520 MODEL A1, 2560/, ONE CARD PUNCHING DEVICE /2520 MODEL A1, A2, OR A3, 1442 MODEL 5, 2560/, THE PRINTER /1403 MODEL 2 OR N1 WITH OR WITHOUT THE ,,UNIVERSAL CHARACTER SET,, FEATURE, OR 1403 MODEL 7, OR 2203 MODEL A1/ ATTACHED TO THE SYSTEM MUST BE USED, IF PRINTING OF A LISTING OF THE GENERATED ROUTINES AND/OR DIAGNOSTIC MESSAGES IS DESIRED.

FOR EXECUTION OF OBJECT PROGRAMS-- A 2020 PROCESSING UNIT, MODEL C2*, WITH SERIAL I/O CHANNEL /510C/, ONE CARD READING DEVICE /2501 MODEL A1 OR A2, 2520 MODEL A1, 2560/, THE 1419 MICR, AND A PRINTER /1403 MODEL 2 OR N1 WITH OR WITHOUT THE ,,UNIVERSAL CHARACTER SET,, FEATURE, OR 1403 MODEL 7, OR 2203 MODEL A1/. *THE 2020 PROCESSING UNIT MODEL B2 /4096 BYTES/, MAY BE SUFFICIENT FOR EXECUTION OF A LIMITED NUMBER OF 1419 IOCS FUNCTIONS. FOR EXECUTION OF THE MAJORITY OF PROGRAMS CONTAINING 1419 IOCS ROUTINES A MODEL C2 /8192 BYTES/ IS REQUIRED. THE USE OF ANY ADDITIONAL INPUT/OUTPUT DEVICES IS DICTATED BY THE REQUIREMENTS OF THE MAIN PROGRAM. THE PROGRAM REQUIRES AN ENGINEERING CHANGE LEVEL OF 127384 FOR THE 1419. IN ADDITION TO THE ANNOUNCED CONFIGURATION THE 1419 IOCS SUPPORTS THE USE OF -- A 2203 MODEL A1 PRINTER WITH

CONTINUED FROM PRIOR COLUMN--

13, 39, 52 AND 63 CHARACTER SET TYPE BARS... THE 1419 MICR FEATURE ,,PROGRAMMABLE POCKET LIGHTS...

BASIC PROGRAM MATERIAL -- DOCUMENTATION -- PROGRAM MATERIAL LIST... ATTACHMENT... 1419 IOCS MANUAL, C26-3607... OPERATING PROCEDURES, C24-9008. MACHINE READABLE -- PROGRAM DECK /GENERATOR AND LIBRARY/ AND ONE SAMPLE DECK.

360T-LM-015 STERLING CURRENCY PROCESSING ROUTINES
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-LM-015

THE STERLING CURRENCY PROCESSING ROUTINES PROVIDE IBM SYSTEM/360 MODEL 20 USERS WITH A CONVENIENT MEANS OF PROCESSING STERLING CURRENCY. BOTH ARITHMETIC AND EDITING FUNCTIONS ARE PROVIDED. /BSI OR IBM CODES AS WELL AS A MIXTURE OF BOTH CAN BE HANDLED./ THESE ROUTINES ARE INCLUDED IN THE USERS PROGRAM BY MEANS OF INPUT/OUTPUT FILE SECTIONS. THE STERLING ROUTINES ARE ASSEMBLED WITH THE USERS SOURCE PROGRAM. NOTE-- THE ROUTINES ARE USED ONLY WITH ASSEMBLER PROGRAMS. RPG AND PCU PROGRAM LIST SUMMARY PUNCH PROCESSOR DECKS CONTAIN STERLING ROUTINES. THERE ARE NO ADDITIONAL MACHINE REQUIREMENTS FOR THE USE OF THESE ROUTINES, BEYOND REQUIREMENTS FOR BAL-- 360T-AS-001.

BASIC PROGRAM MATERIAL -- DOCUMENTATION -- PROGRAM MATERIAL LIST... STERLING CURRENCY PROCESSING ROUTINES MANUAL. MACHINE READABLE -- SYMBOLIC SUBROUTINE DECKS.

360T-RG-010 S/360 MODEL 20 REPORT PROGRAM GENERATOR
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-RG-010

RPG IS THE PRIMARY PROGRAMMING LANGUAGE FOR MODEL 20. RPG PERFORMS CARD FILE MAINTENANCE, CALCULATIONS AND INPUT/OUTPUT OPERATIONS. A FEW OF ITS OUTSTANDING FEATURES ARE-- MULTIPLE INPUT/OUTPUT FILES, TABLE LOOK-UP, GOTO /BRANCHING/, USER CONTROLLED INDICATORS /SETON, SETOFF/ AND REPORT HEADINGS. TO USE THIS PROGRAM THE USER FURNISHES A SET OF SPECIFICATIONS DESCRIBING THE INPUT DATA, CALCULATIONS AND THE DESIRED OUTPUT. THE LANGUAGE IS PROBLEM ORIENTED RATHER THAN MACHINE ORIENTED. THE REPORT PROGRAM GENERATOR IS OF THE COMPILE-AND-GO TYPE. AN OPTION IS AVAILABLE THAT ALLOWS PUNCHING OF THE OBJECT PROGRAM INTO CARDS FOR FUTURE USE.

MINIMUM SYSTEM REQUIREMENTS-- FOR PROGRAM GENERATION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF THE FOLLOWING INPUT/OUTPUT CONFIGURATIONS -- A 2560 MFCM OR A 2520 CARD READ PUNCH OR A 2501 CARD READER... OPTIONALLY, A 2203 OR 1403 PRINTER /48 CHARACTER SET/. FOR OBJECT PROGRAM EXECUTION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF THE FOLLOWING INPUT/OUTPUT CONFIGURATIONS -- A 2560 MFCM... A 2520 CARD READ PUNCH... A 2501 CARD READER... IF PUNCHING IS SPECIFIED A 2520 OR A 1442 MODEL 5 CARD PUNCH... IF PRINTING IS SPECIFIED A 2203 OR 1403 PRINTER.

BASIC PROGRAM MATERIAL -- DOCUMENTATION -- PROGRAM MATERIAL LIST... RPG FOR PUNCHED CARD EQUIPMENT MANUAL... OPERATING PROCEDURES. MACHINE READABLE -- PROGRAM DECK... SAMPLE DECK.

360T-ST-109 MODEL 20 SORT-TIME ESTIMATING PROGRAM FOR DISK-SORT APPLICATIONS
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-ST-109

A SORT-TIME ESTIMATING PROGRAM, PERMITS THE USER TO CALCULATE TIME ESTIMATES FOR SORT OPERATIONS THAT WILL BE PERFORMED WITH AN IBM SYSTEM/360 MODEL 20 DISK PROGRAMMING SYSTEM SORT/MERGE PROGRAM. THE SORT-TIME ESTIMATING PROGRAM RUNS ON A MODEL 20 CARD SYSTEM. THE INPUT TO THE PROGRAM CONSISTS OF THOSE CONTROL STATEMENTS THAT ARE REQUIRED BY THE DPS JOB CONTROL AND DPS SORT/MERGE PROGRAM FOR THE ACTUAL SORT APPLICATION. THE USER SPECIFIES THE MINIMUM NUMBER OF RECORDS FOR WHICH AN ESTIMATE IS DESIRED ALONG WITH AN INCREMENTAL VALUE. TIME ESTIMATES WILL THEN BE PRINTED FOR TEN FILE SIZES STARTING WITH THE MINIMUM SIZE AND ADDING THE INCREMENT NINE TIMES. THE MAXIMUM FILE SIZE WILL ALSO BE PRINTED.

FEATURES-- FOR CALCULATION OF THE TIME ESTIMATES, THE PROGRAM CONSIDERS SUCH FACTORS AS FILE SIZE, BLOCK LENGTH, RECORD LENGTH, OPTIONS OF THE DPS SORT/MERGE PROGRAM THAT ARE TO BE UTILIZED, AND THE SORTING TECHNIQUE TO BE EMPLOYED. THE PROGRAM CAUSES THE PRINTING OF DIAGNOSTIC MESSAGES IF ANY SPECIFICATION ERRORS FOR THE TIME ESTIMATE ARE ENCOUNTERED. THE ESTIMATES FOR THE ACTUAL TIME REQUIRED FOR THE SORT APPLICATION ARE ACCURATE WITHIN PLUS/MINUS 15 PER CENT OR ONE MINUTE, WHICHEVER IS GREATER. THE TIME REQUIRED TO PERFORM ONE SORT-TIME ESTIMATE IS DETERMINED BY THE SPECIFIC FILE SIZE. THE TIME REQUIREMENTS VARY BETWEEN 0.5 AND 5 MINUTES.

MINIMUM SYSTEM REQUIREMENTS-- A 2020 PROCESSING UNIT MODEL C1 OR C2, A CARD READING DEVICE /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/, A PRINTER /1403 MODEL 2, 7, OR N1, OR 2203 MODEL A1/.

BASIC PROGRAM MATERIAL -- DOCUMENTATION -- PROGRAM MATERIAL LIST... APPLICATION MANUAL, C33-6002... SORT/MERGE MANUAL, C26-3806. MACHINE READABLE -- OBJECT PROGRAM DECKS.

360T-UT-100 S/360 MODEL 20 PUNCHED CARD UTILITY PROGRAMS I /GANGPUNCH--REPRODUCE, LIST-SUMMARY PUNCH/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-100

THE PROGRAMS AND REPRESENTATIVE FUNCTIONS THEY PERFORM ARE -- GANGPUNCH--REPRODUCE -- REPRODUCING -- SELECTIVE-STRAIGHT... GANGPUNCHING -- INTERSPERSED-OFFSET, MAJOR-MINOR, COUNT-CONTROLLED... CARD PRINTING... CONSECUTIVE NUMBERING. LIST-SUMMARY PUNCH -- LISTING AND/OR TABULATION OF CARD FILES... TOTAL ACCUMULATION... HEADING AND OVERFLOW IDENTIFICATION... SUMMARY CARD PREPARATION. THESE UTILITY PROGRAMS ARE OF THE GENERATE-AND-GO TYPE. FOR LIST-SUMMARY PUNCH AND GANGPUNCH--REPRODUCE THE OPTION IS AVAILABLE TO PUNCH OUT THE

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CONTINUED FROM PRIOR PAGE--
OBJECT PROGRAM.

CONTINUED FROM PRIOR COLUMN--

MINIMUM SYSTEM REQUIREMENTS--
FOR PROGRAM GENERATION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF
THE FOLLOWING INPUT/OUTPUT CONFIGURATIONS --
GANGPUNCH-REPRODUCE -- A 2560 MFCM OR A 2520 CARD READ PUNCH
OR A 2501 CARD READER WITH A 2520 CARD PUNCH OR A 1442 CARD PUNCH
MODEL 5... OPTIONALLY A 2203 OR 1403 PRINTER. LIST-SUMMARY
PUNCH -- A 2560 MFCM OR A 2520 CARD READ PUNCH OR A 2501
CARD READER WITH A 2520 CARD PUNCH OR A 1442 MODEL 5 CARD
PUNCH... OPTIONALLY A 2203 OR 1403 PRINTER.
FOR PROGRAM EXECUTION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF THE
FOLLOWING INPUT/OUTPUT CONFIGURATIONS -- GANGPUNCH-REPRODUCE --
A 2560 MFCM OR A 2520 CARD READ PUNCH OR A 2501 CARD READER
WITH A 2520 CARD PUNCH OR 1442 MODEL 5 CARD PUNCH... OPTIONALLY
A 2203 OR 1403 PRINTER. LIST-SUMMARY PUNCH -- A 2560 MFCM OR A
2520 CARD READ PUNCH OR A 2501 CARD READER WITH A 2520 CARD
PUNCH OR 1442 MODEL 5 CARD PUNCH, IF PUNCHING IS SPECIFIED... A
2203 OR 1403 PRINTER.
NOTE-- PRINTERS CLASSIFIED ,,OPTIONAL,, ARE USED TO DISPLAY
PROGRAM DOCUMENTATION, DIAGNOSTIC MESSAGES AND ERROR
IDENTIFICATION. A PRINTER IS, THEREFORE, NOT REQUIRED IF THESE
FACILITIES ARE NOT DESIRED.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... PUNCHED CARD UTILITY
PROGRAMS MANUAL... OPERATING PROCEDURES.
MACHINE READABLE -- PROGRAM DECKS... SAMPLE DECKS.

360T-UT-101 S/360 MODEL 20 PUNCHED CARD
UTILITY PROGRAMS II /COLLATE, MERGE-SORT/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-101

THE PROGRAMS AND REPRESENTATIVE FUNCTIONS THEY PERFORM ARE --
COLLATE -- MATCHING... MERGING WITH OR WITHOUT SELECTION...
CONSECUTIVE NUMBER CHECKING... INSERTION... SEQUENCE CHECKING...
SELECTION... HASH TOTALS.
MERGE-SORT -- NUMERIC OR ALPHAMERIC CONTROL FIELD SORTING
SEQUENCING OF UP TO FIVE FIELDS. THESE UTILITY PROGRAMS ARE OF
THE GENERATE-AND-GO TYPE.

MINIMUM SYSTEM REQUIREMENTS--
FOR PROGRAM GENERATION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF
THE FOLLOWING INPUT/OUTPUT CONFIGURATIONS -- COLLATE -- A
2560 MFCM AND OPTIONALLY A 2203 OR 1403 PRINTER. MERGE-SORT -- A
2560 MFCM AND OPTIONALLY A 2203 OR 1403 PRINTER.
FOR PROGRAM EXECUTION -- A 4K SYSTEM/360 MODEL 20 AND ONE OF THE
FOLLOWING INPUT/OUTPUT CONFIGURATIONS -- COLLATE -- A 2560 MFCM
AND OPTIONALLY A 2203 OR 1403 PRINTER. MERGE-SORT -- A 2560 MFCM
AND OPTIONALLY A 2203 OR 1403 PRINTER.
NOTE-- PRINTERS CLASSIFIED ,,OPTIONAL,, ARE USED TO DISPLAY
PROGRAM DOCUMENTATION, DIAGNOSTIC MESSAGES AND ERROR
IDENTIFICATION. A PRINTER IS, THEREFORE, NOT REQUIRED IF THESE
FACILITIES ARE NOT DESIRED.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... PUNCHED CARD UTILITY
PROGRAMS MANUAL... OPERATING PROCEDURES.
MACHINE READABLE -- PROGRAM DECKS... SAMPLE DECKS.

360T-UT-102 S/360 MODEL 20 BASIC UTILITY
PROGRAMS /EXCEPT TRACE/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-102

THE MODEL 20 BASIC UTILITY PROGRAMS NOW AVAILABLE, ARE A SET
OF STANDARDIZED UTILITY ROUTINES THAT CAN BE USED IN THE RUNNING
OR TESTING OF A USERS OBJECT PROGRAM. THEY ARE-- CLEAR STORAGE...
ABSOLUTE PROGRAM LOADER... RELOCATABLE PROGRAM LOADER... PRINT
STORAGE... PUNCH STORAGE... FUNCTIONS -- /1/ TO CLEAR THE CORE
STORAGE,, TO LOAD ASSEMBLED PROGRAMS... /2/ ABSOLUTE OR...
/3/ RELOCATABLE... /4/ TO PRODUCE LISTING OF THE CONTENTS OF CORE
STORAGE... /5/ TO PUNCH THE CONTENTS OF CORE STORAGE INTO
CARDS... AND /6/ TO TEST OBJECT PROGRAMS DURING EXECUTION.

MINIMUM SYSTEM REQUIREMENTS-- A 4K SYSTEM/360 MODEL 20
WITH A READ UNIT -- 2501, 2560, OR 2520 MODEL A1... FOR ,,PUNCH
STORAGE,, A 2560, 2520, OR 1442 MODEL 5... AND FOR ,,PRINT
STORAGE,, AND ,,BASIC TRACE,, A PRINTER -- 2203 OR 1403.
OPTIONAL MATERIAL DESIRED MUST BE IDENTIFIED ON THE ORDER CARD.
THE NUMBER OF TAPES NECESSARY TO OBTAIN THE PROGRAM MATERIAL
MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE
TAPES SHOULD BE 2400 FEET IN LENGTH.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... FUNCTIONS AND
OPERATING PROCEDURES.
MACHINE READABLE -- PROGRAM DECKS.

360T-UT-103 S/360 MODEL 20 BASIC TRACE
/4K/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-103

THE MODEL 20 BASIC UTILITY PROGRAMS ARE A SET OF STANDARDIZED
UTILITY ROUTINES THAT CAN BE USED IN THE RUNNING OR TESTING OF A
USERS OBJECT PROGRAM. THEY ARE-- CLEAR STORAGE...ABSOLUTE PROGRAM
LOADER... RELOCATABLE PROGRAM LOADER... PRINT STORAGE... PUNCH
STORAGE... BASIC TRACE.
FUNCTIONS -- /1/ TO CLEAR THE CORE STORAGE,, TO LOAD ASSEMBLED
PROGRAMS... /2/ ABSOLUTE OR... /3/ RELOCATABLE... /4/ TO PRODUCE
LISTING OF THE CONTENTS OF CORE STORAGE... /5/ TO PUNCH THE
CONTENTS OF CORE STORAGE INTO CARDS... AND /6/ TO TEST OBJECT
PROGRAMS DURING EXECUTION.

MINIMUM SYSTEM REQUIREMENTS-- A 4K SYSTEM/360 MODEL 20 WITH
A READ UNIT -- 2501, 2560, OR 2520 MODEL A1... FOR ,,PUNCH
STORAGE,, A 2560, 2520, OR 1442 MODEL 5... AND FOR ,,PRINT
STORAGE,, AND ,,BASIC TRACE,, A PRINTER -- 2203 OR 1403.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... FUNCTIONS AND
OPERATING PROCEDURES.
MACHINE READABLE -- PROGRAM DECKS... SAMPLE DECK

360T-UT-104 S/360 MODEL 20 BASIC TRACE
/8K/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-104

THE MODEL 20 BASIC UTILITY PROGRAMS ARE A SET OF STANDARDIZED
UTILITY ROUTINES THAT CAN BE USED IN THE RUNNING OR TESTING OF A
USERS OBJECT PROGRAM. THEY ARE-- CLEAR STORAGE...ABSOLUTE PROGRAM
LOADER... RELOCATABLE PROGRAM LOADER... PRINT STORAGE... PUNCH
STORAGE... BASIC TRACE.
FUNCTIONS -- /1/ TO CLEAR THE CORE STORAGE,, TO LOAD ASSEMBLED
PROGRAMS... /2/ ABSOLUTE OR... /3/ RELOCATABLE... /4/ TO PRODUCE
LISTING OF THE CONTENTS OF CORE STORAGE... /5/ TO PUNCH THE
CONTENTS OF CORE STORAGE INTO CARDS... AND /6/ TO TEST OBJECT
PROGRAMS DURING EXECUTION.

MINIMUM SYSTEM REQUIREMENTS-- A 4K SYSTEM/360 MODEL 20 WITH
A READ UNIT -- 2501, 2560, OR 2520 MODEL A1... FOR ,,PUNCH
STORAGE,, A 2560, 2520, OR 1442 MODEL 5... AND FOR ,,PRINT
STORAGE,, AND ,,BASIC TRACE,, A PRINTER -- 2203 OR 1403.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... FUNCTIONS AND
OPERATING PROCEDURES.
MACHINE READABLE -- PROGRAM DECKS... SAMPLE DECK.

360T-UT-105 S/360 MODEL 20 BASIC TRACE
/16K/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-105

THE MODEL 20 BASIC UTILITY PROGRAMS ARE A SET OF STANDARDIZED
UTILITY ROUTINES THAT CAN BE USED IN THE RUNNING OR TESTING OF A
USERS OBJECT PROGRAM. THEY ARE-- CLEAR STORAGE...ABSOLUTE PROGRAM
LOADER... RELOCATABLE PROGRAM LOADER... PRINT STORAGE... PUNCH
STORAGE... BASIC TRACE.
FUNCTIONS -- /1/ TO CLEAR THE CORE STORAGE,, TO LOAD ASSEMBLED
PROGRAMS... /2/ ABSOLUTE OR... /3/ RELOCATABLE... /4/ TO PRODUCE
LISTING OF THE CONTENTS OF CORE STORAGE... /5/ TO PUNCH THE
CONTENTS OF CORE STORAGE INTO CARDS... AND /6/ TO TEST OBJECT
PROGRAMS DURING EXECUTION.

MINIMUM SYSTEM REQUIREMENTS-- A 4K SYSTEM/360 MODEL 20 WITH
A READ UNIT -- 2501, 2560, OR 2520 MODEL A1... FOR ,,PUNCH
STORAGE,, A 2560, 2520, OR 1442 MODEL 5... AND FOR ,,PRINT
STORAGE,, AND ,,BASIC TRACE,, A PRINTER -- 2203 OR 1403.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... FUNCTIONS AND
OPERATING PROCEDURES.
MACHINE READABLE -- PROGRAM DECKS... SAMPLE DECK.

360T-UT-107 S/360 MODEL 20 BASIC TRACE
/12K/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-107

THE MODEL 20 BASIC UTILITY PROGRAMS ARE A SET OF STANDARDIZED
UTILITY ROUTINES THAT CAN BE USED IN THE RUNNING OR TESTING
OF A USERS OBJECT PROGRAM. THEY ARE-- CLEAR STORAGE...
ABSOLUTE PROGRAM LOADER... RELOCATABLE PROGRAM LOADER...
PRINT STORAGE... PUNCH STORAGE... BASIC TRACE.
FUNCTIONS -- /1/ TO CLEAR THE CORE STORAGE,, TO LOAD ASSEMBLED
PROGRAMS... /2/ ABSOLUTE OR... /3/ RELOCATABLE... /4/ TO
PRODUCE LISTING OF THE CONTENTS OF CORE STORAGE... /5/ TO PUNCH
THE CONTENTS OF CORE STORAGE INTO CARDS... AND /6/ TO TEST
OBJECT PROGRAMS DURING EXECUTION.

MINIMUM SYSTEM REQUIREMENTS-- A 4K SYSTEM/360 MODEL 20 WITH
A READ UNIT -- 2501, 2560, OR 2520 MODEL A1... FOR ,,PUNCH
STORAGE,, A 2560, 2520, OR 1442 MODEL 5... AND FOR ,,PRINT
STORAGE,, AND ,,BASIC TRACE,, A PRINTER -- 2203 OR 1403.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... FUNCTIONS AND
OPERATING PROCEDURES, C26-3604.
MACHINE READABLE -- OBJECT AND SAMPLE DECKS IN CARD FORM.

360T-UT-108 UNIVERSAL CHARACTER SET
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360T-UT-108

SYSTEM/360 MODEL 20 UNIVERSAL CHARACTER SET PROVIDES FOR
LOADING THE 240-BYTE UCS BUFFER WITH ANY 8-BIT CODES THAT
ARE TO CORRESPOND TO THE 240 GRAPHIC POSITIONS ON THE PRINTER
CHAIN/TRAIN. THE USER FURNISHES THE UTILITY PROGRAM WITH
SPECIFICATION CARDS, FOUR OF WHICH CONTAIN THE 240 CHARACTERS
TO BE LOADED INTO THE UCS BUFFER.

FEATURES-- THE UCS UTILITY PROGRAM IS A STAND-ALONE PROGRAM.
IT SUPPORTS THE FOLDING AND DUALING CAPABILITY. AFTER THE
BUFFER HAS BEEN LOADED, A SET OF LINES REPRESENTING THE
CHAIN/TRAIN IMAGE IS PRINTED. THIS ALLOWS VISUAL VERIFICATION
THAT THE CHAIN OR TRAIN GRAPHICS, AND THEIR POSITIONS, MATCH
THE DESIRED CHARACTER CODES. TO LOAD AND EXECUTE THE PROGRAM
TAKES LESS THAN ONE MINUTE.

MINIMUM SYSTEM AND EC LEVEL REQUIREMENTS-- A PROCESSING
UNIT 2020 MODEL 82 /EC LEVEL AT LEAST 12100/, WITH UNIVERSAL
CHARACTER SET... ADAPTER... A CARD READER /2501 MODEL A1 OR A2,
2520 MODEL A1 OR 2560 MODEL A1/... PRINTER 1403 MODEL 2
OR N1 WITH UNIVERSAL CHARACTER SET FEATURE.

BASIC PROGRAM MATERIAL --
DOCUMENTATION -- PROGRAM MATERIAL LIST... UNIVERSAL
CHARACTER SET MANUAL, C26-3812.
MACHINE READABLE -- OBJECT DECK IN CARD FORM.

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360U-AS-130 BASIC ASSEMBLER /TAPE/
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-AS-130

THIS PROGRAM IS A MODIFICATION OF THE BASIC ASSEMBLER,
CARD VERSION. IT PROVIDES SUPPORT FOR MODEL 20 CUSTOMERS
WITH MINIMUM TAPE CONFIGURATIONS. THE LANGUAGE IS IDENTICAL
TO THAT OF THE CARD VERSION, I.E., SOURCE CARDS ARE IN
SHORT CODING FORMAT. PUNCHES IN COLUMNS 1-24 ARE IGNORED.
THE OPERATING CHARACTERISTICS DIFFER IN THAT THE PROGRAM
USES TAPE AS INTERMEDIATE STORAGE BETWEEN PASSES. THE PROGRAM
IS LOADED FROM CARDS,, SOURCE DECK INPUT IS FROM CARDS AND
OBJECT DECK OUTPUT IS ON CARDS. THIS PROGRAM IS A STAND

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ALONE SYSTEM. IT DOES NOT OPERATE UNDER THE TPS CONTROL AND SERVICE PROGRAMS BELOW. THE ASSEMBLY OF A PROGRAM CONSISTING OF 600 CARDS /FITTING INTO 4K STORAGE/, WITH 165 SYMBOLS, REQUIRES ABOUT SEVEN MINUTES.

MINIMUM SYSTEM REQUIREMENTS-- A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2, A CARD READER/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/, CARD PUNCH UNIT /2520 MODEL A1--A3, 2560 MODEL A1, OR 1442 MODEL 5/ A 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4 WITH TWO 9-TRACK READ/WRITE HEADS OR -- IF ONE OR TWO HEADS ARE 7-TRACK -- THE DATA CONVERSION FEATURE, AND A PRINTER /1403 MODEL 2, 7, OR N1, OR 2203 MODEL A1/, WHICH IS REQUIRED IF IT IS DESIRED TO PRINT DIAGNOSTIC MESSAGES AND PROGRAM LISTINGS.

PACKAGE NUMBER 1 REQUIREMENTS-- AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL --

DOCUMENTATION -- PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... BASIC ASSEMBLER LANGUAGE MANUAL, C24-3602... OPERATING PROCEDURES, C24-9011.

MACHINE READABLE -- OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE-- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY PID -- NO TAPE SUBMITTAL IS REQUIRED. THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-AS-149 TPS ASSEMBLER PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-AS-149

THE MODEL 20 TPS ASSEMBLER PROVIDES A POWERFUL LANGUAGE FOR MACHINE-ORIENTED PROGRAMMING. IT HAS FACILITIES TO WRITE USER MACRO DEFINITIONS FOR REPETITIVE ROUTINES AND PROVISIONS TO USE THE I/O AND BASIC MONITOR MACROS SUPPLIED BY IBM. SOURCE PROGRAMS WRITTEN IN EITHER MODEL 20 ASSEMBLER OR MODEL 20 BASIC ASSEMBLER LANGUAGE AND PUNCHED INTO CARDS ARE PROCESSED BY THE ASSEMBLER PROGRAM TO PRODUCE MACHINE LANGUAGE PROGRAMS. OUTPUT IS PUNCHED INTO CARDS OR WRITTEN ON TAPE IN RELOCATABLE OR ABSOLUTE FORMAT.

FEATURES-- THE LANGUAGE IS A MAJOR EXTENSION OF THE MODEL 20 BASIC ASSEMBLER LANGUAGE. IT PERMITS SYMBOLS OF UP TO 8 CHARACTERS; LITERALS; CONTROL SECTION DEFINITION; AND VARIOUS AUXILIARY FUNCTIONS. A MACRO LANGUAGE IS PROVIDED TO WRITE MACRO DEFINITIONS FOR GENERATION OF MULTIPLE MACHINE OR ASSEMBLER INSTRUCTIONS. USER-DEFINED MACRO INSTRUCTIONS, AS WELL AS IBM-SUPPLIED MACRO INSTRUCTIONS, ARE RETRIEVED FROM THE MACRO LIBRARY SECTION OF THE SYSTEM TAPE DURING THE GENERATION PHASE. THE ASSEMBLER PROGRAM IS TAPE RESIDENT, I.E., IT MUST BE PART OF THE PROGRAM LIBRARY SECTION OF THE SYSTEM TAPE WHEN USED. CONTROL CARDS ARE USED TO SUPPLY NECESSARY INFORMATION FOR ASSEMBLER OPTIONS. THE OUTPUT TEXT IS IN EITHER ABSOLUTE OR RELOCATABLE FORMAT. DIAGNOSTICS ARE PERFORMED ON ALL SOURCE STATEMENTS. AN OPTIONAL LISTING IDENTIFIES CODING ERRORS BY MEANS OF ERROR MESSAGES.

PERFORMANCE DATA-- SEE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS--

FOR PROGRAM GENERATION -- A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE 2415 MAGNETIC TAPE UNIT MODEL 2 OR 5... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1, OR 2203 MODEL A1/... ONE CARD PUNCH /2520 MODEL A1--A3, 2560 MODEL A1, OR 1442 MODEL 5/ IF PUNCHING IS SPECIFIED. THREE TAPE DRIVES ARE USED, A FOURTH IS OPTIONAL AND PROVIDES THE ABILITY TO PROCESS LITERALS OR TO PUT THE OBJECT PROGRAM ON TAPE. ONE TAPE DRIVE MUST HAVE A 9-TRACK READ/WRITE HEAD. IF THE OTHERS ARE 7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED.

FOR PROGRAM EXECUTION -- REQUIREMENTS DEPEND ON USERS PROGRAM. THE ASSEMBLER LANGUAGE SUPPORTS ALL AVAILABLE MACHINE FEATURES AND ALL CARD AND TAPE I/O DEVICES.

PACKAGE NUMBER 3 REQUIREMENTS--

AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES. /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/. THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR MACROS BY REPLACEMENT OF CARDS.

BASIC PROGRAM MATERIAL --

DOCUMENTATION -- PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... ASSEMBLER LANGUAGE MANUAL, C24-9002... OPERATING PROCEDURES, C24-9009... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE -- OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE-- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A SYSTEM GENERATION RUN. DTR WILL BE SUPPLIED BY PID -- NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-CL-136 TPS INITIAL PROGRAM LOADER
FOR CARD-RESIDENT SYSTEM.
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-CL-136

CONTINUED FROM PRIOR COLUMN--

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION, AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE FOLLOWING ADVANTAGES--

- REDUCED CARD HANDLING.
- AUTOMATIC JOB-TO-JOB TRANSITION.
- SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
- ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
- EASE OF OPERATION.
- TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA-- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS-- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS--

BASIC REQUIREMENTS--

A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC. EXECUTION OF USERS PROGRAMS-- 1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

PACKAGE NUMBER 1 REQUIREMENTS-- AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL --

DOCUMENTATION -- PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000... OPERATING PROCEDURES, C24-9000... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE -- OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE-- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY PID -- NO TAPE SUBMITTAL IS REQUIRED. THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-CL-137 TPS BASIC MONITOR PROGRAM OF
CARD-RESIDENT SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-CL-137

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION, AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE FOLLOWING ADVANTAGES--

- REDUCED CARD HANDLING.
- AUTOMATIC JOB-TO-JOB TRANSITION.
- SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
- ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
- EASE OF OPERATION.
- TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA-- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS-- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS--

BASIC REQUIREMENTS--

A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC. EXECUTION OF USERS PROGRAMS-- 1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

PACKAGE NUMBER 1 REQUIREMENTS-- AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL --

DOCUMENTATION -- PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000... OPERATING PROCEDURES, C24-9000... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE -- OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE-- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY PID -- NO TAPE SUBMITTAL IS REQUIRED. THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-CL-138 TPS JOB CONTROL PROGRAM OF
CARD-RESIDENT SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-CL-138

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THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION, AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE FOLLOWING ADVANTAGES--

- REDUCED CARD HANDLING.
- AUTOMATIC JOB-TO-JOB TRANSITION.
- SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
- ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
- EASE OF OPERATION.
- TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS--

BASIC REQUIREMENTS--
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC.

EXECUTION OF USERS PROBLEM PROGRAMS--
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

PACKAGE NUMBER 1 REQUIREMENTS--
AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000... OPERATING PROCEDURES, C24-9000... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED. THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-CL-139 TPS INITIAL PROGRAM LOADER
FOR TAPE-RESIDENT SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-CL-139

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION, AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE FOLLOWING ADVANTAGES--

- REDUCED CARD HANDLING.
- AUTOMATIC JOB-TO-JOB TRANSITION.
- SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
- ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
- EASE OF OPERATION.
- TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS--

BASIC REQUIREMENTS--
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC.

FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A 9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED.

EXECUTION OF USERS PROBLEM PROGRAMS--
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

PACKAGE NUMBER 2 REQUIREMENTS--
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES OF ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000... OPERATING PROCEDURES, C24-9000... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

CONTINUED FROM PRIOR COLUMN--

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-CL-140 TPS BASIC MONITOR PROGRAM OF
TAPE-RESIDENT SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-CL-140

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION, AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE FOLLOWING ADVANTAGES--

- REDUCED CARD HANDLING.
- AUTOMATIC JOB-TO-JOB TRANSITION.
- SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
- ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
- EASE OF OPERATION.
- TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS--

BASIC REQUIREMENTS--
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC.

ADDITIONAL REQUIREMENTS--
FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A 9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED.

EXECUTION OF USERS PROBLEM PROGRAMS--
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

PACKAGE NUMBER 2 REQUIREMENTS--
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES OF ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000... OPERATING PROCEDURES, C24-9000... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-CL-141 TPS JOB CONTROL PROGRAM OF
TAPE-RESIDENT SYSTEM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-CL-141

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION, AND EXECUTION OF PROGRAMS. THE CONTROL PROGRAMS PROVIDE THE FOLLOWING ADVANTAGES--

- REDUCED CARD HANDLING.
- AUTOMATIC JOB-TO-JOB TRANSITION.
- SELECTIVE RETRIEVAL OF PROGRAMS FROM THE SYSTEM TAPE.
- ABILITY TO EXPAND CORE STORAGE THROUGH PROGRAM OVERLAYS.
- EASE OF OPERATION.
- TAPE DRIVE ASSIGNMENT OBJECT TIME.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS--

BASIC REQUIREMENTS--
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC.

ADDITIONAL REQUIREMENTS--
FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A 9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED.

EXECUTION OF USERS PROBLEM PROGRAMS--
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

PACKAGE NUMBER 2 REQUIREMENTS--
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES OF ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

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BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
OPERATING PROCEDURES, C24-9000...
PERFORMANCE ESTIMATES, C24-9010.
MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM
APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-IO-151 TPS INPUT/OUTPUT AND BASIC
MONITOR MACRO DEFINITIONS
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-IO-151

THE INPUT/OUTPUT MACROS RELIEVE THE USER OF PROGRAMMING
THE FUNCTIONS REQUIRED TO SERVICE MACHINE INTERRUPTS, OVERLAP
PROCESSING, AND INPUT/OUTPUT OPERATIONS FOR CARD, PRINTER, AND
MAGNETIC TAPE DEVICES. THE BASIC MONITOR MACROS ALLOW THE
PROGRAMMER TO REQUEST SERVICES OF THE BASIC MONITOR. THIS
PROGRAM CONSISTS OF A SET OF MACRO DEFINITIONS TO BE INCLUDED
IN THE MACRO LIBRARY OF THE SYSTEM TAPE. FROM THESE DEFINITIONS
THE ASSEMBLER GENERATES SPECIALIZED ROUTINES AND/OR LINKAGES
TO BE INCLUDED IN THE PROBLEM PROGRAMS. THESE ROUTINES CAN
BE USED ONLY IN CONNECTION WITH THE BASIC MONITOR.

FEATURES- IN ADDITION TO THE FEATURES PROVIDED BY THE IDCS
FOR PUNCHED CARD EQUIPMENT, THE I/O MACROS HANDLE--
- OPENING AND CLOSING OF TAPE FILES.
- WRITING, READING, AND TRANSFERRING OF BLOCKED OR UNBLOCKED
RECORDS OF FIXED OR VARIABLE LENGTH.
- BLOCKING OR DEBLOCKING OF RECORDS.
- CHECKING AND CREATION OF STANDARD TAPE LABELS /AN EXIT IS
PROVIDED FOR CHECKING AND CREATION OF ADDITIONAL USER
STANDARD TAPE LABELS/.
- READ BACKWARDS.
- TAPE I/O ERROR CHECKING AND RECOVERY PROCEDURES.
THE BASIC MONITOR MACROS ALLOW ACCESS TO THE COMMUNICATION
REGION, LOADING OF PROGRAM PHASES, AND JOB-TO-JOB TRANSITION.

PERFORMANCE DATA- SEE SRL PUBLICATION IBM SYSTEM/360 MODEL 20,
TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM REQUIREMENT FOR
ASSEMBLY OF PROGRAMS CONTAINING I/O AND BASIC MONITOR MACRO
INSTRUCTIONS IS THE CONFIGURATION REQUIRED BY THE TPS
ASSEMBLER PROGRAM. THE MINIMUM CONFIGURATION FOR EXECUTION OF
SUCH PROGRAMS DEPENDS ON PROCESSING REQUIREMENTS.
PACKAGE NUMBER 3 REQUIREMENTS--
AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES.
/USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/.
THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE
BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE
INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A
CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR
MACROS BY REPLACEMENT OF CARDS.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
USERS... INPUT/OUTPUT CONTROL SYSTEM MANUAL, C24-9003...
CONTROL AND SERVICE PROGRAM MANUAL, C24-9000...
OPERATING PROCEDURES, C24-9009... PERFORMANCE
ESTIMATES, C24-9010.
MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS
PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A
SYSTEM GENERATION RUN.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-RG-148 TPS REPORT PROGRAM GENERATOR
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-RG-148

THE TPS RPG FACILITATES THE PREPARATION OF PROGRAMS TO
WRITE REPORTS, PUNCH CARDS, PERFORM FILE MAINTENANCE OPERATIONS,
READ AND WRITE TAPE RECORDS, AND UPDATE EXISTING TAPE FILES
INVOLVING CARD AND MAGNETIC TAPE INPUT/OUTPUT. THE USER
FURNISHES THE GENERATOR WITH SPECIFICATION CARDS DESCRIBING
THE INPUT, NECESSARY CALCULATIONS, DESIRED OUTPUT, FILE
DESCRIPTION, AND EXTENSION.

FEATURES- THE TPS RPG IS TAPE-RESIDENT AND HAS COMPILE-AND-GO
CAPABILITY, WITH THE OPTION OF HAVING THE MACHINE-LANGUAGE
PROGRAM PUNCHED INTO CARDS OR WRITTEN ON TAPE. IF 8K BYTES OF
CORE STORAGE ARE AVAILABLE FOR PROGRAM GENERATION ONLY, THE
TPS RPG CAN PROCESS A TOTAL OF 17 FILES /INPUT, OUTPUT,
COMBINED, AND TABLE FILES/ AND TABLES IN ANY COMBINATION.
IF THE CORE CAPACITY IS 12K BYTES, OR MORE, THE NUMBER OF
FILES AND TABLES IS NOT LIMITED BY PROGRAM GENERATION.
IN ALL CASES, HOWEVER, THE MAXIMUM NUMBER OF FILES THAT CAN
BE MATCHED WITH EACH OTHER IS THREE. THE TAPE RECORDS CAN
BE FIXED OR VARIABLE, BLOCKED OR UNBLOCKED. TAPE LABEL
CHECKING AND CREATION CONFORM TO IBM SYSTEM/360 STANDARDS.
NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED
TO ALLOW THE PROCESSING OF USER LABELS.

PERFORMANCE DATA- SEE SRL PUBLICATION IBM SYSTEM/360 MODEL 20,
TAPE PROGRAMMING SUPPORT, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS--
FOR PROGRAM GENERATION -- A 2020 CENTRAL PROCESSING UNIT
MODEL C2 OR BC2... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4 WITH
ONE 9-TRACK MAGNETIC READ/WRITE HEAD. IF THE SECOND HEAD IS
7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED...
ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR
2560 MODEL A1/... ONE PRINTER /2203 MODEL A1, OR 1403 MODEL 2, 7,
OR N1/, IF PRINTING OF DIAGNOSTIC MESSAGES IS SPECIFIED...

CONTINUED FROM PRIOR COLUMN--

ONE CARD PUNCH /2520 MODEL A1-A3, 2560 MODEL A1, OR 1442 MODEL 5/
IF PUNCHING IS SPECIFIED.
FOR PROGRAM EXECUTION -- A 2020 CENTRAL PROCESSING UNIT MODEL C2
OR BC2 AND I/O DEVICES AS SPECIFIED BY THE USER.
PACKAGE NUMBER 2 REQUIREMENTS--
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH THIS
CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS CONFIGURATION
ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD INPUT.
CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE CREATION
OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES OF ALL
PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
USERS... RPG MANUAL, C24-9001... OPERATING
PROCEDURES, C24-9009... PERFORMANCE ESTIMATES, C24-9010.
MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
TAPE PROGRAMMING SYSTEM /TPS/ INCLUDED IN
TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM
APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-SL-142 TPS LOAD SYSTEM TAPE PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-SL-142

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF
THE LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM...
LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS
/I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE
PROGRAM, AND DIRECTORY SERVICE PROGRAM/.

THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE--
- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF
IBM AND/OR USER WRITTEN PROGRAMS.
- COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE, E.G.,
FROM A 7-TRACK TO A 9-TRACK TAPE.
- LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED
PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM
AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED
WITHOUT NEW ASSEMBLY.
- CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM
AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM LIBRARY OF
THE SYSTEM TAPE.
- MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR
USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE
SYSTEM TAPE.
- DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE
CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE SYSTEM
TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360
MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES
/C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS
FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS
ARE AS FOLLOWS--
BASIC REQUIREMENTS--
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER
/2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/...
ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR
PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS,
DISPLAYING CONTENTS OF DIRECTORIES, ETC.

ADDITIONAL REQUIREMENTS--
FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR
THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM
TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT
MODEL 1 OR 4... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A
9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK,
THE DATA CONVERSION FEATURE IS REQUIRED.
EXECUTION OF USER'S PROBLEM PROGRAMS--
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD.
THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS
PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS
FOR A CARD-RESIDENT SYSTEM.
PACKAGE NUMBER 2 REQUIREMENTS--
AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH
THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS
CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD
INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE
CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES
OF ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO
USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000...
OPERATING PROCEDURES, C24-9000...
PERFORMANCE ESTIMATES, C24-9010.
MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600
BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20
TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN
PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM
APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE
PROGRAM MATERIAL INTO CARDS.
DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-SL-143 TPS COPY SYSTEM TAPE PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-SL-143

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A
TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION,
AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF
THE LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM...
LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS
/I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE
PROGRAM, AND DIRECTORY SERVICE PROGRAM/.

THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE--
- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF

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- IBM AND/OR USER WRITTEN PROGRAMS.
- COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE, E.G., FROM A 7-TRACK TO A 9-TRACK TAPE.
- LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED WITHOUT NEW ASSEMBLY.
- CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM LIBRARY OF THE SYSTEM TAPE.
- MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE SYSTEM TAPE.
- DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE SYSTEM TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS-

BASIC REQUIREMENTS-

A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC.

ADDITIONAL REQUIREMENTS-

FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT MODEL 2, 3, 5, OR 6... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A 9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED.

EXECUTION OF USERS PROBLEM PROGRAMS-

1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

PACKAGE NUMBER 2 REQUIREMENTS-

AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES OF ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -

DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000... OPERATING PROCEDURES, C24-9000... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS. DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-SL-144 TPS DIRECTORY SERVICE PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-SL-144

- THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION, AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF THE LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM... LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS /I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE PROGRAM, AND DIRECTORY SERVICE PROGRAM/.
- THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE-
- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF IBM AND/OR USER WRITTEN PROGRAMS.
 - COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE, E.G., FROM A 7-TRACK TO A 9-TRACK TAPE.
 - LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED WITHOUT NEW ASSEMBLY.
 - CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM LIBRARY OF THE SYSTEM TAPE.
 - MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE SYSTEM TAPE.
 - DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE SYSTEM TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS-

BASIC REQUIREMENTS-

A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC.

ADDITIONAL REQUIREMENTS-

FOR THE CONTROL PROGRAMS FOR A TAPE-RESIDENT SYSTEM AND FOR THE FOLLOWING SERVICE PROGRAMS, LOAD SYSTEM TAPE, COPY SYSTEM TAPE, AND DIRECTORY SERVICE- ONE 2415 MAGNETIC TAPE UNIT MODEL 2, 3, 5, OR 6... ONE OF THE TWO TAPE DRIVES MUST CONTAIN A 9-TRACK READ/WRITE HEAD. IF THE SECOND HEAD IS 7-TRACK, THE DATA CONVERSION FEATURE IS REQUIRED.

EXECUTION OF USERS PROBLEM PROGRAMS-

1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

CONTINUED FROM PRIOR COLUMN--

PACKAGE NUMBER 2 REQUIREMENTS- AT LEAST 8K CORE STORAGE AND TWO TAPE DRIVES. /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGE NO. 1/. THIS CONFIGURATION ALLOWS THE USER TO BUILD A SYSTEM TAPE FROM CARD INPUT. CHANGES TO THIS SYSTEM TAPE MUST BE MADE BY THE CREATION OF A NEW SYSTEM TAPE FROM THE UPDATED CARD FILES OF ALL PROGRAMS INCLUDED IN THE SYSTEM TAPE.

BASIC PROGRAM MATERIAL -

DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000... OPERATING PROCEDURES, C24-9000... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGES 1 + 2. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS. DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 2.

360U-SL-145 TPS CORE-IMAGE MAINTENANCE PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-SL-145

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION, AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF THE LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM... LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS /I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE PROGRAM, AND DIRECTORY SERVICE PROGRAM/.

THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE-

- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF IBM AND/OR USER WRITTEN PROGRAMS.
- COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE, E.G., FROM A 7-TRACK TO A 9-TRACK TAPE.
- LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED WITHOUT NEW ASSEMBLY.
- CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM LIBRARY OF THE SYSTEM TAPE.
- MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE SYSTEM TAPE.
- DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE SYSTEM TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS-

BASIC REQUIREMENTS-

A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1 OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC.

ADDITIONAL REQUIREMENTS-

FOR THE FOLLOWING SERVICE PROGRAMS, CORE IMAGE MAINTENANCE, MACRO MAINTENANCE, AND LINKAGE EDITOR- ONE 2415 MAGNETIC TAPE UNIT MODEL 2, 3, 5, OR 6... WITH THREE 9-TRACK READ/WRITE HEADS. IF THE DATA CONVERSION FEATURE IS INSTALLED, ONLY ONE 9-TRACK HEAD IS REQUIRED.

EXECUTION OF USERS PROBLEM PROGRAMS-

1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

PACKAGE NUMBER 3 REQUIREMENTS-

AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES. /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/. THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR MACROS BY REPLACEMENT OF CARDS.

BASIC PROGRAM MATERIAL -

DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000... OPERATING PROCEDURES, C24-9000... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A SYSTEM GENERATION RUN. DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-SL-146 TPS MACRO MAINTENANCE PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-SL-146

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION, AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF THE LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM... LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS /I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE PROGRAM, AND DIRECTORY SERVICE PROGRAM/.

THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE-

- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF IBM AND/OR USER WRITTEN PROGRAMS.

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- COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE, E.G., FROM A 7-TRACK TO A 9-TRACK TAPE.
- LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED WITHOUT NEW ASSEMBLY.
- CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM LIBRARY OF THE SYSTEM TAPE.
- MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE SYSTEM TAPE.
- DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE SYSTEM TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS-

BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1, OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC.

ADDITIONAL REQUIREMENTS-
FOR THE FOLLOWING SERVICE PROGRAMS, CORE IMAGE MAINTENANCE, MACRO MAINTENANCE, AND LINKAGE EDITOR- ONE 2415 MAGNETIC TAPE UNIT MODEL 2, 3, 5, OR 6... WITH THREE 9-TRACK READ/WRITE HEADS. IF THE DATA CONVERSION FEATURE IS INSTALLED, ONLY ONE 9-TRACK HEAD IS REQUIRED.

EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

PACKAGE NUMBER 3 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES. /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/. THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR MACROS BY REPLACEMENT OF CARDS.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000... OPERATING PROCEDURES, C24-9000... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A SYSTEM GENERATION RUN.

DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-SL-147 TPS LINKAGE EDITOR PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-SL-147

THE CONTROL AND SERVICE PROGRAMS GENERATE AND MAINTAIN A TAPE-RESIDENT SYSTEM THAT FACILITATES THE ASSEMBLY, GENERATION, AND EXECUTION OF PROGRAMS. THE SERVICE PROGRAMS CONSIST OF THE LOAD SYSTEM TAPE PROGRAM... COPY SYSTEM TAPE PROGRAM... LINKAGE EDITOR PROGRAM... LIBRARY MANAGEMENT PROGRAMS /I.E. CORE-IMAGE MAINTENANCE PROGRAM, MACRO MAINTENANCE PROGRAM, AND DIRECTORY SERVICE PROGRAM/.

- THE PRINCIPAL FUNCTIONS OF THESE PROGRAMS ARE-
- LOAD SYSTEM TAPE PROGRAM -- BUILDS A SYSTEM TAPE OF IBM AND/OR USER WRITTEN PROGRAMS.
 - COPY SYSTEM TAPE PROGRAM -- TO COPY THE SYSTEM TAPE, E.G., FROM A 7-TRACK TO A 9-TRACK TAPE.
 - LINKAGE EDITOR PROGRAM -- TO LINK SEPARATELY ASSEMBLED PROGRAM SECTIONS AND/OR SUBROUTINES INTO A SINGLE PROGRAM AND TO RELOCATE PROGRAMS SO THAT THEY CAN BE EXECUTED WITHOUT NEW ASSEMBLY.
 - CORE-IMAGE MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR USER-WRITTEN PROGRAMS TO OR FROM THE PROGRAM LIBRARY OF THE SYSTEM TAPE.
 - MACRO MAINTENANCE PROGRAM -- TO ADD OR DELETE IBM AND/OR USER-WRITTEN MACROS TO OR FROM THE MACRO LIBRARY OF THE SYSTEM TAPE.
 - DIRECTORY SERVICE PROGRAM -- TO PRINT THE CONTENTS OF THE CORE-IMAGE DIRECTORY AND/OR MACRO DIRECTORY OF THE SYSTEM TAPE.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- THE MINIMUM SYSTEM REQUIREMENTS FOR THE USE OF MODEL 20 TPS CONTROL AND SERVICE PROGRAMS ARE AS FOLLOWS-

BASIC REQUIREMENTS-
A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE PRINTER /1403 MODEL 2, 7, OR N1, OR 2203 MODEL A1/ FOR PRINTING DIAGNOSTIC MESSAGES, LOGGING OF JOB CONTROL CARDS, DISPLAYING CONTENTS OF DIRECTORIES, ETC.

ADDITIONAL REQUIREMENTS-
FOR THE FOLLOWING SERVICE PROGRAMS, CORE IMAGE MAINTENANCE, MACRO MAINTENANCE, AND LINKAGE EDITOR- ONE 2415 MAGNETIC TAPE UNIT MODEL 2, 3, 5, OR 6... WITH THREE 9-TRACK READ/WRITE HEADS. IF THE DATA CONVERSION FEATURE IS INSTALLED, ONLY ONE 9-TRACK HEAD IS REQUIRED.

FOR THE LINKAGE EDITOR PROGRAM- ONE CARD PUNCH /2520 MODEL A1-A3, 2560 MODEL A1, OR 1442 MODEL 5/ IF OUTPUT IS ON CARDS.
EXECUTION OF USERS PROBLEM PROGRAMS-
1 MAGNETIC TAPE DRIVE 2415 WITH A 9-TRACK READ/WRITE HEAD. THIS MAGNETIC TAPE DRIVE IS NOT REQUIRED, IF THE USERS PROGRAMS ARE EXECUTED UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

CONTINUED FROM PRIOR COLUMN--

PACKAGE NUMBER 3 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES. /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/. THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR MACROS BY REPLACEMENT OF CARDS.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... CONTROL AND SERVICE PROGRAMS MANUAL, C24-9000... OPERATING PROCEDURES, C24-9000... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A SYSTEM GENERATION RUN.

DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-SM-150 TPS SORT/MERGE PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-SM-150

THE SORT/MERGE PROGRAM ALLOWS THE MODEL 20 TAPE USER TO SORT TAPE FILES INTO ASCENDING AND/OR DESCENDING SEQUENCE AND TO MERGE PRE-SEQUENCED OR VARIABLE LENGTH FILES. FOR OBJECT PROGRAM EXECUTION, THE OPERATOR SUPPLIES THE REQUIRED CONTROL INFORMATION IN FORM OF CONTROL CARDS.

FEATURES- THE TPS SORT/MERGE PROGRAM SORTS BINARY DATA /INCLUDING ALPHAMERIC CHARACTERS/, FIXED-POINT INTEGERS, PACKED OR UNPACKED DECIMAL NUMBERS CONTAINED IN BLOCKED OR UNBLOCKED RECORDS OF FIXED OR VARIABLE LENGTH IN AN ASCENDING AND/OR DESCENDING ORDER. IT ALSO MERGES PRE-SEQUENCED FILES /2-5 FILES/. OPERATIONS ARE PERFORMED ACCORDING TO CONTROL DATA CONTAINED IN UP TO 12 FIELDS OF EACH RECORD, WITH A MAXIMUM LENGTH OF 256 BYTES FOR ALL CONTROL FIELDS. WHEN MERGING, THE SEQUENCE OF ALL FILES IS CHECKED. THE PROGRAM PROVIDES FOR EXITS TO USER-WRITTEN ROUTINES AS WELL AS FOR CHECKPOINTS AND RESTART. TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN ONE REEL, OR SELECTED FROM OR WRITTEN ON A REEL CONTAINING MORE THAN ONE FILE. TAPE LABEL CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE USER. THE PROGRAM RUNS UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR EITHER THE CARD OR THE TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- A 2020 CENTRAL PROCESSING UNIT MODEL C2 OR BC2... A 2501 MODEL A1 OR A2 CARD READER, 2520 MODEL A1 OR A2 CARD READER, A 1403 MODEL 2, 7 OR N1 OR 2203 MODEL A1 PRINTER FOR PRINTING OF ERROR AND DIAGNOSTIC MESSAGES... ONE 2415 MODEL 2 OR 5 MAGNETIC TAPE UNIT. AT LEAST THREE TAPE DRIVES ARE REQUIRED FOR THE PROGRAM ITSELF. A FOURTH TAPE DRIVE IS REQUIRED, IF THE PROGRAM IS RUN FROM THE SYSTEM TAPE.

PACKAGE NUMBER 3 REQUIREMENTS-
AT LEAST 8K CORE STORAGE AND FOUR OR MORE TAPE DRIVES. /USERS WITH THIS CONFIGURATION CAN ALSO USE PACKAGES 1 + 2/. THIS CONFIGURATION ALLOWS THE USER TO UPDATE THE SYSTEM TAPE BY THE REPLACEMENT OF PHASES OR MACROS FROM CARD OR TAPE INPUT. THE PROGRAM MATERIAL MUST STILL BE KEPT CURRENT AS A CARD FILE TO ALLOW MODIFICATIONS OF INDIVIDUAL PHASES OR MACROS BY REPLACEMENT OF CARDS.

RESTRICTIONS ON TAPE DRIVE CONFIGURATIONS-
WITH 9-TRACK INPUT TAPES AND/OR 7-TRACK INPUT TAPES, THAT WERE CREATED WITH THE DATA CONVERSION FEATURE TURNED ON, OUTPUT TAPES MUST BE 9-TRACK TAPES AND/OR 7-TRACK TAPES WITH THE DATA CONVERSION FEATURE TURNED ON. FOR SORTING, 9-TRACK WORK TAPES MUST BE USED. WITH 7-TRACK INPUT TAPES, THAT WERE CREATED WITH THE DATA CONVERSION FEATURE TURNED OFF, OUTPUT TAPES CAN BE EITHER 9-TRACK OR 7-TRACK TAPES. FOR SORTING, WORK TAPES MAY BE EITHER 9-TRACK OR 7-TRACK. ALL 7-TRACK TAPES USED IN A GIVEN SORT OR MERGE OPERATION MUST HAVE THE SAME CHARACTERISTICS. FOR EXAMPLE, IF THE TRANSLATE CAPABILITY OF THE COMPATIBILITY SPECIAL FEATURE IS USED WHEN 7-TRACK INPUT TAPES ARE CREATED, IT MUST BE USED WITH ALL 7-TRACK INPUT OR OUTPUT TAPES. FILES OF VARIABLE-LENGTH RECORDS TO BE SORTED OR MERGED MUST BE CREATED ON 9-TRACK TAPES OR ON 7-TRACK TAPES WITH THE DATA CONVERSION SPECIAL FEATURE TURNED ON. THEREFORE, PER THE ABOVE, 9-TRACK WORK TAPES MUST BE USED WHEN SORTING VARIABLE-LENGTH RECORDS. CHECKPOINT RECORDS WILL BE WRITTEN ONLY ON 9-TRACK WORK TAPES OR 7-TRACK WORK TAPES WITH THE DATA CONVERSION FEATURE.

BASIC PROGRAM MATERIAL -
DOCUMENTATION - SORT/MERGE PROGRAM MANUAL, C26-3804... OPERATING PROCEDURES, C24-9009... PERFORMANCE ESTIMATES, C24-9010.

MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGES 1, 2 AND 3. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS AND PREPARES AN INPUT TAPE FOR A SYSTEM GENERATION RUN.

DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

THIS PROGRAM IS A PART OF PACKAGE NO. 3.

360U-UT-131 TPS TAPE-TO-TAPE UTILITY PROGRAM
ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-UT-131

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BY PROVIDING GENERALIZED ROUTINES, THE TAPE UTILITY PROGRAMS REDUCE THE NEED FOR REPETITIVE PROGRAMMING OF CERTAIN OPERATIONS THAT ARE PERFORMED FREQUENTLY. THE PROGRAMS ASSIST THE USER IN THE DAY-TO-DAY OPERATION OF HIS INSTALLATION BY PROVIDING FOR THE TRANSFER OF DATA FROM ONE MEDIUM TO ANOTHER. A UTILITY MODIFIER CARD, PROVIDED FOR THE INPUT AND OUTPUT FILE, ALLOWS THE USER TO SPECIFY THE BLOCKING FACTOR, RECORD LENGTH, CONTROL FIELDS, ETC. A FIELD SELECTION CARD FURNISHES INFORMATION TO THE PROGRAM FOR TRANSFERRING FIELDS FROM AN INPUT RECORD TO THE SAME OR A DIFFERENT RELATIVE POSITION OF THE OUTPUT RECORD AND FOR SIMULTANEOUSLY CONVERTING THE DATA TO A DIFFERENT FORMAT. HEADER CARDS CAN BE USED TO PROVIDE TITLES FOR THE PAGES OF PRINTED OUTPUT.

FEATURES- EXCEPT FOR THE INITIALIZE TAPE UTILITY PROGRAM, THE TAPE UTILITIES PROVIDE FOR THE TRANSFER FROM AN INPUT MEDIUM TO AN OUTPUT MEDIUM, WITH THE FOLLOWING OPTIONS- COPY, REBLOCK, FIELD SELECT, AND REBLOCK AND FIELD SELECT. PRINTER OUTPUT CAN BE IN A BYTE-FOR-BYTE REPRESENTATION OF THE INFORMATION IN CORE STORAGE /DISPLAY/ OR IN AN AUDITED LISTING OF THE INFORMATION IN CORE STORAGE /LIST/. TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN ONE REEL, OR SELECTED FROM OR PLACED ON A REEL CONTAINING MORE THAN ONE FILE. SEQUENCE NUMBERING OF OUTPUT CARDS AND SEQUENCE CHECKING FOR INPUT CARDS ARE AVAILABLE. TAPE LABEL CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS, AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE USER AND PROCESSING OF STERLING CURRENCY FIELDS. THE TAPE UTILITY PROGRAMS RUN UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR EITHER A CARD-RESIDENT SYSTEM OR A TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- WHEN USING THE CONTROL PROGRAMS FOR THE CARD-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL B2 OR BC2... A CARD READING DEVICE /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4. WHEN USING THE CONTROL PROGRAMS FOR THE TAPE-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL C2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4 WITH AT LEAST ONE 9-TRACK READ/WRITE HEAD. THE TAPE-TO-TAPE UTILITY PROGRAM REQUIRES A 2415 MODEL 2 OR 5. FOR ERROR AND DIAGNOSTIC MESSAGES AND FOR THE TAPE-TO-PRINTER UTILITY PROGRAM- ONE 2203 MODEL A1 OR 1403 MODEL 2, 7, OR N1 PRINTER. PACKAGE NUMBER 1 REQUIREMENTS- AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... UTILITY PROGRAMS MANUAL, C26-3808... CARD RESIDENT OPERATING PROCEDURES, C26-3809... OPERATING PROCEDURES, C24-9009... PERFORMANCE ESTIMATES, C24-9010. MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED. THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-UT-132 TPS TAPE-TO-CARD UTILITY PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-UT-132

BY PROVIDING GENERALIZED ROUTINES, THE TAPE UTILITY PROGRAMS REDUCE THE NEED FOR REPETITIVE PROGRAMMING OF CERTAIN OPERATIONS THAT ARE PERFORMED FREQUENTLY. THE PROGRAMS ASSIST THE USER IN THE DAY-TO-DAY OPERATION OF HIS INSTALLATION BY PROVIDING FOR THE TRANSFER OF DATA FROM ONE MEDIUM TO ANOTHER. A UTILITY MODIFIER CARD, PROVIDED FOR THE INPUT AND OUTPUT FILE, ALLOWS THE USER TO SPECIFY THE BLOCKING FACTOR, RECORD LENGTH, CONTROL FIELDS, ETC. A FIELD SELECTION CARD FURNISHES INFORMATION TO THE PROGRAM FOR TRANSFERRING FIELDS FROM AN INPUT RECORD TO THE SAME OR A DIFFERENT RELATIVE POSITION OF THE OUTPUT RECORD AND FOR SIMULTANEOUSLY CONVERTING THE DATA TO A DIFFERENT FORMAT. HEADER CARDS CAN BE USED TO PROVIDE TITLES FOR THE PAGES OF PRINTED OUTPUT.

FEATURES- EXCEPT FOR THE INITIALIZE TAPE UTILITY PROGRAM, THE TAPE UTILITIES PROVIDE FOR THE TRANSFER FROM AN INPUT MEDIUM TO AN OUTPUT MEDIUM, WITH THE FOLLOWING OPTIONS- COPY, REBLOCK, FIELD SELECT, AND REBLOCK AND FIELD SELECT. PRINTER OUTPUT CAN BE IN A BYTE-FOR-BYTE REPRESENTATION OF THE INFORMATION IN CORE STORAGE /DISPLAY/ OR IN AN AUDITED LISTING OF THE INFORMATION IN CORE STORAGE /LIST/. TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN ONE REEL, OR SELECTED FROM OR PLACED ON A REEL CONTAINING MORE THAN ONE FILE. SEQUENCE NUMBERING OF OUTPUT CARDS AND SEQUENCE CHECKING FOR INPUT CARDS ARE AVAILABLE. TAPE LABEL CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS, AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE USER AND PROCESSING OF STERLING CURRENCY FIELDS. THE TAPE UTILITY PROGRAMS RUN UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR EITHER A CARD-RESIDENT SYSTEM OR A TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- WHEN USING THE CONTROL PROGRAMS FOR THE CARD-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL B2 OR BC2... A CARD READING DEVICE /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4. WHEN USING THE CONTROL PROGRAMS FOR THE TAPE-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL C2...

CONTINUED FROM PRIOR COLUMN--

ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4 WITH AT LEAST ONE 9-TRACK READ/WRITE HEAD. THE TAPE-TO-TAPE UTILITY PROGRAM REQUIRES A 2415 MODEL 2 OR 5. FOR ERROR AND DIAGNOSTIC MESSAGES AND FOR THE TAPE-TO-PRINTER UTILITY PROGRAM- ONE 2203 MODEL A1 OR 1403 MODEL 2, 7, OR N1 PRINTER. FOR THE TAPE-TO-CARD UTILITY PROGRAM- ONE CARD PUNCH /2520 MODEL A1-A3, 2560 MODEL A1, OR 1442 MODEL 5/. PACKAGE NUMBER 1 REQUIREMENTS- AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... UTILITY PROGRAMS MANUAL, C26-3808... CARD RESIDENT OPERATING PROCEDURES, C26-3809... OPERATING PROCEDURES, C24-9009... PERFORMANCE ESTIMATES, C24-9010. MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED. THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-UT-133 TPS CARD-TO-TAPE UTILITY PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-UT-133

BY PROVIDING GENERALIZED ROUTINES, THE TAPE UTILITY PROGRAMS REDUCE THE NEED FOR REPETITIVE PROGRAMMING OF CERTAIN OPERATIONS THAT ARE PERFORMED FREQUENTLY. THE PROGRAMS ASSIST THE USER IN THE DAY-TO-DAY OPERATION OF HIS INSTALLATION BY PROVIDING FOR THE TRANSFER OF DATA FROM ONE MEDIUM TO ANOTHER. A UTILITY MODIFIER CARD, PROVIDED FOR THE INPUT AND OUTPUT FILE, ALLOWS THE USER TO SPECIFY THE BLOCKING FACTOR, RECORD LENGTH, CONTROL FIELDS, ETC. A FIELD SELECTION CARD FURNISHES INFORMATION TO THE PROGRAM FOR TRANSFERRING FIELDS FROM AN INPUT RECORD TO THE SAME OR A DIFFERENT RELATIVE POSITION OF THE OUTPUT RECORD AND FOR SIMULTANEOUSLY CONVERTING THE DATA TO A DIFFERENT FORMAT. HEADER CARDS* CAN BE USED TO PROVIDE TITLES FOR THE PAGES OF PRINTED OUTPUT.

FEATURES- EXCEPT FOR THE INITIALIZE TAPE UTILITY PROGRAM, THE TAPE UTILITIES PROVIDE FOR THE TRANSFER FROM AN INPUT MEDIUM TO AN OUTPUT MEDIUM, WITH THE FOLLOWING OPTIONS- COPY, REBLOCK, FIELD SELECT, AND REBLOCK AND FIELD SELECT. PRINTER OUTPUT CAN BE IN A BYTE-FOR-BYTE REPRESENTATION OF THE INFORMATION IN CORE STORAGE /DISPLAY/ OR IN AN AUDITED LISTING OF THE INFORMATION IN CORE STORAGE /LIST/. TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN ONE REEL, OR SELECTED FROM OR PLACED ON A REEL CONTAINING MORE THAN ONE FILE. SEQUENCE NUMBERING OF OUTPUT CARDS AND SEQUENCE CHECKING FOR INPUT CARDS ARE AVAILABLE. TAPE LABEL CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS, AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE USER AND PROCESSING OF STERLING CURRENCY FIELDS. THE TAPE UTILITY PROGRAMS RUN UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR EITHER A CARD-RESIDENT SYSTEM OR A TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- WHEN USING THE CONTROL PROGRAMS FOR THE CARD-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL B2 OR BC2... A CARD READING DEVICE /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4. WHEN USING THE CONTROL PROGRAMS FOR THE TAPE-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL C2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4 WITH AT LEAST ONE 9-TRACK READ/WRITE HEAD. THE TAPE-TO-TAPE UTILITY PROGRAM REQUIRES A 2415 MODEL 2 OR 5. FOR ERROR AND DIAGNOSTIC MESSAGES AND FOR THE TAPE-TO-PRINTER UTILITY PROGRAM- ONE 2203 MODEL A1 OR 1403 MODEL 2, 7, OR N1 PRINTER. PACKAGE NUMBER 1 REQUIREMENTS- AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... UTILITY PROGRAMS MANUAL, C26-3808... CARD RESIDENT OPERATING PROCEDURES, C26-3809... OPERATING PROCEDURES, C24-9009... PERFORMANCE ESTIMATES, C24-9010. MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

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THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-UT-134 TPS TAPE-TO-PRINTER UTILITY PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-UT-134

IBM Programs

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CONTINUED FROM PRIOR PAGE--

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FEATURES- EXCEPT FOR THE INITIALIZE TAPE UTILITY PROGRAM, THE TAPE UTILITIES PROVIDE FOR THE TRANSFER FROM AN INPUT MEDIUM TO AN OUTPUT MEDIUM, WITH THE FOLLOWING OPTIONS- COPY, REBLOCK, FIELD SELECT, AND REBLOCK AND FIELD SELECT. PRINTER OUTPUT CAN BE IN A BYTE-FOR-BYTE REPRESENTATION OF THE INFORMATION IN CORE STORAGE /DISPLAY/ OR IN AN AUDITED LISTING OF THE INFORMATION IN CORE STORAGE /LIST/. TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN ONE REEL, OR SELECTED FROM OR PLACED ON A REEL CONTAINING MORE THAN ONE FILE. SEQUENCE NUMBERING OF OUTPUT CARDS AND SEQUENCE CHECKING FOR INPUT CARDS ARE AVAILABLE. TAPE LABEL CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS, AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE USER AND PROCESSING OF STERLING CURRENCY FIELDS. THE TAPE UTILITY PROGRAMS RUN UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR EITHER A CARD-RESIDENT SYSTEM OR A TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- WHEN USING THE CONTROL PROGRAMS FOR THE CARD-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL B2 OR BC2.. A CARD READING DEVICE /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4. WHEN USING THE CONTROL PROGRAMS FOR THE TAPE-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL C2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4 WITH AT LEAST ONE 9-TRACK READ/WRITE HEAD. THE TAPE-TO-TAPE UTILITY PROGRAM REQUIRES A 2415 MODEL 2 OR 5. FOR ERROR AND DIAGNOSTIC MESSAGES AND FOR THE TAPE-TO-PRINTER UTILITY PROGRAM- ONE 2203 MODEL A1 OR 1403 MODEL 2, 7, OR N1 PRINTER. PACKAGE NUMBER 1 REQUIREMENTS- AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... UTILITY PROGRAMS MANUAL, C26-3808... CARD RESIDENT OPERATING PROCEDURES, C26-3809... OPERATING PROCEDURES, C24-9009... PERFORMANCE ESTIMATES, C24-9010. MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

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THIS PROGRAM IS A PART OF PACKAGE NO. 1.

360U-UT-135 TPS INITIALIZE TAPE UTILITY PROGRAM

ORDER THROUGH LOCAL IBM BRANCH OFFICE
SPECIFY FILE NUMBER 360U-UT-135

BY PROVIDING GENERALIZED ROUTINES, THE TAPE UTILITY PROGRAMS REDUCE THE NEED FOR REPETITIVE PROGRAMMING OF CERTAIN OPERATIONS THAT ARE PERFORMED FREQUENTLY. THE PROGRAMS ASSIST THE USER IN THE DAY-TO-DAY OPERATION OF HIS INSTALLATION BY PROVIDING FOR THE TRANSFER OF DATA FROM ONE MEDIUM TO ANOTHER. A UTILITY MODIFIER CARD, PROVIDED FOR THE INPUT AND OUTPUT FILE, ALLOWS THE USER TO SPECIFY THE BLOCKING FACTOR, RECORD LENGTH, CONTROL FIELDS, ETC. A FIELD SELECTION CARD FURNISHES INFORMATION TO THE PROGRAM FOR TRANSFERRING FIELDS FROM AN INPUT RECORD TO THE SAME OR A DIFFERENT RELATIVE POSITION OF THE OUTPUT RECORD AND FOR SIMULTANEOUSLY CONVERTING THE DATA TO A DIFFERENT FORMAT. HEADER CARDS CAN BE USED TO PROVIDE TITLES FOR THE PAGES OF PRINTED OUTPUT.

FEATURES- EXCEPT FOR THE INITIALIZE TAPE UTILITY PROGRAM, THE TAPE UTILITIES PROVIDE FOR THE TRANSFER FROM AN INPUT MEDIUM TO AN OUTPUT MEDIUM, WITH THE FOLLOWING OPTIONS- COPY, REBLOCK, FIELD SELECT, AND REBLOCK AND FIELD SELECT. PRINTER OUTPUT CAN BE IN A BYTE-FOR-BYTE REPRESENTATION OF THE INFORMATION IN CORE STORAGE /DISPLAY/ OR IN AN AUDITED LISTING OF THE INFORMATION IN CORE STORAGE /LIST/. THE INITIALIZE UTILITY PROGRAM CAN BE USED TO WRITE VOLUME LABELS ON TAPE REELS. TAPE INPUT AND/OR OUTPUT FILES CAN BE CONTAINED IN MORE THAN ONE REEL, OR SELECTED FROM OR PLACED ON A REEL CONTAINING MORE THAN ONE FILE. SEQUENCE NUMBERING OF OUTPUT CARDS AND SEQUENCE CHECKING FOR INPUT CARDS ARE AVAILABLE. TAPE LABEL CHECKING CONFORMS TO ESTABLISHED IBM SYSTEM/360 STANDARDS, AND NON-STANDARD LABELS ARE BYPASSED. AN EXIT IS PROVIDED TO ALLOW PROCESSING OF ADDITIONAL STANDARD LABELS FROM THE USER AND PROCESSING OF STERLING CURRENCY FIELDS. THE TAPE UTILITY PROGRAMS RUN UNDER SUPERVISION OF THE CONTROL PROGRAMS FOR EITHER A CARD-RESIDENT SYSTEM OR A TAPE-RESIDENT SYSTEM.

PERFORMANCE DATA- SEE THE SRL PUBLICATION IBM SYSTEM/360 MODEL 20, TAPE PROGRAMMING SYSTEM, PERFORMANCE ESTIMATES /C24-9010/.

MINIMUM SYSTEM REQUIREMENTS- WHEN USING THE CONTROL PROGRAMS FOR THE CARD-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL B2 OR BC2.. A CARD READING DEVICE /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4. WHEN USING THE CONTROL PROGRAMS FOR THE TAPE-RESIDENT SYSTEM- A 2020 CENTRAL PROCESSING UNIT MODEL C2... ONE CARD READER /2501 MODEL A1 OR A2, 2520 MODEL A1, OR 2560 MODEL A1/... ONE 2415 MAGNETIC TAPE UNIT MODEL 1 OR 4 WITH AT LEAST ONE 9-TRACK READ/WRITE HEAD. THE TAPE-TO-TAPE UTILITY PROGRAM REQUIRES A 2415 MODEL 2 OR 5. FOR ERROR AND DIAGNOSTIC MESSAGES AND FOR THE TAPE-TO-PRINTER UTILITY PROGRAM- ONE 2203 MODEL A1 OR 1403 MODEL 2, 7, OR N1 PRINTER. PACKAGE NUMBER 1 REQUIREMENTS- AT LEAST 4K CORE STORAGE AND TWO TAPE DRIVES. THIS CONFIGURATION ALLOWS THE SYSTEM TO USE THE BASIC ASSEMBLER /TAPE/, STAND ALONE... AND THE TPS UTILITY PROGRAMS, UNDER THE SUPERVISION OF THE CONTROL PROGRAMS FOR A CARD-RESIDENT SYSTEM.

BASIC PROGRAM MATERIAL - DOCUMENTATION - PROGRAM MATERIAL LIST... ATTACHMENT TO USERS... UTILITY PROGRAMS MANUAL, C26-3808... CARD RESIDENT OPERATING PROCEDURES, C26-3809... OPERATING PROCEDURES, C24-9009... PERFORMANCE ESTIMATES, C24-9010. MACHINE READABLE - OBJECT DECK ON ONE 9-TRACK /800 OR 1600 BPI/ DTR OR 7-TRACK /800 BPI, DATA CONVERSION FEATURE REQUIRED/ DTR. THIS DTR ALSO CONTAINS ALL OTHER MODEL 20 TAPE PROGRAMMING SYSTEMS /TPS/ INCLUDED IN PACKAGE NO. 1. /THE PACKAGE NUMBER FOR EACH TPS PROGRAM APPEARS IN THE LAST LINE OF EACH ABSTRACT/.

NOTE- THE REQUESTOR MUST INDICATE WHETHER 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED. THE DTR CONTAINS A RETRIEVAL PROGRAM WHICH PUNCHES THE PROGRAM MATERIAL INTO CARDS.

THIS PROGRAM IS A PART OF PACKAGE NO. 1.

Contributed Programs

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CONTINUED FROM PRIOR COLUMN--

360D-00.1.001 MULTIUTILITY PROGRAM
INPUT/OUTPUT PERIPHERAL SUPPORT TO 7090/94
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.1.001

AUTHOR...M.W. RICCIARDELLI

DIRECT INQUIRIES TO...
M.W. RICCIARDELLI, BELL AEROSYSTEMS CO., P.O. BOX ONE,
BUFFALO, N.Y. 14240

TITLE...MULTI INPUT TIME SHARING SYSTEM /MITS/
***S BL MITS 11.0 12.0 ***

THE MULTI-UTILITY PACKAGE IS DESIGNED TO SUPPORT THE
INPUT/OUTPUT NEEDS OF A 7090/94 WITH RESPECT TO,
/1/ TAPE TO PRINT /T TO P/.
/2/ TAPE TO CARD /T TO C/.
/3/ CARD TO CARD /C TO C/.
/4/ CARD TO PRINT /C TO P/.
/5/ CARD TO TAPE /C TO T/.
THE ABOVE OPTIONS 1, 2, AND 5 ARE RE-ENTERABLE SO AS TO
FACILITATE MULTIPLE PRINTERS AND CARD READ/PUNCH DEVICES.
THE PROGRAM WILL DO ANY THREE FUNCTIONS SIMULTANEOUSLY AND
KEEP THE UNIT RECORD EQUIPMENT MOVING AT FULL SPEED.
DISTRIBUTION TAPE CONTAINS 3 FILES IN 9 TRACK MODE.
1. 2335 RECORDS OF SOURCE CARDS. 80 BYTE RECORDS.
2. 3221 RECORDS OF LISTING. 132 BYTE RECORDS.
3. 133 RECORDS OF OBJECT DECK. 80 BYTE RECORDS.

THE BASIC MACHINE READABLE MATERIAL CAN BE ORDERED ON EITHER
9- OR 7-TRACK TAPE. IF 7-TRACK IS REQUESTED THE DATA
CONVERSION FEATURE IS REQUIRED. EITHER 9- OR 7-TRACK TAPE
MUST BE INDICATED ON THE PROGRAM REQUEST CARD. IF NOT
SPECIFIED, 9-TRACK TAPE WILL BE FORWARDED. THE ONE REEL OF
TAPE NECESSARY TO OBTAIN THE PROGRAM MATERIAL MAY BE SUPPLIED
OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE SHOULD
BE 2400 FEET IN LENGTH.

**360D-00.1.002 SIMULTANEOUS CARD-TO-TAPE
PUNCH TAPE-TO-PRINT**
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.1.002

AUTHOR...ALICE K. DERAMUS

DIRECT INQUIRIES TO...
ALICE K. DERAMUS, IBM CORP., 2045 PEACHTREE RD., N.E.,
ATLANTA, GA. 30309

TITLE...S/360 PERIPHERAL PROGRAM
***N 00.3 06.0 ***

THIS PROGRAM WILL PERFORM SIMULTANEOUSLY CARD-TO-TAPE,
TAPE-TO-PUNCH, AND TAPE-TO-PRINT ON A 32K MODEL 30 WITH FOUR
1403-3 PRINTERS, FIVE 2400 TAPE DRIVES AND ONE 2540 CARD-READ
PUNCH, MAINTAINING NEAR MAXIMUM SPEED ON ALL UNITS. THE
PROGRAM IS WRITTEN SO THAT I/O DEVICES MAY BE ADDED OR
REMOVED WITH VERY LITTLE PROGRAMMING CHANGE. IN ADDITION TO THE
PRIMARY FUNCTIONS MENTIONED, TAPES MAY BE ENDED AND RESTARTED
AT SPECIFIED LOCATIONS; STATISTICAL INFORMATION IS PRODUCED,
AND CONTROL CARDS OR INFORMATION ENTERED THROUGH THE 1052
DETERMINE THE METHOD OF PROCESSING. THE PROGRAM IS WRITTEN
IN 360 ALP. THE BPS SUPERVISOR IS USED, HOWEVER, PATCHES
HAVE BEEN MADE SO THAT WHEN ONE DEVICE GOES OUT OF READY
OTHER OPERATING DEVICES MAY CONTINUE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9-TRACK
OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF
MAGNETIC TAPE. THE TAPE REQUIRED MAY BE ORDERED FROM YOUR
IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE
2400 FEET IN LENGTH.

360D-00.1.003 MULTIPLE UTILITY CHANGE
CREATE DISK TAPE LABEL IDENTIFICATION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.1.003

AUTHORS...MR. M.J. FRANCO J.B. BLOMQUIST

DIRECT INQUIRIES TO...
MR. M.J. FRANCO, IBM CORP., 360/PROG. CTR., BLDG. 985,
POUGHKEEPSIE, N.Y.

TITLE...CLIP/360 CHANGE OR CREATE LABEL IDENTIFICATION PROGRAM
FOR DISK AND TAPE
***N 01.4 00.3 00.4 ***

CLIP IS A STAND-ALONE, SELF-LOADING CARD PROGRAM WRITTEN IN
SYSTEM/360 ASSEMBLER LANGUAGE, CAPABLE OF DOING SINGLE OR
MULTIPLE JOBS INCLUDING ANY ONE OR ALL OF THE FOLLOWING
FUNCTIONS--
1-CHANGE THE VOLUME SERIAL NUMBER OF A PREVIOUSLY INITIALIZED
1316 DISK PACK.
2-CHANGE THE NAME IDENTIFICATION OF A PREVIOUSLY INITIALIZED
1316 DISK PACK.
3-CHANGE THE SECURITY OF A PREVIOUSLY INITIALIZED 1316 DISK
PACK.
4-CREATE A VOLUME LABEL ON TAPE/S/ MOUNTED ON IBM SERIES
2400 TAPE DRIVE/S/.
CLIP ELIMINATES THE RERUNNING OF A DASDI /DIRECT ACCESS
STORAGE DEVICE INITIALIZATION/ PROGRAM TO CHANGE THE VOLUME
IDENTIFICATION OF A DISK PACK. THE USE OF CLIP CAN SAVE AS MUCH
AS FIVE /5/ MINUTES OF MACHINE TIME NEEDED TO RUN THE COMPLETE
DASDI PROGRAM. CLIP WILL ONLY CHANGE THE VOLUME
IDENTIFICATION RECORD /CYLINDER 0, TRACK 0, RECORD 3/ OF A DISK
PACK. VALID DATA ON THE DISK PACK IS NOT DESTROYED, AS IT WOULD
BE, IF THE DASDI PROGRAM WERE USED. ADDITIONAL CONVENIENCE
IS AFFORDED IN THE PROGRAMS ABILITY TO CREATE VOLUME LABELS
ON TAPE. INPUT /DEVICE AND LABEL IDENTIFICATION INFORMATION/
TO CLIP IS ACCEPTED VIA PUNCHED CARDS, OR VIA THE CONSOLE
TYPEWRITER. CLIP HAS BEEN TESTED ON SYSTEM/360 MODELS 30, 44,
50, AND 65. THE MACHINE CONFIGURATION REQUIRED TO LOAD AND
EXECUTE CLIP IS-- 16K BYTES OF CORE STORAGE... 1 CARD READER
/2540 OR 1442/... 1 CONSOLE TYPEWRITER... 1 2311 DISK DRIVE...
1 TAPE DRIVE /2400 SERIES MODEL 1, 2, OR 3/.

TO OBTAIN THE OPTIONAL PROGRAM MATERIAL ONE REEL OF MAGNETIC
TAPE IS REQUIRED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED
ON THE ORDER CARD. THE TAPE NECESSARY TO OBTAIN THE OPTIONAL
PROGRAM MATERIAL MAY BE SUPPLIED OR ORDERED FROM YOUR IBM
REPRESENTATIVE. THE TAPE SHOULD BE 2400 FEET IN LENGTH.

**360D-00.1.004 CONCURRENT PERIPHERAL
UTILITY FUNCTIONS OS/360 MFT PARTITION**
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.1.004

AUTHOR...MR. W.C. GOODLETT

DIRECT INQUIRIES TO...
MR. JOHN FLINT, IBM CORP., 112 E. POST RD., WHITE PLAINS, N.Y.

TITLE...CPO - OS/360 MFT CONCURRENT PERIPHERAL OPERATIONS
***N 00.3 00.4 06.0 ***

THE CPO PROGRAM PROVIDES FOR CONCURRENT EXECUTION OF UP
TO 36 PERIPHERAL UTILITY FUNCTIONS WITHIN A SINGLE, CONTINUOUSLY
RUNNING PARTITION OF AN OS/360 MFT SYSTEM. ASYNCHRONOUS
INITIATION OF UTILITY FUNCTIONS IS UNDER CONSOLE-OPERATOR
CONTROL. BLOCKING AND DEBLOCKING OF RECORDS BETWEEN UNIT
RECORD AND MAGNETIC TAPE OR DASD UNITS IS SUPPORTED. USE OF
COMMAND CHAINING IN SCHEDULING I/O DEVICES ALLOWS MAXIMUM
THROUGHPUT WITH A MINIMUM IMPACT ON OTHER PARTITIONS. FACILITIES
FOR INCORPORATING USER MODIFICATIONS ARE PROVIDED. CPO CAN
BE RUN UNDER ANY OS/360 MFT CONFIGURATION WITH I/O DEVICES
AVAILABLE FOR ASSIGNMENT TO THE CPO FUNCTIONS. A 20K
PARTITION IS REQUIRED FOR EFFECTIVE OPERATION. CPO IS WRITTEN
IN OS/360 ASSEMBLER LANGUAGE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 2400
FOOT REEL OF MAGNETIC TAPE. THIS TAPE MAY BE ORDERED FROM
YOUR IBM REPRESENTATIVE OR SUPPLIED.

360D-00.1.005 TAPE DISK DATA CELL DUMP
PRINT HEXIDECIMAL EBCDIC
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.1.005

AUTHOR...C.W. KASTNER

DIRECT INQUIRIES TO...
C.W. KASTNER, IBM CORP., 1011 SAN JACINTO, AUSTIN, TEXAS 78701

TITLE...DOS TAPE, DISK, DATA CELL DUMP
N 04.1 00.3 00.4 00.5

THIS IS A GENERALIZED DUMP UTILITY IN THAT IT WILL DUMP
ANY TAPE /7 OR 9 TRACK, LABELED OR UNLABELED, ETC./ AND WILL
DUMP ANY 2311 OR 2321 TRACK /I.E., VOL NUMBER, VTDC,
ALTERNATE TRACK, ETC./.. IT OPERATES UNDER 16K DOS AND REQUIRES
32K CORE. FOR ALL FILES, THE USER CAN PRINT IN EITHER
VERTICAL HEX AND EBCDIC, HORIZONTAL HEX AND EBCDIC, HEX ONLY,
OR EBCDIC ONLY, AND CAN PRINT THE FIRST N LINES OF EACH
LOGICAL TAPE RECORD OR EACH DASD BLOCK. FOR TAPE FILES,
THE USER CAN CONTROL REWINDING, DEBLOCK RECORDS, PRINT
MULTIPLE FILES, SKIP DOWN N TAPE BLOCKS BEFORE BEGINNING
DUMPING, PRINT THE FIRST N RECORDS OF A FILE, THEN SKIP TO NEXT
EOF MARK, BACKSPACE AND DUMP THE LAST 5 TAPE BLOCKS, FORWARD
SPACE OR BACKSPACE TAPE BY CONSOLE CONTROL, AND HAS THE
OPTION OF PRINTING REPORT TAPES UNDER SINGLE SPACE OR FIRST
CHARACTER CARRIAGE CONTROL. WRITTEN IN ASSEMBLY LANGUAGE
AND REQUIRES 32K MEMORY.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
ND TAPE SUBMITTAL IS REQUIRED.

**360D-00.1.006 DOS/TOS CARD-TO-CARD
CARD-TO-PRINT CARD-TO-TAPE TAPE-TO-CARD TAPE-TO-PRINT TAPE-TO-TAPE**
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.1.006

AUTHOR...MR. D. HANKERSON

DIRECT INQUIRIES TO...
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PHOENIX, ARIZ. 85012

TITLE...DOS/TOS DEBE UTILITY PROGRAM
***N 00.3 00.4 06.0 ***

DOS/TOS - DEBE UTILITY PROGRAM IS AN ADAPTATION OF ,,DEBE
UTILITY PROGRAMS,, TO THE DISK AND TAPE OPERATING SYSTEMS.
DOS/TOS - DEBE UTILITY PROGRAM PERFORMS THE FOLLOWING
FUNCTIONS IN CONJUNCTION WITH THE DISK OR TAPE OPERATING
SYSTEM-- CARD TO CARD, CARD TO PRINTER, CARD TO TAPE,
TAPE TO CARD /80 CHARACTER, FIXED LENGTH, BLOCKED OR UNBLOCKED
RECORDS/, TAPE TO PRINT /BCD OR HEXIDECIMAL/, TAPE TO TAPE,
AND FOUR TAPE CONTROL FUNCTIONS. SELECTION OF THE DESIRED
UTILITY FUNCTION IS ACCOMPLISHED FROM THE 1050 CONSOLE
TYPEWRITER OR FROM OPTION CONTROL CARDS IN THE INPUT JOB
STREAM. THE PROGRAMS ARE INTERRUPTIBLE AND AN EXTERNAL
INTERRUPT CAUSES THE PROGRAM TO REQUEST THE NEXT PROGRAM ID.
MACHINE REQUIREMENTS ARE THOSE NECESSARY TO RUN DOS/TOS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
ND TAPE SUBMITTAL IS REQUIRED.

**360D-00.1.009 BPS CARD TAPE PRINTER
UTILITIES**
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.1.009

AUTHOR...MR. L.G. DEFRANCE

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DIRECT INQUIRIES TO..
MR. L.G. DEFRANCE, IBM CORP., 100 S. WACKER DR., CHICAGO, ILL. 60606

TITLE...DEBE - UTILITIES PROGRAMS
N 00.3 06.0 08.4 08.5

THE SYSTEM/360 DEBE UTILITIES IS A COLLECTION OF CARD, TAPE, AND PRINTER UTILITIES WRITTEN AS A SINGLE MODULE IN IBM BPS ASSEMBLER LANGUAGE /8K TAPE/. UP TO 10,000 BYTE RECORD LENGTHS ARE ACCEPTED BY THE TAPE UTILITIES EXCEPTING THE CARD TO TAPE AND TAPE TO CARD WHICH ARE LIMITED TO 80 BYTE RECORDS. TAPE TO TAPE, TAPE TO PRINTER, /HEXIDECIMAL OR BCD/, CARD TO CARD, CARD TO PRINTER, WRITE TAPEMARK, AND FOUR TAPE POSITIONING ROUTINES ARE THE REMAINING FUNCTIONS. MINIMUM MACHINE REQUIREMENTS ARE- 16K STORAGE, DECIMAL ARITHMETIC, AND 2540 CARD READER PUNCH, 2400 TAPE DRIVES, 1403 PRINTER AS REQUIRED FOR ASSEMBLY OR THE SELECTED DEBE FUNCTION. THE 1050 CONSOLE TYPEWRITER IS REQUIRED FOR SELECTING THE DEBE FUNCTION, ASSIGNING TAPE DRIVE ADDRESSES, AND SELECTING THE MODE FOR 7 TRACK TAPE DRIVE OPERATIONS.

3600-00-2.001 BPS BOS FORTRAN FLOWCHART
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-00-2.001

AUTHOR...G.E. GAUTNEY, JR.

DIRECT INQUIRIES TO..
G.E. GAUTNEY, JR., CORNING GLASS WORKS, CORNING, N.Y.

TITLE...BPS BOS FORTRAN FLOWCHART PROGRAM
***S CGW FLOW 02.0 04.0 ***

THE BPS/BOS FORTRAN FLOWCHART PROGRAM IS INTENDED PRIMARILY AS A DEBUGGING OR DOCUMENTATION AID. IT ACCEPTS AS INPUT BPS OR BOS FORTRAN SOURCE PROGRAMS AND PREPARES AUTOMATICALLY A BLOCK DIAGRAM FLOW CHART OF THE INPUT PROGRAM. PROGRAM SOURCE LANGUAGE IS BPS FORTRAN BUT CAN ALSO BE USED AS A BOS FORTRAN PROGRAM SINCE NO STATEMENTS UNIQUE TO EITHER VERSION OF 360 FORTRAN ARE USED. STORAGE USED 10,000 BYTES. MINIMUM MACHINE REQUIREMENTS FOR BPS/BOS FORTRAN ARE ADEQUATE.

THE MACHINE READABLE MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. IF TRACK REQUIREMENT IS NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

3600-00-2.002 DOS FLOWCHARTER
CROSS-REFERENCE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-00-2.002

AUTHOR...MR. D.L. FISHER

DIRECT INQUIRIES TO..
MR. D. FISHER, IBM CORP., BLDG. 051, MONTEREY + COTTLE RDS., SAN JOSE, CALIF.

TITLE...SYSTEMS FLOW CHARTER FOR DOS
***N 06.8 06.6 ***

THE PROGRAM IS A S/360 - DOS SYSTEMS FLOW CHARTER, WRITTEN IN ASSEMBLY LANGUAGE. THE MACHINE MUST HAVE 32K OR MORE OF CORE 1 - 2311 DISK FILE, 1443 OR 1403 PRINTER, 1442 OR 2540 CARD READER. THE PROGRAM WILL DRAW SYSTEMS FLOW CHARTS, CREATE A ,,SYSTEMS TABLE AND PROGRAM-FILE CROSS-REFERENCE,, THE SYMBOLS DRAWN ARE TAPE, RANDOM FILE, CARD, DOCUMENT, GRAPHIC DISPLAY, TERMINAL, KEYBOARD, PAPER TAPE, COMMENTS, CLERICAL OPERATION, ADDING MACHINE TRANSMITTAL TAPE, MULTIPLE /2 OR 3/ CARD SYMBOL, OFF PAGE CONNECTOR, OFF LINE STORAGE AND SEQUENTIAL FILE. THE PROGRAM WILL USE THE SAME TRANSACTION FORMAT AS THE ,,SYSTEMS FLOWCHARTS FOR THE IBM 1401,, PID NUMBER 1401-02.0.039.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE. THIS TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.

3600-00-2.003 FLOWCHARTING DOCUMENTATION
OS/360
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-00-2.003

AUTHORS..F.D. LEWIS M.F. STEWART R.O. DRAKE
J.F. SANDER

DIRECT INQUIRIES TO..
F.D. LEWIS, IBM CORP., NEIGHBORHOOD RD., KINGSTON, N.Y.

TITLE...AUTOMATIC DOCUMENTATION AND FLOWCHARTING PROGRAM
***N 06.8 06.6 ***

A PROGRAM WHICH OPERATES UNDER CONTROL OF OS/360 WHICH PRODUCES TEXT AND FLOWCHARTS FROM CARD INPUT. THE FLOWCHART LANGUAGE IS A SYMBOLIC LANGUAGE, WHEN A CONNECTION IS DESIRED FROM ONE SYMBOL TO ANOTHER THE SYMBOL GOING TO IS REFERRED TO BY A SYMBOLIC NAME AND THE PROGRAM GENERATES A LINE, IF POSSIBLE, OR A CONNECTOR WITH THE PROPER COORDINATE AND PAGE NUMBER INSERTED. THE USER HAS THE OPTION OF SELECTING HIS OWN CHARACTER SET FOR THE PRINTING OF SYMBOLS, LINES AND ARROWHEADS. REQUIRES 64K STORAGE AND 2 TAPES OR DISK. SOURCE LANGUAGE IS OS/360 ASSEMBLER. THE SYNTAX OF THE LANGUAGE IS COMPATIBLE WITH A 1401 VERSION OF THE PROGRAM AVAILABLE FROM PID UNDER CATALOG NUMBER 1401-02.0.024.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

3600-00-3.001 OS/360 SIMULTANEOUS
CARD-TO-TAPE TAPE-TO-PRINT TAPE-TO-CARD
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-00-3.001

AUTHORS..W.M. JACKSON J.P. SPRINGER

DIRECT INQUIRIES TO..
W.M. JACKSON, IBM CORP., NASA PROGRAM, 1120 CONNECTICUT AVE., N.W. WASHINGTON, D.C. 20036

TITLE...MODIFICATION OF S/360 BPS MULTIPLE UTILITY FOR OFF-LINE
SUPPORT TO OS/360
***N 00.1 06.0 ***

,,THIS PROGRAM MODIFICATION TO THE S/360 BPS MULTIPLE UTILITY /8K/ 360P-UT-055, ALLOWS SIMULTANEOUS CARD-TO-TAPE TAPE-TO-PRINTER, AND/OR TAPE-TO-CARD OPERATIONS TO SUPPORT OS/360 FORMAT REQUIREMENTS IN A STACKED-JOB ENVIRONMENT. A PRINTER WITH THE UNIVERSAL CHARACTER SET FEATURE MAY BE USED. THIS ASSEMBLY LANGUAGE PROGRAM IS USED ON A PERIPHERAL COMPUTER IN PREPARING INPUT STREAM TAPES FOR THE MAIN COMPUTER AND PERFORMING THE PRINTING AND PUNCHING FROM THE OS/360 OUTPUT WRITER TAPE. THE MODIFIED PROGRAM, PERMANENTLY RESIDING IN CORE, IS STARTED AND RESTARTED AS REQUIRED THROUGH CONSOLE TYPEWRITER ENTRIES. IT HANDLES THE VARIABLE-LENGTH, MULTI-DATA-SET OUTPUT TAPES, SKIPPING TAPE MARKS AND LABELS, DEBLOCKING ABEND RECORDS, AND DISREGARDING INVALID CHARACTERS. OPERATOR ENTRIES AND TYPEWRITER MESSAGES ARE MINIMIZED FOR EASE OF OPERATION AND SPEED,, THE MACHINE READABLE MATERIAL IS AVAILABLE ON ONE FULL, 2400 FOOT, REEL OF MAGNETIC TAPE.

3600-00-3.002 CREATE IDENTIFY COPY MASTER
TAPE STATISTICS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-00-3.002

AUTHOR...MRS. J. CARTER

DIRECT INQUIRIES TO..
MRS. J. CARTER, IBM CORP., 40 SAW MILL RIVER RD., HAWTHORNE, N.Y.

TITLE...MASTER CREATION PROGRAM
***N 13.1 01.6 ***

THIS BPS PROGRAM CREATES A ,,MASTER,, TAPE CONTAINING IDENTIFICATION AND TAPE STATISTICS FOR SUBMISSION TO AND USE BY THE PROGRAM INFORMATION DEPARTMENT. IT IS A TAPE COPIER WHICH TERMINATES INPUT ON ANY OF SEVERAL OPTIONS, AND KEEPS STATISTICS AS TO RECORD, TAPE MARK AND CHARACTER COUNTS, AND MAXIMUM RECORD SIZE. UPON COMPLETION OF THE COPY, IT GENERATES A SPECIAL TRAILER CONTAINING THESE COUNTS PLUS ANY SPECIFIED IDENTIFICATION OF UP TO 15 NON-BLANK CHARACTERS. THIS INCREASES TAPE SECURITY BY MAKING THE IDENTIFICATION AND STATISTICS A PERMANENT PART OF THE CONTENTS IN THE TRAILER REQUIRED BY PID. THIS INFORMATION IS FOR DISTRIBUTION. THE PROGRAM ALSO RECOGNIZES THE TRAILER THUS GENERATED AS A TERMINATOR. MINIMUM CONFIGURATION- MOD 30, 16K, 1 SELECTOR CHANNEL, 1052 CONSOLE TYPEWRITER, CARD READER AND 1403 PRINTER, AND TWO 2400 TAPE UNITS.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK DTR- THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

3600-00-3.003 DOS/TOS INITIALIZE TAPE
WRITE-VOLUME-LABELS WRITE-HEADER-LABELS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-00-3.003

AUTHOR...MR. D. HANKERSON

DIRECT INQUIRIES TO..
MR. D. HANKERSON, IBM CORP., 3424 N. CENTRAL, PHOENIX, ARIZ. 85012

TITLE...DOS/TOS INITIALIZE TAPE PROGRAM
***N 04.3 01.1 03.4 ***

DOS/TOS - INITIALIZE TAPE PROGRAM OPERATES IN CONJUNCTION WITH THE DISK OPERATING SYSTEM OR THE TAPE OPERATING SYSTEM. ITS PURPOSE IS TO INITIALIZE TAPES WITH STANDARD S/360 VOLUME AND HEADER LABELS. ONE VOLUME AND HEADER LABEL IS WRITTEN FOR EACH CONTROL CARD. THE PROGRAM CYCLES THROUGH THE AVAILABLE TAPE DRIVES INITIALIZING TAPES, UNTIL ALL THE CONTROL CARDS HAVE BEEN READ. THE ADVANTAGE OF HAVING AN INITIALIZE TAPE PROGRAM THAT RUNS UNDER DOS/TOS IS THAT TAPES CAN BE INITIALIZED AS PART OF THE JOB STEP. THIS IS PARTICULARLY USEFUL WHEN TESTING NEW S/360 APPLICATION PROGRAMS.

3600-00-3.004 CREATE BLOCKED UNBLOCKED
FIXED-LENGTH VARIABLE-LENGTH TAPE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-00-3.004

AUTHOR...MR. R. VONWASMUTH

DIRECT INQUIRIES TO..
MR. R. VONWASMUTH, IBM CORP., 3424 WILSHIRE BLVD., LOS ANGELES, CALIF. 90005

TITLE...TAPE FILE CREATION PROGRAM
***N 01.6 07.1 06.0 ***

THIS PROGRAM PRODUCES S/360 TAPE FILES WITH BLOCKED OR UNBLOCKED VARIABLE OR FIXED LENGTH RECORDS FROM CARD INPUT. THE BPS UTILITY AND THE AUTOTEST CARD-TO-TAPE PROGRAMS ARE VERY LIMITED WHEN OUTPUT RECORDS ARE OTHER THAN FIXED LENGTH OR HAVE VARYING FORMATS. THIS PROGRAM WILL WRITE PACKED, UNPACKED OR BINARY DATA ON THE TAPE ACCORDING TO FIELD CONTROL CHARACTERS PUNCHED IN DATA CARDS. THERE IS NO NEED FOR THE USER TO DETERMINE THE BLOCK COUNT AND/OR RECORD COUNT FOR VARIABLE LENGTH RECORDS, AS IN AUTOTEST, NOR ARE THE BLOCKS LIMITED TO 400 CHARACTERS. EASE OF USE AND FLEXIBILITY OF OUTPUT ARE THE MAIN CRITERIA FOR USING THIS PROGRAM IN

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PREFERENCE TO THE CURRENT UTILITIES MENTIONED. WRITTEN IN S/360 ASSEMBLER LANGUAGE, THE PROGRAM REQUIRES LESS THAN 16K OF CORE /INCLUDING SUPERVISOR AND JOB CONTROL/ AND ONE 2400 SERIES TAPE DRIVE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-00.3.007 DOS SORT USER EXIT ROUTINES TO PROCESS 1401 TAPE LABELS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.3.007

AUTHOR...MR. G.W. LAWSON

DIRECT INQUIRIES TO..

MR. G.W. LAWSON, IBM CORP., 3777 LONG BEACH BLVD.,
LONG BEACH, CALIF. 90807

TITLE...DOS SORT USER EXIT ROUTINES TO PROCESS 1401 TAPE LABELS
***N 12.0 06.1 ***

DOS SORT USER EXIT ROUTINES WHICH READ AND CHECK AND/OR GENERATE AND WRITE STANDARD 80-CHARACTER 1401 TAPE LABELS. THE ROUTINES ARE WRITTEN IN DOS ASSEMBLER LANGUAGE FOR A SYSTEM/360 DISK AND TAPE SYSTEM. THESE ROUTINES CAN BE OF GREAT VALUE TO A USER WHO IS EMULATING 1401 PROGRAMS BUT WANTS TO TAKE ADVANTAGE OF THE GREATER SPEEDS OF THE SYSTEM/360 DOS SORT.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-00.3.008 PROGRAM TO COPY OR VERIFY UNDEFINED TAPE RECORDS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.3.008

AUTHOR...MR. T.V. PASKO

DIRECT INQUIRIES TO..

MR. T.V. PASKO, IBM CORP., 1120 CONNECTICUT AVE., N.W.,
WASHINGTON, D.C.

TITLE...CUTOVR-COPY UNDEFINED 7 AND 9 TRACK TAPE RECORDS OR VERIFY RESULTS.
***N 02.0 06.5 ***

THIS PROGRAM, WRITTEN IN IBM SYSTEM/360 BASIC ASSEMBLER LANGUAGE, WAS DESIGNED TO ACCOMPLISH FOUR FUNCTIONS CONCERNING 7 AND 9 TRACK UNDEFINED TAPE RECORDS NOT EXCEEDING 4K BYTES/CHARACTERS-
- COPY 7 TRACK TAPE, PUNCHING AND PRINTING 7 TRACK ERROR RECORDS.
- VERIFY THE 7 TRACK COPY, EXCLUDING ERROR RECORDS DETECTED IN THE COPY PHASE.
- COPY 9 TRACK TAPE, MERGING NEW AND/OR CORRECTED ERROR RECORDS, WHILE PUNCHING AND PRINTING 9 TRACK ERROR RECORDS.
- VERIFY THE 9 TRACK COPY, INCLUDING MERGED RECORDS AND EXCLUDING ERROR RECORDS DETECTED IN THE COPY PHASE.
ALTHOUGH PRIMARILY INTENDED FOR USE AT INSTALLATIONS UNDERGOING 7 TO 9 TRACK TAPE CONVERSION, ITS TWO 9 TRACK PHASES CAN BE USED AT INSTALLATIONS USING 9 TRACK TAPE EXCLUSIVELY. MACHINE REQUIREMENTS ARE A 16K/360 WITH STANDARD INSTRUCTION SET, DECIMAL ARITHMETIC.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-00.3.009 SYMBOLIC PROGRAMS STORE-ON-TAPE LIST PUNCH DELETE UPDATE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.3.009

AUTHOR...MR. W.S. PENSIERO

DIRECT INQUIRIES TO..

MR. W.S. PENSIERO, IBM CORP., HOTEL ASTOR, 1515 BROADWAY,
NEW YORK CITY, N.Y.

TITLE...SLIP - SOURCE LIBRARY INQUIRY PROGRAM
***N 00.1 06.8 03.0 ***

THE PRIMARY FUNCTION OF SLIP IS TO STORE ON TAPE, IN A BLOCKED FORMAT, SYMBOLIC CARDS FOR 360 PROGRAMS. OTHER FUNCTIONS ARE THE ABILITY TO LIST, PUNCH, LIST AND PUNCH, DELETE, OR UPDATE SYMBOLIC PROGRAMS. THERE IS ALSO A COPY FEATURE FOR THE ENTIRE TAPE. THE UPDATE FEATURE CAN BE USED FOR AN ENTIRE SYMBOLIC PROGRAM, THE INPUT COMING FROM EITHER TAPE OR CARD. THE UPDATE FEATURE CAN ALSO BE USED TO CHANGE INDIVIDUAL STATEMENTS IN AN EXISTING PROGRAM THAT IS CATALOGED ON THE SLIP TAPE. THE PROGRAM SLIP - SOURCE LIBRARY INQUIRY PROGRAM, INTERFACES TO AN ASSEMBLED 8K BOS SUPERVISOR AND JOB CONTROL. THERE IS ALSO AN OPERATORS MESSAGE PROGRAM WHICH CAN BE EXECUTED TO GIVE OPERATING INSTRUCTIONS. THE SLIP PROGRAM TAPE WILL EXECUTE ON AN 8K 360/30 OR LARGER SYSTEM.

NOTE- ONE REEL OF MAGNETIC TAPE IS REQUIRED TO OBTAIN THE BASIC PROGRAM MATERIAL. THIS TAPE MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE MUST BE 2400 FEET IN LENGTH.

360D-00.4.001 DISK TABLE-OF-CONTENTS LIST
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.4.001

AUTHOR...MR. H.R. TUCK

DIRECT INQUIRIES TO..

MR. H.R. TUCK, IBM CORP., 370 W. FIRST ST., DAYTON, OHIO

TITLE...LISTER FOR VOLUME TABLE OF CONTENTS
***N 06.8 ***

VTOC LISTS ON SYSLST THE VOLUME TABLE OF CONTENTS OF A DISK PACK FOR A 2311 DISK DRIVE. VTOC STANDARD OR VTOC FOR SYSTEMS RESIDENCE ON CYLINDER 199 TRACKS 0-9 IS ACCEPTABLE. ALL NON-ZERO LABELS ARE DISPLAYED WITH DATES AND EXTENTS CONVERTED TO DECIMAL. PROGRAM RUNS UNDER 8K BOS DISK SYSTEM. CONFIGURATION- MINIMUM 8K BOS DISK. WRITTEN IN 360 ASSEMBLY LANGUAGE.

360D-00.4.002 BOS LOAD DATA-FIELDS-TO-DISK CHANGE-DISK-FILES
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.4.002

AUTHOR...R.B. BENNETT

DIRECT INQUIRIES TO..

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TITLE...UTILITY FOR SELECTIVE CHANGES TO 2311 RECORDS FROM CARDS UNDER S/360 BOS
***N 01.1 01.6 06.2 ***

THE PURPOSE OF THIS PROGRAM IS TO SELECTIVELY LOAD DATA FIELDS FROM CARDS TO 2311 DISK RECORDS ON A RANDOM UPDATE BASIS. UNDER THE S/360 BASIC OPERATING SYSTEM, THE CURRENT CARD-TO-DISK UTILITY, IS A DISK RECORD CREATE PROGRAM. THEREFORE, ANY PREVIOUS DATA ON DISK IS DESTROYED BY THE OPERATION /PROCESSING CONSECUTIVELY/. ALTHOUGH THE RECORD THIS CREATED MAY BE ANY SIZE, THE USER MAY LOAD ONLY THE 80 CHARACTERS OF ONE CARD /SUBSEQUENT PASSES AGAINST THE SAME FILE MAY CREATE ENTIRELY NEW FILES/. THE PROGRAM AS SUBMITTED PERMITS CHANGING EXISTING FILES WITHOUT DESTROYING UNAFFECTED FIELDS, ALLOWING ALSO THE BUILDING OF ANY SIZE RECORD /LIMIT OF ONE TRACK/ FROM CARDS, VIA MULTIPLE PASSES WHEN NECESSARY. THE FIELD SELECT CARD IS COMPATIBLE WITH THE IBM UTILITIES. THE PROGRAM WORKS UNDER 8K BOS, BUT SHOULD BE EASILY ADAPTABLE TO MORE GENERAL USE. PACKING IS POSSIBLE. CHANGES TO THE KEY FIELDS MAY BE MADE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-00.4.004 7040/90/94 EMULATOR-TO-DISK UTILITY
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.4.004

AUTHORS..R. GROTZ L. CARNEY G.E. BROWN

DIRECT INQUIRIES TO..

R. GROTZ, DOUGLAS AIRCRAFT CO., INC., LONG BEACH, CALIF.

TITLE...EMULATOR-TO-DISK
S NA EMTD 01.5 00.5 05.5 11.1

THE PURPOSE OF THIS PROGRAM IS TO PLACE AN INITIALIZED 7090/94 EMULATOR OR THE 7040 EMULATOR ONTO A 2311 DISK PACK IN SUCH A MANNER AS TO ALLOW INITIAL PROGRAM LOADING /IPL/ING/ OF THE EMULATOR FROM THE DISK PACK, AND IN A FORMAT WHICH IS COMPATIBLE WITH OS/360/S USAGE OF DIRECT-ACCESS DEVICES. S/360 MODEL 165 WITH A 1052 CONSOLE, ONE 2311 DISK DRIVE, ONE TAPE UNIT AND ONE CARD READER IS REQUIRED. ONCE THE INITIALIZED EMULATOR HAS BEEN LOADED INTO CORE FROM ITS ORIGINAL RESIDENT VOLUME, THIS PROGRAM PLACES THE NECESSARY IPL TEXT ON CYLINDER 0, TRACK 0, AND THEN COPIES THE EMULATOR ONTO THE DASHED TARGET PACK IN TRACK IMAGES WHICH CONSIST OF TWO RECORDS. RECORD ONE CONSISTS OF THE CHANNEL PROGRAM REQUIRED TO READ THE EMULATOR TEXT /CONTAINED IN RECORD TWO/, INTO ITS RESPECTIVE AREA OF CORE, TO INITIATE A SEEK AND SEARCH FOR THE NEXT TRACK, AND TO TRANSFER CHANNEL CONTROL TO RECORD ONE OF THE NEXT TRACK. THE SELF-LOADING CHANNEL PROGRAM LOOP IS TERMINATED BY TURNING OFF COMMAND CHAINING IN THE CHANNEL COMMAND WORD WHICH READS THE RECORD CONTAINING THE LAST SEGMENT OF THE EMULATOR INTO CORE, AT WHICH TIME THE PRESET IPL PSW TRANSFERS CONTROL TO THE EMULATOR IPL ROUTINE. THIS PROGRAM IS INTENDED FOR USE AS A STAND-ALONE UTILITY DECK FOR THOSE INSTALLATIONS HAVING A 7090/94 OR A 7040 EMULATOR.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-00.4.007 MODEL 44 DISK STORE
RETRIEVE DATA LOAD EXECUTE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-00.4.007

AUTHOR...MR. D.A. DUFFIELD

DIRECT INQUIRIES TO..

MR. D.A. DUFFIELD, IBM CORP., 340 E. MAIN ST.,
ROCHESTER, N.Y. 14604

TITLE...MODEL 44 DISK SUPPORT PACKAGE
***N 01.1 06.7 ***

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THE FOLLOWING IS A DESCRIPTION OF THE SYSTEM/360 MODEL 44 DISK SUPPORT PACKAGE WHICH, WHEN IN CONJUNCTION WITH BPS FORTRAN, WILL PROVIDE THE USER WITH A CONVENIENT MEANS FOR PROGRAM AND DATA STORAGE ON THE INTEGRATED DISK STORAGE DRIVE.

THREE FORTRAN-CALLABLE SUBROUTINES ARE USED FOR THE STORAGE AND RETRIEVAL OF DATA-- DEFINE FOR FILE DEFINITION, WDISK FOR THE WRITING OF DATA, AND RDISK FOR THE READING OF DATA. DEFINE WILL SPECIFY THE NUMBER OF RECORDS AND THE LENGTH /IN 32-BIT WORDS/ OF EACH RECORD. RDISK AND WDISK WILL SPECIFY THE RECORD NUMBER TO BE ACCESSED AND AN AREA INTO /OR OUT OF/ WHICH THE DATA SHOULD BE READ /OR WRITTEN/. CURRENTLY ONLY ONE FILE MAY RESIDE ON A PACK SO FILE NUMBER NEED NOT BE SPECIFIED IN THE SUBROUTINE CALLS.

A FOURTH FORTRAN-CALLABLE SUBROUTINE, LINK, ALLOWS THE USER TO LOAD AND EXECUTE A PROGRAM PREVIOUSLY STORED ON THE DISK PACK. LARGE PROGRAMS MAY NOW BE SUBDIVIDED AND THE SEGMENTS STORED ON THE DISK. THE TIME DELAY BETWEEN THE ISSUE OF A CALL LINK AND THE BEGINNING OF EXECUTION OF THE PROGRAM LINKED TO, IS IN THE ORDER OF ONE SECOND. TWENTY-TWO PROGRAMS MAY BE STORED PER PACK FOR A SYSTEM WITH 64K BYTES OF CORE STORAGE. THE USER WILL SPECIFY THE PROGRAM TO BE LOADED IN A LINK SUBROUTINE CALL OF THE PROGRAM TO BE OVERLAID.

BACKING UP THE LINK SUBPROGRAM ARE THREE UTILITIES FOR PROGRAM STORAGE AND MAINTENANCE. STORE WILL TAKE THE OBJECT CODE FROM CORE STORAGE AND PLACE IT IN THE FIRST AVAILABLE SLOT ON A 2315 DISK PACK. THE PROGRAM NAME /TAKEN FROM THE INDEX CARD/ IDENTIFICATION NUMBER AND SIZE ARE PLACED IN A DICTIONARY ON TRACK NO. 0. DELETE WILL REMOVE A PROGRAM FROM THE PACK AND MAKE THAT SLOT AVAILABLE FOR STORAGE OF ANOTHER PROGRAM. DMPDBL WILL PRINT OUT ON DEVICE NO. 3 THE CURRENT CONTENTS OF A DISK PACK. INITIAL WILL INITIALIZE A DISK PACK FOR PROGRAM STORAGE MAKING THAT PACK UN-DEFINE-ABLE SO THAT PROGRAMS WILL NOT INADVERTENTLY BE OVERWRITTEN WITH DATA.

WDADR WILL WRITE ADDRESSES ON A DISK PACK. THE ADDRESSES ARE USED BY BOTH THE PROGRAM AND DATA STORAGE ROUTINES FOR CHECKING SEEK OPERATIONS. CURRENTLY A DISK PACK CANNOT BE USED FOR BOTH PROGRAM STORAGE AND DATA STORAGE. THEREFORE, PROGRAMS STORED ON A DISK SHOULD NOT EXPECT TO USE THAT SAME PACK FOR TEMPORARY DATA STORAGE. HOWEVER, IF THE SYSTEM HAS THE SECOND DRIVE, A SLIGHT MODIFICATION TO THE ROUTINES WILL ALLOW ONE DRIVE TO BE USED FOR DATA STORAGE AND THE OTHER FOR PROGRAM STORAGE.

THIS PROGRAM WAS WRITTEN TO WORK IN CONJUNCTION WITH THE MODEL 44 BPS FORTRAN SYSTEM ON MAGNETIC TAPE. IF IT IS DESIRED TO USE THE BPS FORTRAN TYPE III PACKAGE, WHICH USES THE DISK FOR THE SYSTEM, THE USER MUST HAVE THE SECOND DRIVE AVAILABLE AND CHANGE THE DISK ADDRESSES IN THE ASSEMBLER ROUTINES FROM X/0C0/ TO X/0C1/.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

3600-00.5.001 INITIALIZE SINGLE DATA CELL STRIP

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-00.5.001

AUTHOR...H.H. TOWELL

DIRECT INQUIRIES TO...

H.H. TOWELL, IBM CORP., 570 BROAD ST., NEWARK, N.J. 07102

TITLE...INITIALIZE DATA CELL STRIP
***N 00.4 04.3 06.7 ***

THIS IS A STAND-ALONE PROGRAM WHICH WRITES HOME ADDRESSES AND TRACK DESCRIPTOR RECORDS ON ONE OR MORE DATA CELL STRIPS. IT ALSO CHECKS THE DATA PORTION OF EACH TRACK BY WRITING AND READING A 2000 BYTE RECORD OF HEXI-DECIMAL ,,FF.,, THE MINIMUM CONFIGURATION FOR THIS PROGRAM IS A SYSTEM/360 MODEL 30 WITH 8K OF STORAGE, 1 CARD READER, 1 PRINTER, 1 TYPEWRITER, AND 1 DATA CONVERSION PROGRAM. THE PROGRAM WAS WRITTEN IN ASSEMBLER LANGUAGE AND ASSEMBLED USING 8K BPS. IT WILL ENABLE THE USER TO INITIALIZE A SINGLE DATA CELL STRIP INSTEAD OF INITIALIZING AND ENTIRE CELL.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

3600-00.6.003 2250 DRAFTING SCHEMATIC GENERATE MANIPULATE SHAPES

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-06.6.003

AUTHOR...DONALD HOLLO

DIRECT INQUIRIES TO...

DONALD HOLLO, IBM CORP., 112 E. POST RD., WHITE PLAINS, N.Y.

TITLE...IBM 2250 EXPERIMENTAL DRAFTING AND SCHEMATIC PACKAGE
***N 00.6 06.6 ***

THE IBM 2250 EXPERIMENTAL DRAFTING AND SCHEMATIC PACKAGE PROVIDES THE USER WITH THE CAPABILITY OF DRAWING POINTS, LINES, CIRCLES, DIMENSION LINES, AND OTHER ELEMENTS NORMALLY REQUIRED FOR DRAFTING APPLICATIONS. IN ADDITION, SCHEMATIC CAPABILITY EXISTS BY ALLOWING PRESTORED SHAPES TO BE GENERATED AND MANIPULATED WITH THE SYSTEM. THE PROGRAM IS WRITTEN UNDER BASIC PROGRAMMING SUPPORT FORTRAN IV, LEVEL D, TAPE 16K. THE SYSTEM REQUIRES A SINGLE, DEDICATED IBM 2250 DISPLAY UNIT, MODEL 1 WITH BUFFER STORAGE, CHARACTER GENERATOR, ABSOLUTE VECTOR FEATURE, LIGHT PEN, AND FUNCTION KEYBOARD. THE PROGRAM USES ROUTINES DEVELOPED IN THE GRAPHIC EDITOR SYSTEM /LIBRARY NUMBER 3600-3.4.004/ AND THEREFORE MUST BE USED IN OPERATING THIS PROGRAM. THIS PROGRAM IS DESIGNED SUCH THAT MODIFICATIONS MAY BE MADE TO SUIT THE REQUIREMENTS OF THE USER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

3600-00.6.004 OS/360 ASSEMBLER LANGUAGE MACROS 2250 DISPLAY

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-00.6.004

AUTHORS...J.T. WOOD J.L. THOMAS

DIRECT INQUIRIES TO...

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TITLE...ALPHANUMERIC DISPLAY PACKAGE FOR THE IBM 2250
***N 04.2 00.6 03.7 ***

ALPHAPAC CONSISTS OF A SERIES OF RE-ENTRANT SUB-ROUTINES WHICH PROVIDE MACROLEVEL SUPPORT TO AN IBM 2250 DISPLAY UNIT EQUIPPED WITH ALPHANUMERIC KEYBOARD, LIGHT PEN, AND A 4,096 BYTE BUFFER, ATTACHED TO AN IBM 360. THIS PACKAGE, WHICH WAS WRITTEN IN OS ASSEMBLER LANGUAGE, USES THE GRAPHIC SUPPORT PROVIDED WITH OPERATING SYSTEM 360. USING THIS PACKAGE, A PERSON CAN WRITE AND DEBUG PROGRAMS WHICH USE THE 2250, AND NOT BE CONCERNED ABOUT THE GRAPHIC ORDERS, BUFFER MANAGEMENT, POLLING TECHNIQUES, ATTENTION HANDLING, RASTER UNITS, X AND Y COORDINATES, AND OTHER DETAILS OF THE 2250 DISPLAY UNIT.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF MEDIA IS NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

3600-00.6.005 BPS CONTROL INTERRUPTS 2250 DISPLAY

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-00.6.005

AUTHORS...J.R. CHAMBLISS G.W. DECEMBER

DIRECT INQUIRIES TO...

J.R. CHAMBLISS, IBM CORP., 3800 LINDELL BLVD., ST. LOUIS, MO. 68108

TITLE...MODIFICATION OF S/360 8K BPS FOR 2250 DISPLAY UNIT CONTROL
***N 08.7 00.6 01.4 ***

THIS IS A MODIFICATION OF THE 8K BPS SUPERVISOR TO ALLOW THE USER TO CONTROL AND HANDLE INTERRUPTS FROM A 2250 DISPLAY UNIT. IT IS LESS THAN 100 BYTES OF CORE AND DOES NOT AFFECT ANY OTHER FACILITY OF THE SUPERVISOR. IT HANDLES INTERRUPTS BY SETTING CORE BITS TO REPRESENT THE TYPE OF INTERRUPT. THE USER MUST TEST THE MANUAL DATA OR SENSE BYTES HIMSELF. ALL INPUT/OUTPUT OPERATIONS CAN BE PERFORMED USING 8K BPS PHYSICAL IOCS MACROS. INCLUDED ARE TWO SAMPLE PROGRAMS. ONE HAS THE SYSTEM ACT AS EDITOR AND SCOREKEEPER FOR A SIMPLE TIC-TAC-TOE GAME. THE OTHER IS A FUNCTIONAL DEMONSTRATION SHOWING ALL CONSOLE FUNCTIONS. THE INTERRUPT HANDLING AND ANALIZING ROUTINES ARE INCLUDED IN THE PROGRAM FOR ALL FUNCTIONS. THE FUNCTIONS ARE DISPLAYED ON THE SCREEN AND THE 1403 PRINTER. THE MACHINE REQUIREMENTS ARE ON AN 8K SYSTEM/360 WITH DECIMAL ARITHMETIC 2 SELECTOR CHANNELS, A 2540, 1403, AND 2250 MODEL 1. THE 2250 HAS 4K BUFFER STORAGE, ABSOLUTE VECTORS, CHARACTER GENERATOR, ALPHAMERIC KEYBOARD, FUNCTION KEYBOARD AND LIGHT PEN. THE PACKAGE IS EASILY MODIFIED FOR FEWER CHANNELS.

3600-01.4.003 ACCOUNTING /ROUTINE/ /FOR/ 260 OPERATING /SYSTEM/

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-01.4.003

AUTHOR...MR. D. JACOBS

DIRECT INQUIRIES TO...

MR. D. JACOBS, THE BOEING CO., VERTOL DIV., 100 WOODLAND AVE., PLANT 3-01, MAIL STOP P30-47, RIDLEY PARK, PA.

TITLE...OPERATING SYSTEM ACCOUNTING
S VDB ACT 01.4 05.1 06.3 29.1

THIS PROGRAM WAS WRITTEN TO--
1. DETERMINE TASK TIME OF EACH STEP OF JOB.
2. DETERMINE WAIT/OVERHEAD TIME OF JOB.
3. INFORM OPERATOR OF TAPE ASSIGNMENTS BY DD NAME.
4. DETERMINE STARTING ADDRESS OF PROBLEM PROGRAM RB.
5. DETERMINE MAXIMUM TAPES AND DISKS USED IN JOB.
6. PRINT ACCOUNTING INFORMATION OF JOB ON SYSOUT AND SYSTEM RESIDENCE PACK.
7. PUNCH ACCOUNTING RECORDS FROM DISK.
STEP INITIATOR HAS BEEN MODIFIED SO THAT IT ACCOMPLISHES /3/, /4/, AND /5/ ABOVE. IT ALSO ISSUES A TIMER MACRO PRIOR TO ISSUING THE ,,XCTL,, TO THE PROBLEM PROGRAM. STEP TERMINATION ACCOMPLISHES /1/ AND /2/ ABOVE. JOB TERMINATION ACCOMPLISHES /7/ ABOVE. MONITOR OR OPERATING SYSTEM REQUIRED- OS/360

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

3600-01.5.002 1620 COMPATIBILITY TAPE TO DISK RESTORE

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-01.5.002

AUTHOR...MR. D.M. KNIGHT

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DIRECT INQUIRIES TO..
MR. D.M. KNIGHT,NORDEN DIV.,UNITED AIRCRAFT CORP.,
NORWALK, CONN.

TITLE...360/1620 TAPE TO COMPATIBILITY DISK RESTORE
***S UAN 00.4 12.0 00.4 ***

RESTORES COMPATIBILITY DISKS FROM BACK-UP TAPES GENERATED BY
360/1620 COMPATIBILITY DISK TO TAPE DUMP,, /01.5.003/.
THE DECKS SUPPLIED ARE STAND ALONE UTILITIES AND OPERATE
INDEPENDENTLY OF ALL OTHER SOFTWARE. DISKS MAY NOT CONTAIN
BAD TRACKS /ALSO TRUE FOR COMPATIBILITY PROGRAM/ UNLESS THEY
ARE NOT IN THE COMPATIBILITY AREA. 32K BYTES OF STORAGE,
ONE 9-TRACK TAPE DRIVE AND ONE 2311 DISK DRIVE ARE REQUIRED.
SOURCE LANGUAGE IS B.P.S. ASSEMBLER WITH ALL MACROS EXPANDED.
RUNNING TIME IS ABOUT TEN MINUTES PER DISK.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE
SUBMITTAL IS REQUIRED.

3600-01.5.003 1620 COMPATIBILITY DISK TO
TAPE DUMP

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-01.5.003

AUTHOR...MR. D.M. KNIGHT

DIRECT INQUIRIES TO..
MR. D.M. KNIGHT,NORDEN DIV.,UNITED AIRCRAFT CORP.,
NORWALK, CONN.

TITLE...360/1620 COMPATIBILITY DISK TO TAPE DUMP
***S UAN 00.3 12.0 00.4 ***

DUMPS 360/1620 COMPATIBILITY DISKS TO 9 TRACK TAPES FOR
DATA AND PROGRAM BACKUP. THE DECK SUPPLIED IS A STAND ALONE
UTILITY AND REQUIRES NO OTHER SOFTWARE. DISK MAY NOT CONTAIN
BAD TRACKS /ALSO HOLDS TRUE FOR COMPATIBILITY/ UNLESS THEY
ARE NOT IN COMPATIBILITY AREA. PROGRAM REQUIRES A 32K SYSTEM
WITH A 2311 DISK DRIVE AND A 9-TRACK TAPE DRIVE. SOURCE
LANGUAGE IS B.P.S. ASSEMBLER WITH ALL MACROS EXPANDED.
RUNNING TIME IS ABOUT 10 MINUTES PER DISK.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE
SUBMITTAL IS REQUIRED.

3600-01.6.002 CREATE MAINTAIN INDEXED
SEQUENTIAL DATA SETS OS/360

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-01.6.002

AUTHOR...WILLIAM N. AMES

DIRECT INQUIRIES TO..
WILLIAM N. AMES,IBM CORP.,200 E. CAMPERDOWN WAY,
GREENVILLE, S.C. 29601

TITLE...OS/360 GENERALIZED ISAM UTILITY PROGRAM
***N 06.5 06.8 ***

THIS GENERALIZED UTILITY PROGRAM WILL ASSIST THE OS/360
USER IN REORGANIZING AND MAINTAINING INDEXED SEQUENTIAL
DATA SETS. THE PROGRAM PERFORMS ANY OF FOUR FUNCTIONS--
- PROVIDES A FORMATTED LISTING OF RECORDS WITHIN AN INDEXED
SEQUENTIAL DATA SET.
- CREATES A SEQUENTIAL DATA SET USING AN INDEXED SEQUENTIAL
DATA SET AS INPUT.
- CREATES AN INDEXED SEQUENTIAL DATA SET USING A SEQUENTIAL
DATA SET AS INPUT.
- PROVIDES INFORMATION REGARDING THE DISTRIBUTION OF
LOGICAL RECORDS AMONG PRIME DATA AND OVERFLOW AREAS.
THE JOB CONTROL AND UTILITY CONTROL CARD REQUIREMENTS FOR
THIS PROGRAM ARE CONSISTENT WITH THOSE OF STANDARD OS/360
UTILITIES.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

3600-01.6.003 INSPECT UPDATE PRINT
DATA-SET OS/360

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-01.6.003

AUTHORS..D.M. LUDLOW C.N. STILL

DIRECT INQUIRIES TO..
D.M. LUDLOW,IBM CORP.,BLOG. 706,DEPT. 029,POUGHKEEPSIE, N.Y.

TITLE...SUPERZAP
***N 00.5 06.7 ***

SUPERZAP IS A PROGRAMMING AID DESIGNED TO INSPECT, UPDATE, AND
PRINT THE CONTENTS OF DATA SETS WHICH RESIDE ON DIRECT ACCESS
DEVICES. IT OPERATES UNDER THE IBM SYSTEM/360 OPERATING
SYSTEM AND UTILIZES THE DATA MANAGEMENT AND SYSTEMS FACILITIES
IN REFERRING TO AND ALTERING THE CONTENTS OF THE DATA SET.
DATA REFERENCES CAN BE MADE EITHER DIRECTLY BY POSITION
WITHIN A SPECIFIC DATA RECORD OR INDIRECTLY BY USING AN
ASSEMBLY LISTING. THE MAIN UTILITY OF SUPERZAP IS ITS ABILITY
TO AUTOMATICALLY LOCATE LINK EDITED LOAD MODULES--IMPLEMENT
THE CONTROL FUNCTIONS OF VERIFY, REP, DUMP, AND JUMP--
ANY MODIFICATIONS OF LOAD MODULES REQUIRE THE PROGRAM TO
ACCESS THE DATA SET DIRECTORY AND SET ON THE LOCALLY MODIFIED
BIT IN THE MEMBER SSI BYTE. SUPERZAP CAN RUN WITHIN A
32K OS/360 SYSTEM ENVIRONMENT WHERE THE DATA SET RECORDS
TO BE ACCESSED ARE NO GREATER THAN 3K BYTES.

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THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

3600-01.6.004 UTILITY TO EXTRACT COUNTS
FROM IS LABELS,REQUIRES NO ASSEMBLY SHOWS USER STATUS OF FILE SPACE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-01.6.004

AUTHOR...B.H. DILLEY

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B.H. DILLEY,THE HOBART MANUFACTURING CO.,
711 PENNSYLVANIA AVE.,TROY, OHIO 45373

TITLE...ISCTS - S/360 DOS PROGRAM TO EXTRACT INDEX SEQUENTIAL
COUNTS FROM FORMAT 2 LABEL
***C 4826 00.0 13.0 ***

THE ISFMS /INDEX SEQUENTIAL FILE MANAGEMENT SYSTEM/ MAINTAINS
THE FOLLOWING COUNTS IN THE FORMAT 2 LABEL--

- RANDOM REFERENCES TO NON FIRST OVERFLOW RECORDS.
- NUMBER OF RECORDS IN PRIME DATA AREA.
- NUMBER OF RECORDS IN OVERFLOW AREA.
- NUMBER OF INDEPENDENT OVERFLOW TRACKS REMAINING.
- NUMBER OF CYLINDER OVERFLOW AREAS FULL.

THIS PROGRAM WILL RETRIEVE THE FORMAT 2 LABELS FROM A
2311 ISFM FILE AND PRINT THE COUNTS ON THE 1052 TYPEWRITER.
THESE COUNTS ARE VERY USEFUL IN DETERMINING WHEN TO REORGANIZE
THE FILE, HOW MUCH SPACE TO ALLOCATE TO PRIME AREA AND OVERFLOW
AREA ETC.
MACHINE CONFIGURATION- 360 MODEL 30, 16K OR GREATER.
1052 TYPEWRITER. SOURCE LANGUAGE- 16K DOS/TOS ASSEMBLER
LANGUAGE /BAL/. TWO USER WRITTEN MACROS WERE USED. THESE
ARE INCLUDED IF USER CHOOSES TO REASSEMBLE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

3600-01.7.001 RPG PROGRAM TO CALCULATE
MODULUS-II SELF-CHECK DIGIT

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-01.7.001

AUTHOR...THOMAS E. OBRIEN

DIRECT INQUIRIES TO..
THOMAS E. OBRIEN,IBM CORP.,1830 6TH AVE.,MOLINE, ILL. 61265

TITLE...COMPUTING MODULUS II SYSTEM/360-20
***N 06.0 ***

THIS PROGRAM IS WRITTEN IN RPG TO CALCULATE THE SELF-CHECKING
DIGIT MODULUS 11. THIS PROGRAM IS OF VALUE TO ANYONE SETTING
UP A NUMBERING FILE FOR THE MODULUS 11, AS IN ONE PASS
IT WILL CALCULATE THE SELF-CHECKING DIGIT, PUNCH AND PRINT
IT BACK IN THE CARD, SELECT OUT CARDS CONTAINING NUMBERS
ON WHICH THE SELF-CHECKING DIGIT CANT BE CALCULATED AND
CONCURRENTLY PRINTING A MASTER LIST WHICH ALSO IDENTIFIED
THE UNCALCULATED INPUT. THE PROGRAM WAS WRITTEN FOR A
CARD-ORIENTED S/360-20 INCLUDING A 2020 CPU 2203 PRINTER
AND A 2560 MFCM WITH THE INTERPRETING DEVICE. STORAGE
REQUIREMENTS ARE 4K.

3600-02.0.001 DIAGNOSTIC TRACE FOR 360

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-02.0.001

AUTHOR...MR. J.L. HALL

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PITTSBURGH, PA. 15230

TITLE...DIAGNOSTIC ROUTINE
***C 3292 04.2 ***

A DIAGNOSTIC ROUTINE TO TRACK DOWN POSSIBLE ERRORS OR TO
CHECK LOGIC FLOW IN FORTRAN PROGRAMS. BECAUSE OF THE MANNER
IN WHICH THE TRACK ROUTINE WORKS, A LIMIT HAD TO BE SET AS
TO THE MAXIMUM NUMBER OF STATEMENTS THAT COULD BE LISTED.
THIS IS SET AT 1200 LINES /20 PAGES/. WHEN THIS IS EXCEEDED,
THE PROGRAM CONTINUES EXECUTION BUT NO MORE TRACK OUTPUT
IS GIVEN. IT IS SUGGESTED THAT CONTROL NEVER BE TRANSFERRED
TO A ,,CALL TRACK,, INSTRUCTION. REASONS FOR THIS ARE THAT
AN ERRONEOUS VALUE WILL BE GIVEN FOR THE VALUE STORED, AND
ALSO, IF THE PROGRAM IS TO BE EXECUTED ON A MACHINE WITHOUT
TRACK, THE CARDS COULD BE REMOVED WITHOUT REQUIRING NEW
STATEMENT NUMBERS TO BE GIVEN.
STORAGE USED BY PROGRAM- 4317 BYTES.
EQUIPMENT REQUIRED BY PROGRAM- MINIMUM MACHINE REQUIREMENTS FOR
DOS FORTRAN ARE ADEQUATE.
PROGRAMMING TYPE- FORTRAN IV ASSEMBLY LANGUAGE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

3600-02.5.001 DIAGNOSTICS STATUS RECORDER

PRINT MODEL 30
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 3600-02.5.001

AUTHOR...GEORGE SLOVENSKY

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DIRECT INQUIRIES TO..
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TITLE...DYNAMIC STATUS RECORDER SYSTEM EDIT AND PRINT MODEL 30
***N 03.6 ***

THIS IS A TWO-PHASE PROGRAM FOR DYNAMICALLY RECORDING PERTINENT SYSTEM ENVIRONMENT INFORMATION UPON THE OCCURRENCE OF A HARDWARE MALFUNCTION. THE FIRST PHASE /DSR/ IS UNIQUE IN THAT IT IS DESIGNED TO BE AN INTEGRAL PART OF A CONTROL PROGRAM AND DOES NOT REQUIRE MANUAL INTERVENTION TO INITIATE. TO FACILITATE INCLUSION INTO A CONTROL PROGRAM, THIS PHASE IS AVAILABLE IN SYSTEM/360 BASIC ASSEMBLER LANGUAGE SOURCE CARDS. THIS SOURCE DECK, WHICH CONSISTS OF 95 CARDS, REQUIRES 92 BYTES OF CORE STORAGE, AND CAN BE ASSEMBLED WITH THE BASIC ASSEMBLER PROGRAM UTILIZING THE TAPE OPTION /AT LEAST ONE 9 TRACK TAPE DRIVE MUST BE AVAILABLE FOR ASSEMBLY/. PHASE II /SEP/ IS A STAND ALONE PROGRAM THAT PERFORMS THE EDITING AND PRINTING OF THE RECORDS CONSTRUCTED IN PHASE I. SEP IS AVAILABLE IN OBJECT DECK FORM AND CONSISTS OF 144 CARDS. THE SEP PHASE FOR THE MODEL 30 CAN BE EXECUTED ON MINIMUM CORE STORAGE SYSTEMS THAT INCLUDE A 1442 OR 2540 CARD READER, 1403, 1404 OR 1443 PRINTER, AND AN OUTPUT STORAGE DEVICE /9 TRACK TAPE DRIVE, 2302, 2311, 7320 OR 2321/.

360D-02.5.002 DIAGNOSTICS STATUS RECORDER
EDIT PRINT MODEL 40

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-02.5.002

AUTHOR...GEORGE SLOVENSKY

DIRECT INQUIRIES TO..
GEORGE SLOVENSKY, IBM CORP., NEIGHBORHOOD RD., KINGSTON, N.Y.

TITLE...DYNAMIC STATUS RECORDER SYSTEM EDIT AND PRINT MODEL 40
***N 03.6 ***

THIS IS A TWO-PHASE PROGRAM FOR DYNAMICALLY RECORDING PERTINENT SYSTEM ENVIRONMENT INFORMATION UPON THE OCCURRENCE OF A HARDWARE MALFUNCTION. THE FIRST PHASE /DSR/ IS UNIQUE IN THAT IT IS DESIGNED TO BE AN INTEGRAL PART OF A CONTROL PROGRAM AND DOES NOT REQUIRE MANUAL INTERVENTION TO INITIATE. TO FACILITATE INCLUSION INTO A CONTROL PROGRAM, THIS PHASE IS AVAILABLE IN SYSTEM/360 BASIC ASSEMBLER LANGUAGE SOURCE CARDS. THIS SOURCE DECK, CONSISTING OF 80 CARDS, REQUIRES 76 BYTES OF CORE STORAGE, AND CAN BE ASSEMBLED WITH THE BASIC ASSEMBLER PROGRAM UTILIZING THE TAPE OPTION /AT LEAST ONE 9 TRACK TAPE DRIVE MUST BE AVAILABLE FOR ASSEMBLY/. PHASE II /SEP/ IS A STAND ALONE PROGRAM THAT PERFORMS THE EDITING AND PRINTING OF THE RECORDS CONSTRUCTED IN PHASE I. SEP IS AVAILABLE IN OBJECT DECK FORM AND CONSISTS OF 201 CARDS. THE SEP PHASE FOR THE MODEL 40 CAN BE EXECUTED ON MINIMUM CORE STORAGE SYSTEMS THAT INCLUDE A 1442 OR 2540 CARD READER, 1403, 1404 OR 1443 PRINTER, AND AN OUTPUT STORAGE DEVICE /9 TRACK TAPE DRIVE, 2302, 2311, 7320 OR 2321/.

360D-02.5.003 DIAGNOSTICS STATUS RECORDER
EDIT PRINT MODEL 50

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-02.5.003

AUTHOR...GEORGE SLOVENSKY

DIRECT INQUIRIES TO..
GEORGE SLOVENSKY, IBM CORP., NEIGHBORHOOD RD., KINGSTON, N.Y.

TITLE...DYNAMIC STATUS RECORDER SYSTEM EDIT AND PRINT MODEL 50
***N 03.6 ***

THIS IS A TWO-PHASE PROGRAM FOR DYNAMICALLY RECORDING PERTINENT SYSTEM ENVIRONMENT INFORMATION UPON THE OCCURRENCE OF A HARDWARE MALFUNCTION AND PRINTING THE CONTENTS UPON REQUEST. THE FIRST PHASE /DSR/ IS UNIQUE IN THAT IT IS DESIGNED TO BE AN INTEGRAL PART OF A CONTROL PROGRAM AND DOES NOT REQUIRE MANUAL INTERRUPTION TO INITIATE. TO FACILITATE INCLUSION INTO A CONTROL PROGRAM, THIS PHASE IS AVAILABLE IN SYSTEM/360 BASIC ASSEMBLER LANGUAGE SOURCE CARDS. THIS SOURCE DECK, CONSISTING OF 82 CARDS, REQUIRES 72 BYTES OF PERMANENT CORE STORAGE, AND CAN BE ASSEMBLED WITH THE BASIC ASSEMBLER PROGRAM UTILIZING THE TAPE OPTION /AT LEAST ONE 9 TRACK TAPE DRIVE MUST BE AVAILABLE FOR ASSEMBLY/. PHASE II /SEP/ IS A STAND ALONE PROGRAM THAT PERFORMS THE EDITING AND PRINTING OF THE RECORDS CONSTRUCTED IN PHASE I. THE SEP PHASE FOR THE MODEL 50 CAN BE EXECUTED ON MINIMUM CORE STORAGE SYSTEMS THAT INCLUDE A 1442 OR 2540 CARD READER, 1403, 1404 OR 1443 PRINTER, AND AN OUTPUT STORAGE DEVICE /9 TRACK TAPE DRIVE, 2302, 2311, 7320 OR 2321/.

360D-03.2.004 LIMITED ENTRY DECISION
TABLES TRANSLATOR, RE-SORT AND CROSS-LINK OPTIMIZE OUTPUT PL/I

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.2.004

AUTHOR...K.J. COULTER

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K.J. COULTER, BELL TELEPHONE CO. OF CANADA, 620 BELMONT, R130 MONTREAL, QUEBEC, CANADA

TITLE...PET - PRE-PROCESSOR OF ENCODED TABLES
***G 12.7 03.6 ***

PET IS A DECISION TABLE TRANSLATOR. THE SOURCE LANGUAGE IS A COMBINATION OF PL/I AND PET VERBS. THROUGH RULE SORTING AND THE CROSS-LINKING OF DUPLICATE ACTION STRINGS, EFFICIENT STRUCTURING OF THE INPUT TABLES LOGIC PRODUCES OPTIMIZED OUTPUT PROGRAM CODE. A COMPLETE ERROR CHECK PLUS A TABLE UPDATE FACILITY PERMITS DEBUGGING AT THE LOGIC LEVEL. SEVEN PHASES OF PET PASS AGAINST TABLE HELD IN INTERNAL ARRAY. PET CAN HANDLE UP TO 30 BYTES AND 80 CONDITIONS AND/OR ACTIONS PER TABLE, PLUS INITIALIZATION AND COMMENT CARDS. ONLY LIMITED ENTRY TABLES HAVING NO /ELSE/ RULES AND /NUMBERED/ ACTIONS ARE TRANSLATABLE BY PET. LOGICAL TABLES MAY BE GROUPED AND CROSSREFERENCED TO CREATE PROCEDURES.

CONTINUED FROM PRIOR COLUMN--

67K PARTITION SYSTEM IS REQUIRED. PET CAN BE EXECUTED ON ANY IBM/360 CONFIGURATION WHICH CAN HANDLE THE PL/I COMPILER, WITH A MINIMUM OF 128K STORAGE. PET IS WRITTEN IN PL/I /LEVEL ,,F,,/ AND HAS BEEN SPLIT INTO 5 SEGMENTS TO SAVE CORE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

360D-03.4.001 BOS INPUT/OUTPUT CONTROL
1412/1419 READER/SORTERS

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.4.001

AUTHOR...W.M. HALLINAN

DIRECT INQUIRIES TO..
W.M. HALLINAN, IBM CORP., 100 S. WACKER DR., CHICAGO, ILL.

TITLE...INPUT/OUTPUT CONTROL PROGRAM FOR 1412/1419
READER/SORTERS ON THE S/360 UNDER 8K BOS
***N 06.3 06.1 ***

THIS PROGRAM IS DESIGNED TO RUN UNDER THE 8K DISK BASIC OPERATING SYSTEM. THE FACILITIES OF BOS CAN BE UTILIZED IN PROGRAMS WHICH USE READER SORTERS. DURING OPERATION OF READER SORTER PROGRAMS, THIS CONTROL PROGRAM IS APPENDED TO THE BOS SUPERVISOR. IT REQUIRES APPROXIMATELY 2,300 POSITIONS OF MEMORY IN ADDITION TO THE BOS SUPERVISOR CORE REQUIREMENTS. SOURCE LANGUAGE IS 360 ASSEMBLER LANGUAGE. THE READER SORTER CONTROL PROGRAM IS A MODIFICATION TO VERSION 1 OF THE BPS IOCP PROGRAM FOR 1412/1419--PROGRAM NUMBER 360P-10-058. THE MINIMUM SYSTEM CONFIGURATION IS A 16K 360 WITH EXTERNAL INTERRUPT FEATURE, A CARD READER, AT LEAST 1 2311, A CONSOLE PRINTER AND EITHER AN IBM 1412 OR 1419 READER SORTER. THE SPECIFICATIONS FOR USING THE PROGRAM ARE ESSENTIALLY AS OUTLINED IN IBM SYSTEM/360 BASIC PROGRAMMING SUPPORT SPECIFICATIONS INPUT/OUTPUT 1412/1419 FORM NUMBER C24-3398. FOR I/O OPERATIONS OTHER THAN THE 1412/1419 SEE THE BOS MANUALS. THE ONLY CHANGES IN THE I/O OPERATIONS FOR 1412/1419 FROM THE BPS IOCP REGISTER ASSIGNMENTS AND SUPERVISOR CALL CODES WHICH HAVE BEEN ALTERED TO AVOID CONFLICT WITH BOS.

360D-03.4.002 2250 GENERATION
TRANSFORMATION IMAGE DEFINITION ARRAYS SUBROUTINES

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.4.002

AUTHORS...R.G. LOOMIS W.H. DODRILL D. TANNER

DIRECT INQUIRIES TO..
F. ZEDERBAUM, IBM CORP., 590 MADISON AVE., NEW YORK, N.Y. 10022

TITLE...FORTRAN CONSOLE PROGRAMMING SYSTEM ICPS
***N 06.6 06.6 06.7 ***

THE PROGRAM PROVIDES A SET OF SUBROUTINES FOR THE GENERATION OF IMAGE DEFINITION ARRAYS AND THEIR TRANSFORMATION INTO DISPLAY STRINGS IN THE BUFFER OF THE IBM 2250, WITH SELECTIVE CONTROL OVER THE IMAGE PROCESSING PROVIDED BY THE LOGIC OF THE FORTRAN PROGRAM. THE GENERALITY OF THESE SUBROUTINES TOGETHER WITH THE VERSATILITY OF THE FORTRAN LANGUAGE PROVIDES GREAT FLEXIBILITY IN THE DESIGN OF PROGRAMS FOR IMAGE MANIPULATION AT THE CONSOLE ACCORDING TO THE REQUIREMENTS OF THE PARTICULAR PROBLEM. THE CPS SYSTEM TAPE EMBODIES ALL THE FEATURES OF FORTRAN IV BPS, LEVEL D, TAPE 16K, AND SUPPORTS A SINGLE 2250 MODEL 1 DISPLAY CONSOLE WHICH MUST BE EQUIPPED WITH 4K OR 8K BUFFER, THE CHARACTER GENERATOR, AND THE ABSOLUTE VECTOR FEATURE. THE SYSTEM WILL RUN ON ANY SYSTEM/360 MODEL 30 OR HIGHER, HAVING 64K OR MORE, EQUIPPED WITH 1052 TERMINAL, CARD READER-PUNCH, EITHER 2540 OR 1442, 1403 PRINTER AND FOUR TAPE UNITS. OPTIONAL FEATURES SUPPORTED ARE THE LIGHT PEN, THE FUNCTION KEYS AND THE INDICATOR LIGHTS.

THE BASIC MACHINE READABLE MATERIAL IS A 9-TRACK SYSTEMS TAPE. ONE 2400 FOOT MAGNETIC TAPE IS REQUIRED. THE OPTIONAL MATERIAL CONSISTS OF--
1. A 9-TRACK REFERENCE TAPE.
2. A 7-TRACK AUTOCHART TAPE.
THE TAPES REQUIRED TO OBTAIN THE BASIC AND OPTIONAL MATERIAL MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPES PROVIDED MUST BE 2400 FEET IN LENGTH.

360D-03.4.007 OBJECT/TIME/FORMATING
/SUBROUTINE FOR FORTRAN IV-E 360/DS

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.4.007

AUTHOR...MR. E.M. HAMILTON

DIRECT INQUIRIES TO..
MR. E.M. HAMILTON, COMPUTER CENTER, GEORGE WASHINGTON UNIV., 2013 G ST., N.W., WASHINGTON, D.C. 20006

TITLE...SUBROUTINE OBJFMT
***S GWU 03.8 07.6 06.5 ***

THIS ASSEMBLY LANGUAGE SUBROUTINE WILL REPLACE ANY SPECIFIED COMPILED FORMAT STATEMENT IN THE CALLING PROGRAM WITH A FORMAT STATEMENT READ AT EXECUTION TIME. IT WILL COMPILE ANY VALID FORTRAN IV-E SPECIFICATIONS AND IS INDEPENDENT OF ANY DATA SET REFERENCE NUMBER DEFINITION. THE SUBROUTINE, WRITTEN FOR 360 D/S, IS INDEPENDENT OF ANY PARTICULAR RELEASE, AND USES APPROXIMATELY 2,300 BYTES OF CORE AND IS SERIALLY REUSABLE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED--THE DTR WILL BE PROVIDED BY THE LIBRARY.

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**360D-03.4.010 OBJECT/TIME/FORMATING
/SUBROUTINE FOR FORTRAN IV-E 360/DOS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.4.010**

AUTHOR...MR. E.M. HAMILTON

DIRECT INQUIRIES TO...
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2013 G ST., N.W., WASHINGTON, D.C. 20006

TITLE...SUBROUTINE OBJFMT
***S G M U 07.6 06.5 03.8 ***

THIS ASSEMBLY LANGUAGE SUBROUTINE WILL REPLACE ANY SPECIFIED COMPILED FORMAT STATEMENT IN THE CALLING PROGRAM WITH A FORMAT STATEMENT READ AT EXECUTION TIME. IT WILL COMPILE ANY VALID FORTRAN IV-E SPECIFICATIONS AND IS INDEPENDENT OF ANY DATA SET REFERENCE NUMBER DEFINITION. THE SUBROUTINE IS WRITTEN FOR 360 DOS/TOS, IS INDEPENDENT OF ANY PARTICULAR RELEASE AND USES APPROXIMATELY 2,300 BYTES OF CORE AND IS SERIALLY REUSABLE.

**360D-03.4.013 DOS COBOL DISK INDEX
SEQUENTIAL MACROS LOAD ADD RETRIEVE UPDATE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.4.013**

AUTHOR...DIANN C. HANSEN

DIRECT INQUIRIES TO...
DIANN C. HANSEN, IBM CORP., 340 MARKET ST., SAN FRANCISCO, CALIF

TITLE...DOBOL - DISK INDEX SEQUENTIAL MACROS -- 16K DOS COBOL
***N 00.4 06.0 ***

THIS PROGRAM IS A MAJOR MODIFICATION TO 16K DOS COBOL DIRECT ACCESS MACROS. IT WILL COVER ONLY THE INDEX SEQUENTIAL ACCESS METHOD AND WILL GIVE TO A COBOL USER THE ABILITY TO USE IS FILES EFFECTIVELY. THERE ARE EIGHT ASSEMBLY LANGUAGE MACROS WHICH WILL LOAD IN THE SOURCE LIBRARY. THE MACROS WILL LOAD, ADD, RETRIEVE AND UPDATE SEQUENTIAL, RANDOM AND RANDOM-SEQUENTIAL FILES., RETRIEVE AND UPDATE AND ALLOW ADD TO SEQUENTIAL, RANDOM AND RANDOM-SEQUENTIAL FILES. THE MACROS ALSO ALLOW FOR A MASTER INDEX, MULTIPLE EXTENTS AND CYLINDER OVERFLOW TRACKS AND OVERLAP OF PROCESSING WITH RANDOM READ AND WRITE MACROS. ALSO, REORGANIZATION STATISTICS WILL BE AVAILABLE AT THE TIME THE FILE IS CLOSED. THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

**360D-03.4.014 BOS MACROS INDEXED
SEQUENTIAL FILE MANAGEMENT SYSTEM VARIABLE LENGTH UNBLOCKED RECORDS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.4.014**

AUTHOR...HOWARD KATZ

DIRECT INQUIRIES TO...
HOWARD KATZ, IBM CORP., 1031 NORTH BRAND BLVD.,
GLENDALE, CALIF. 91202

TITLE...BOS - INDEXED SEQUENTIAL FILE MANAGEMENT SYSTEM-
SUPPORT FOR VARIABLE LENGTH UNBLOCKED RECORDS
***N 03.0 03.7 ***

IBM TYPE I SUPPORT FOR BOS, AT PRESENT, DOES NOT INCLUDE THE HANDLING OF VARIABLE LENGTH RECORDS UNDER ISFMS. THEREFORE, IT IS THE INTENT OF THESE MACROS TO PROVIDE AN IBM S/360 USER THE CAPABILITY TO PROCESS VARIABLE LENGTH UNBLOCKED RECORDS BY USING MACRO STATEMENTS IN THE SAME MANNER AS HE WOULD PROCESS A STANDARD FIXED RECORD LENGTH FILE. CARE WAS TAKEN TO MAKE ALL MODIFICATIONS COMPATIBLE WITH THE STANFORD BOS 8K DISK. PROGRAMMING LANGUAGES USED ARE BOS 8K DISK MACRO LANGUAGE AND ASSEMBLER LANGUAGE. MACHINE REQUIREMENTS ARE AT LEAST A S/360 MODEL 30 WITH AT LEAST 8K AND 1-2311.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

**360D-03.4.015 SUBROUTINE TO ALLOW FORTRAN
PROGRAMMER TO USE OBJECT-TIME FORMATTING IN INPUT-OUTPUT STATEMENTS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.4.015**

AUTHORS...F.D. JAGGAR G.H. DEVEREAUX A.R. HAUSER

DIRECT INQUIRIES TO...
F.D. JAGGAR, IBM CORP., 3610 14TH ST., RIVERSIDE, CALIF. 92502

TITLE...OS/360 FORTRAN E OBJECT TIME FORMAT SUBROUTINE
***N 12.0 ***

THIS SUBROUTINE ALLOWS AN E LEVEL FORTRAN PROGRAMMER TO USE OBJECT TIME FORMATTING IN INPUT/OUTPUT STATEMENTS. IT WAS WRITTEN AS AN AID TO CONVERSION OF PROGRAMS FROM 7094 FORTRAN IV TO FORTRAN E. THE SUBROUTINE MAY, WITH MODIFICATION, BE USED WITH BPS FORTRAN.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

**360D-03.6.001 FORTRAN CROSS REFERENCE
LISTING /OF/ NAMES, KEYWORDS /AND/ CONSTANTS.
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.6.001**

AUTHOR...R.H. KARPINSKI

DIRECT INQUIRIES TO...
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MEDICAL CNTR., SAN FRANCISCO, CALIF. 94122

TITLE...FORTRAN CROSS REFERENCE
***S UCS XREF 00.0 03.2 ***

FORTXREF IS A STANDARD PL/I PROGRAM USING SYSIN FOR THE INPUT DATA AND SYSPRINT FOR THE OUTPUT. THE DATA CONSISTS OF ONE OR MORE FORTRAN PROGRAMS. EACH OCCURRENCE OF A FORTRAN END CARD WILL CAUSE THE CROSS-REFERENCING TABLE TO BE OUTPUT AND REINITIALIZED. THIS WILL ALSO HAPPEN ON END OF DATA IF THE LAST CARD IS NOT AN END CARD. EACH INPUT CARD WILL BE OUTPUT WITH A FORTRAN LINE NUMBER IF APPROPRIATE. THE CROSS-REFERENCE TABLE GIVES /IN 360 COLLATING SEQUENCE/ EACH KEYWORD, VARIABLE NAME, STATEMENT NUMBER, AND CONSTANT WITH A LIST OF EACH USE BY LINE NUMBER. INACCURACIES- IF ,,FORMAT,, IS USED AS AN ARRAY NAME, THE REST OF THE STATEMENT MAY NOT BE CROSS REFERENCED. LIMITS- 1000 ITEMS MAY BE REFERENCED APPROXIMATELY 6000 TIMES.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

**360D-03.6.002 MODEL 20 RPG PRELIST EDIT
CARD TAPE DISK DOCUMENTATION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.6.002**

AUTHOR...S.T. FLEMING, JR.

DIRECT INQUIRIES TO...
S.T. FLEMING, JR., IBM CORP., 2125 BISCAYNE BLVD.,
MIAMI, FLA. 33137

TITLE...REPORT PROGRAM GENERATOR PRELIST FOR MODEL 20 CARD,
TAPE AND DISK
***N 04.3 06.8 ***

THE RPG PRELISTER IS A PROGRAM WRITTEN TO PROVIDE A TOOL FOR EDITING RPG PROGRAMS FOR CLERICAL ERRORS. RPG PROGRAMS WRITTEN FOR MODEL 20 CARD, TAPE AND DISK CAN BE TESTED. THE PRELISTER IS WRITTEN IN MODEL 20 ASSEMBLER LANGUAGE AND REQUIRES AN 8K MODEL 20 EQUIPPED WITH A CARD READER AND A PRINTER WITH 120 PRINT POSITIONS. IT PROVIDES A LISTING OF FILE DESCRIPTION, FILE EXTENSIONS, INPUT, CALCULATION, OUTPUT AND COMMENTS CARDS UNDER APPROPRIATE HEADINGS AND TESTS FOR CLERICAL ERRORS IN EACH CARD. THIS LISTING IS ALSO DESIGNED TO SERVE AS THE PROGRAM DOCUMENTATION.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

**360D-03.7.001 DOS COBOL STACKER SELECT
MACRO**

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.7.001

AUTHOR...R. FRATARCANGELO

DIRECT INQUIRIES TO...
R. FRATARCANGELO, IBM CORP., 1427 GENESEE ST., UTICA, N. Y.

TITLE...COBOL STACKER SELECT MACRO
***N 06.0 ***

THE PURPOSE OF THIS ASSEMBLER LANGUAGE MACRO IS TO ALLOW THE COBOL USER TO SELECT INPUT DATA CARDS. TWO SEPARATE CALLS ARE REQUIRED TO CAUSE STACKER SELECTION. THE FIRST CALL INITIATES THE CARD READ. THE SECOND CALL DETERMINES WHICH POCKET THE CARD WILL BE SELECTED INTO AND MUST BE ISSUED ANY TIME PRIOR TO THE NEXT READ. THE CARD DOES NOT PHYSICALLY GET SELECTED INTO THE POCKET UNTIL THE NEXT CARD FEED CYCLE. THIS MEANS THAT THE PROGRAMMER HAS UNLIMITED TIME TO DETERMINE INTO WHICH POCKET THE CARD IS TO BE SELECTED. THIS MACRO OPERATES UNDER DOS AND IS DESIGNED ALONG THE SAME LINES AS THE DASD COBOL MACROS.

**360D-03.7.002 BPS/BOS MACROS ASSEMBLY
LANGUAGE CONTROL BASE REGISTERS DECIMAL OPERATIONS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.7.002**

AUTHOR...MARKHAM J. MATSON

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TITLE...MACROS FOR PACKED DECIMAL OPERATIONS AND BASE REGISTER
CONTROL
***N 03.1 06.0 ***

THIS SET OF MACROS IS DESIGNED TO SIMPLIFY CODING IN ASSEMBLY LANGUAGE, OPERATING UNDER A SYSTEM/360 WITH DECIMAL INSTRUCTION SET OPERATING UNDER 8K BPS OR 8K BOS. THE INITIALIZATION AND SEQUENCE MACRO CONTROL BASE REGISTER ASSIGNMENT AND MAINTENANCE. THE ARITHMETIC MACROS, ADD, SUB, MULT AND DIVD PROVIDE PACKED-DECIMAL ALIGNMENT. THE EDIT MACRO GENERATES A MASK AND PERFORMS THE EDIT. THE PACK AND UNPACK MACRO CHECK FOR VALID SIGN AND GENERATE ONE IF A BLANK FIELD IS PACKED. THE OPERATOR COMMUNICATION MACROS PROVIDE VARIABLE LENGTH MESSAGE AND RESPONSES.

THE PROGRAM AND MACRO STANDARDS SHOW A SUGGESTED STANDARD THAT MAY BE MODIFIED BY CHANGING THE INIT, GOTO, SUBRX AND LINKX MACROS. THE USER NEED ONLY CATALOG THOSE MACROS THAT WILL BE UF

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USE TO HIM.

THE SAMPLE PROGRAM SHOWS THE MACROS IN USE AND THE GENERATED CODE. THE PRIMARY PURPOSE OF THE SAMPLE PROGRAM IS TO FAMILIARIZE THE USER WITH GENERATED CODE.

360D-03.7.003 MACROS, BAL LMG, BOS SYS/;
MOVE, TABLE BLD/RETRVE SWITCH MANIPULATION BASIC ARITH, DECISION MAKING
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.7.003

AUTHOR...MR. B.H. DILLEY

DIRECT INQUIRIES TO..

MR. B.H. DILLEY, 711 PENNSYLVANIA AVE., TROY, OHIO

TITLE...8K BASIC OPERATING SYSTEM MACROS
C 4826 01.8 03.7 06.4 06.0

THE 8K BOS MACROS ARE DESIGNED TO FACILITATE PROGRAMMING THROUGH GENERATION OF PRE-TESTED CODING. INTRICATE CODING TECHNIQUES SUCH AS BASE REGISTER SETTINGS AND TABLE LOOK-UP ARE REDUCED TO LOGICAL OPERATIONS ON THE PART OF THE PROGRAMMER AND/OR SYSTEMS ANALYSTS. THEREBY MORE TIME CAN BE DEVOTED TO PROBLEM SOLVING AND LESS TIME TO INTRICATE COMPUTER PROGRAMMING. PACKED DECIMAL MACROS ARE DIVIDE, MULTIPLY, SHIFT, ZERO, ADD, SUBTRACT, PACK, UNPACK, AND EDIT. PACKED OR ZONE MACROS INCLUDE COMPARE, RANGE, IFNUMERIC, BLANK AND MOVE. OPERATOR COMMUNICATION MACROS INCLUDE TYPE AND REPLY. SWITCH HANDLING MACROS INCLUDE MACROS /7 OF THEM/ TO DEFINE, MANIPULATE AND INTERROGATE PROGRAM SWITCHES. OTHER MACROS INCLUDE A POWERFUL TABLE LOOK-UP AND A MACRO TO DEFINE, LOAD AND COMMUNICATE BASE REGISTER SETTINGS TO THE ASSEMBLER.

MACHINE REQUIREMENTS- DESIGNED TO BE CATALOGUED INTO THE S/360 8K BOS DISK COMPILER, AND THEREFORE WILL FUNCTION ON ANY S/360 THE 8K DISK COMPILER WILL FUNCTION ON. PACKED DECIMAL FEATURE REQUIRED FOR MOST OF THE MACROS.

TO OBTAIN THE MACHINE READABLE PORTION OF THE PROGRAM ONE FULL 2400 FOOT, REEL OF MAGNETIC TAPE IS REQUIRED.

360D-03.7.004 DOS/TOS ASSEMBLER LANGUAGE
BOS/BPS MSG MACRO FACILITY
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.7.004

AUTHOR...E.L. ABT

DIRECT INQUIRIES TO..

E.L. ABT, IBM CORP., 520 BOYLSTON ST., BOSTON, MASS. 02116

TITLE...BOS/BPS MSG MACRO FOR DOS/TOS IBM SYSTEM/360 ASSEMBLER
LANGUAGE
***N 08.7 ***

THIS SET OF THREE MACROS PROVIDES DOS/TOS ASSEMBLER LANGUAGE PROGRAMS THE MSG MACRO FACILITY OF BOS/BPS. THE FORMAT AND OPERATION OF THE MSG MACRO REMAINS THE SAME AS UNDER BOS/BPS. TWO ADDITIONAL MACROS ARE PROVIDED. MSGX GENERATES A CLOSED SUBROUTINE TO DO THE TYPING AND RESPONSE HANDLING. TYPE GENERATES A DTFCN FOR THE CONSOLE PRINTER AND IS USED BY MSGX. THE SAME CONSOLE FACILITIES MAY BE USED BY THE PROBLEM PROGRAM AS WELL. THESE MACROS ARE WRITTEN IN DOS/TOS MACRO LANGUAGE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-03.7.005 DOS/TOS MACROS
INITIALIZE-FIELDS MOVE-DATA COMPUTE-SUMS COMPARE-FIELDS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.7.005

AUTHOR...P.J. HAMILTON

DIRECT INQUIRIES TO..

P.J. HAMILTON, IBM CORP., DEPT. 867, GARDEN STATE PKWY.,
EXIT 136, CRANFORD, N.J.

TITLE...DATA MANIPULATION MACROS FOR THE SYSTEM/360 DOS/TOS
ASSEMBLER
***N 06.6 ***

THESE MACRO INSTRUCTIONS ALLOW THE SYSTEM/360 DOS/TOS ASSEMBLY LANGUAGE PROGRAMMER TO MOVE DATA, COMPUTE SUMS, COMPARE FIELDS, AND INITIALIZE AREAS WITHOUT HAVING TO WRITE THE MACHINE INSTRUCTIONS FOR FORMAT CONVERSION, WORD BOUNDARY ALIGNMENT, OR LENGTH ADJUSTMENT. THEY ARE WRITTEN TO MANIPULATE FIELDS AND LITERALS OF TYPE A,B,C,F,H,P,V,X,Y, AND Z. THEY ARE DESIGNED WITH THE GREATEST CONSIDERATION GIVEN TO OBJECT PROGRAM EFFICIENCY.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-03.7.006 DOS ASSEMBLER LANGUAGE
MACRO CHANNEL COMMAND WORD
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.7.006

AUTHOR...MR. S. AUERBOCK

DIRECT INQUIRIES TO..

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NEW YORK CITY, N.Y. 10017

CONTINUED FROM PRIOR COLUMN--

TITLE...CHANNEL COMMAND WORD MACROS
***N ***

THIS ASSEMBLER LANGUAGE MACRO INSTRUCTION WILL AID THE CHANNEL CLEAR PACK. THE MACRO INCLUDES THE FOLLOWING FEATURES-
- MNEMONIC CHANNEL COMMANDS FOR MORE COMMON I/O DEVICES.
- THE USER CAN EXPAND OR MODIFY THE TABLE TO INCLUDE HIS OWN DEVICES.
- MNEMONICS FOR THE FLAG BITS. FLAGS NOT SPECIFIED ARE GENERATED AS ZERO BITS., HENCE THE ENTIRE FLAG ENTRY IS OPTIONAL.
- IMPLICIT COUNT FIELD. IF THIS OPTIONAL ENTRY IS OMITTED, A COUNT EQUAL TO THE LENGTH OF THE I/O AREA IS GENERATED. THE MACRO WILL BE ESPECIALLY VALUABLE TO USERS INSTALLING A 1418/1428 OR 1287. INSTALLATIONS USING NON-STANDARD LABELS WILL ALSO FIND THE MACRO USEFUL. MACRO WAS WRITTEN AND TESTED USING THE S/360 D.O.S. ASSEMBLER LANGUAGE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-03.7.007 BPS/BOS ASSEMBLER LANGUAGE
MACROS GENERATE CLEAR PACK THE MACRO INCLUDES THE FOLLOWING FEATURES-
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.7.007

AUTHOR...MR. E.L. ABT

DIRECT INQUIRIES TO..

MR. E.L. ABT, IBM CORP., FIELD SYSTEMS CTR., 520 BOYLSTON ST.,
BOSTON, MASS.

TITLE...USEFUL BPS/BOS MACROS FOR IBM SYSTEM/360 ASSEMBLER
LANGUAGE
***N ***

THIS SET OF MACROS PROVIDES HIGHER-LEVEL CODING FOR MANY COMMON DATA CONVERSION NEEDS. ONE GROUP PROVIDES ROUTINES TO GENERATE CLEAR, PACK, TOTAL TRANSFER, CROSS FOOT, AND SUMMARIZE DECIMAL FIELDS. THE UPSI AND TEST MACROS CONVERT THE UPSI BYTE TO CHARACTER SWITCHES AND TEST FOR ON/OFF CONDITIONS. THE BALRX MACROS GENERATES BASE REGISTER LOADING AND USING STATEMENTS. THE CLEAR MACRO WILL CLEAR ANY SIZE AREA TO ANY CHARACTER. THE MOVE MACRO WILL MOVE ANY SIZE AREA TO ANOTHER AREA. THE TYPE AND TYPEX MACROS GENERATE STANDARD TYPE ROUTINE. THIS IS USED BY OTHER MACROS FOR TYPING FILE NAMES DURING OPEN, PROGRAM CHECK IDENTIFICATION, I/O ERROR HANDLING, ETC. ADDITIONAL MACROS PROVIDE TABLE LOOK-UP, DATE HANDLING, PAGE NUMBERING, REGISTER SAVING, ZONE STRIPPING, ZERO SUPPRESSION, AND ZERO FILLING. THE MACROS ARE WRITTEN IN 8K BPS/BOS MACRO LANGUAGE. THEY ARE BEING REWRITTEN FOR DOS/TOS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-03.7.008 16K GENERAL /PURPOSE/
MACROS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.7.008

AUTHOR...BOBBY H. DILLEY

DIRECT INQUIRIES TO..

BOBBY H. DILLEY, ASSISTANT MANAGER OF EDP SYSTEMS,
THE HOBART MANUFACTURING CO., 711 PENNSYLVANIA AVE.,
TROY, OHIO 45373

TITLE...16K GENERAL PURPOSE MACROS
***C 4826 06.4 06.0 ***

THE 16K GENERAL PURPOSE MACROS ARE DESIGNED TO ASSIST THE PROGRAMMER USING BASIC ASSEMBLER LANGUAGE. THE MACROS FACILITATE PROGRAMMING THROUGH GENERATION OF PRE-TESTED CODING. INTRICATE CODING TECHNIQUES SUCH AS BASE REGISTER SETTINGS ARE REDUCED TO LOGICAL OPERATIONS ON THE PART OF THE PROGRAMMER. DECIMAL ARITHMETIC MACROS CONSIST OF ADD, SUBTRACT, MULTIPLY, DIVIDE, AND SHIFT. OPERATOR COMMUNICATION MACROS INCLUDE TYPE AND REPLY USING A 1052. DATA CONVERSION MACROS ARE CALJL TO TWO JULIAN DATES. OTHER GENERAL PURPOSE MACROS ARE BLANK, COMPARE, RANGE, EDIT, TABLE LOOK-UP, MOVE, PACK, UNPACK, ZEROP /ZERO PACKED FIELDS/ BASE REGISTER SETTING AND COMMUNICATION, AND SWITCH DEFINITION AND TESTING /SWON, SWOFF, IFON, IFOFF, SETON, SETOF, SETSB, IFONB, FTTR, FTNPD/. THE IFNUM MACRO IS USED TO VALIDATE NUMERIC FIELDS. THERE ARE 31 MACROS IN THIS PACKAGE. THESE MACROS ARE DESIGNED TO BE CATALOGUED INTO THE 16K DOS/TOS COMPILER AND THEREFORE WILL FUNCTION ON ANY S/360 THE 16K DOS/TOS COMPILER WILL FUNCTION ON. THE PACKED DECIMAL FEATURE IS REQUIRED FOR MOST OF THE MACROS. SOURCE LANGUAGE IS 16K DOS/TOS MACRO LANGUAGE.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR 7 TRACK REEL OF MAGNETIC TAPE. THE TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.

360D-03.7.009 PROGRAMMING /AIDS/ INDEX
SEQUENTIAL TESTING MACROS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.7.009

AUTHOR...B.H. DILLEY

DIRECT INQUIRIES TO..

B.H. DILLEY, HOBART MANUFACTURING CORP., TROY, OHIO

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CONTINUED FROM PRIOR PAGE--

TITLE...INDEX SEQUENTIAL FILENAMEC STATUS TESTING MACROS
 ***C 4826 02.0 ***

THE IFER AND IFERL MACROS WERE DESIGNED TO AID THE PROGRAMMER IN TESTING THE STATUS BYTE /FILENAMEC/ OF INDEX SEQUENTIAL FILES. THE PROGRAMMER IS ALLOWED TO REQUEST TESTING OF THE STATUS OF A GET, PUT, READ, WRITE OR SETL REQUEST AGAINST AN INDEX SEQUENTIAL FILE IN SYMBOLIC TERMS WHICH ARE MEANINGFUL TO HIM. PROGRAM CONTROL IS PASSED TO THE ROUTINE DIRECTED BY THE PROGRAMMER FOR FURTHER DETAIL ACTION. CONDITIONS TESTED FOR INCLUDE DISKERROR, WRONG LENGTH ERROR, SEQUENTIAL END OF FILE, NO HIT ON RANDOM RETRIEVAL, ILLEGAL FILE LIMITS, DUPLICATE RECORD, OVERFLOW AREA FULL, OVERFLOW RECORD INDICATION, PRIME AREA FULL, CYLINDER INDEX FULL, MASTER INDEX FULL, AND SEQUENCE ERRORS. SOURCE LANGUAGE IS 16K DOS/TOS MACRO LANGUAGE /BAL/. ONE USER WRITTEN MACRO /IFONB/ MACRO IS CALLED AS AN INNER MACRO. THE SOURCE FOR IT IS INCLUDED. A 16K MODEL 30 WITH A 1052 TYPEWRITER AND ONE OR MORE 2311 DISK DRIVES IS REQUIRED.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-03.7.010 DOS/TOS ASSEMBLER LANGUAGE
 MACROS CONSOLE COMMUNICATIONS
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-03.7.010

AUTHOR...E.L. ABT

DIRECT INQUIRIES TO..

E.L. ABT,IBM CORP.,520 BOYLSTON ST.,BOSTON, MASS. 02116

TITLE...WRITE TO OPERATOR MACROS FOR DOS/TOS ASSEMBLER LANGUAGE
 ***N ***

THIS SET OF FOUR MACROS PROVIDES DOS/TOS ASSEMBLER LANGUAGE PROGRAMS CONCERNING FACILITIES SIMILAR TO THAT AVAILABLE IN OPERATING SYSTEM/360. THE WTO MACRO ALLOWS THE USER TO TYPE UP TO 100 CHARACTERS ON SYSLOG, WHILE WTOR WILL IN ADDITION ACCEPT A RESPONSE OF UP TO 100 CHARACTERS. BOTH WTO AND WTOR LINK TO A CLOSED SUBROUTINE GENERATED BY THE WTOX MACRO. THIS ROUTINE IN TURN LINKS TO A STANDARD DTPCN GENERATED FROM THE TYPE MACRO. THE TYPE MACRO IS THE SAME AS USED BY THE MSG MACRO PROGRAM /360D-03.1.003/ AND CAN BE SHARED BY MSG MACRO PROCESSING. THE SAME CONSOLE FACILITIES MAY BE USED BY THE PROBLEM PROGRAM. THESE MACROS ARE WRITTEN IN DOS/TOS LANGUAGE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-03.7.011 A SYSTEM/360 MACRO FOR
 /SOUNDING/ THE AUDIBLE ALARM
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-03.7.011

AUTHOR...R.A. MACKINNON

DIRECT INQUIRIES TO..

MR. R.A. MACKINNON,IBM CORP.,520 BOYLSTON ST.,BOSTON, MASS.

TITLE...AUDIBLE ALARM
 ***N 01.0 02.0 ***

AUDIBLE ALARM IS A SYSTEM/360 MACRO DEFINITION FOR SUPPORT OF THE CONTROL ALARM FEATURE ASSOCIATED WITH THE CONSOLE TYPEWRITER. THIS FEATURE CAN BE ORDERED OR IS PROVIDED ON A REGULAR BASIS FOR SYSTEM/360 EXCEPT MODEL 30 WHERE IT IS AN RPG. CONTROL ALARM FEATURE IS USEFUL IN THOSE CASES WHERE UNUSUAL OPERATING CONDITIONS ARE DETECTED BY A PROGRAM AND THE OPERATOR MUST BE SUMMONED TO THE CONSOLE TYPEWRITER OF A SYSTEM/360 WHICH MAY BE RUNNING UNATTENDED OVER A PERIOD OF TIME. AUDIBLE ALARM IS WRITTEN AS A BASIC OPERATING SYSTEM MACRO USING THE EXCP, WAIT, AND CCB MACROS OF THAT OPERATING SYSTEM. CONSEQUENTLY, THE MACRO COULD READILY BE PLACED IN A DOS OR TOS SOURCE STATEMENT LIBRARY. OBJECT MACHINE REQUIREMENTS BEYOND THE CONTROL ALARM FEATURE WILL BE DICTATED BY THE PROGRAM WITHIN WHICH AUDIBLE ALARM HAS BEEN INVOKED.

360D-03.8.001 RPG PRINT VARIABLE LENGTH
 CONSOLE MESSAGES SUBROUTINE
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-03.8.001

AUTHOR...W.B. MAHER

DIRECT INQUIRIES TO..

W.B. MAHER,IBM CORP.,2640 CANAL ST.,NEW ORLEANS, LA. 70119

TITLE...CONSOLE MESSAGE SUBROUTINE FOR S/360 RPG
 ***N 01.4 ***

THIS SUBROUTINE WILL PRINT VARIABLE LENGTH CONSOLE MESSAGES INITIATED BY AN RPG PROGRAM ON A 1052 CONSOLE PRINTER. SINCE THE CONSOLE IS UNSUPPORTED BY SYSTEM/360 RPG, A SUBROUTINE SUCH AS THIS ONE WILL BE NECESSARY TO UTILIZE THE CONSOLE. TO USE THE SUBROUTINE THE RPG PROGRAMMER STATES THE MESSAGE AND ITS LENGTH AND EXITS IN HIS CALCULATION SPECIFICATIONS. THE PROGRAM IS WRITTEN IN ASSEMBLY LANGUAGE AND WILL RUN UNDER THE BASIC OPERATING SYSTEM.

360D-03.8.002 BPS FORTRAN SUBROUTINES
 FORTRAN-COMMERCIAL
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-03.8.002

AUTHORS..MR. J.L. WISE MR. R.B. BADEN MR. R.K. LOUDEN

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CONTINUED FROM PRIOR COLUMN--

DIRECT INQUIRIES TO..
 MR. J.L. WISE,IBM CORP.,NEW YORK FIELD SYSTEMS CENTER,
 625 MADISON AVE.,NEW YORK, N.Y.

TITLE...FORCOM-360
 ***N 00.1 ***

THE FORCOM-360 PACKAGE IS A MODIFICATION OF THE 1130 COMMERCIAL SUBROUTINE PACKAGE /1130-SE-025X/. IT IS A SET OF SEVEN FORTRAN SUBROUTINES WHICH CAN BE ASSEMBLED AND USED WITH 360 BPS FORTRAN AND OTHER IBM 360 FORTRAN COMPILERS OF WHICH THE BPS FORTRAN LANGUAGE IS A SUBSET. IT PROVIDES THE FORTRAN USER WITH THE ABILITY TO PERFORM THE BASIC FUNCTIONS OF COMMERCIAL PROGRAMMING. THE FOLLOWING COMMERCIAL CAPABILITIES ARE PROVIDED- FLOATING DOLLAR SIGN AND ASTERISK CHECK PROTECTION, ALPHAMERIC MOVE AND COMPARE OPERATIONS, THE ABILITY TO READ UNFORMATTED RECORDS, COMPLETE INPUT/OUTPUT CHARACTER EDITING, WITH ZONE PUNCH MANIPULATION. THE PACKAGE IS MODULAR IN DESIGN, AND CONSISTS OF THE FOLLOWING SUBROUTINES- MOVE, EDIT, GET, PUT, NCOMP, NZONE, FILL.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-03.8.003 SUBROUTINE DETERMINE
 DAY-OF-WEEK

AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-03.8.003

AUTHOR...RICHARD L. CONNER

DIRECT INQUIRIES TO..

RICHARD L. CONNER,IBM WORLD TRADE CORP.,201 E. 42ND ST.,
 NEW YORK CITY, N.Y.

TITLE...WEEKDAY
 ***N 01.4 ***

WEEKDAY IS A SUBROUTINE WHICH WILL DETERMINE THE DAY OF THE WEEK FOR DATE IN THE GREGORIAN CALENDAR FROM AD OCTOBER 15, 1582, TO FEBRUARY 29, 2000. IT OPERATES ON ANY SYSTEM/360 THAT HAS THE STANDARD DECIMAL FEATURE INSTRUCTIONS. IT IS INVOKED BY THE OS/TOS/DOS CALL STATEMENT - THUS, IT CAN BE USED BY PROGRAMS CODED IN ASSEMBLER LANGUAGE, COBOL, PL/I OR FORTRAN. WEEKDAY OCCUPIES FEWER THAN 200 BYTES. IT IS CODED IN ASSEMBLER LANGUAGE AS A SERIALLY-REUSABLE SUBROUTINE.

360D-03.8.004 DOS RPG DEBUGGING
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-03.8.004

AUTHOR...MR. G.P. SAMMONS

DIRECT INQUIRIES TO..

MR. G. SAMMONS,IBM CORP.,2911 STATE ST.,ERIE, PA.

TITLE...RPGAID - AN RPG DEBUGGING TOOL UNDER DOS
 ***N 04.2 03.5 ***

THE RPGAID SUBROUTINE IS AN ASSEMBLER ROUTINE WHICH LISTS ALL THE INDICATORS DURING THE EXECUTION OF AN RPG PROGRAM UNDER DOS. IT IS A VALUABLE AID IN DEBUGGING COMPLEX RPG PROGRAMS, ESPECIALLY ONES INVOLVING MATCHING RECORDS. IT CAN ALSO PROVE USEFUL TO A PROGRAMMER WHO IS JUST BEGINNING TO WORK WITH RPG, SINCE HE CAN CHECK WHAT HE BELIEVES TO BE THE LOGIC FLOW OF THE PROGRAM AGAINST THE INDICATOR LISTING. ONLY 10N CARDS HAVE TO BE PLACED IN THE CALCULATION SPECIFICATIONS OF THE MAIN PROGRAM. THE AUTOLINK FEATURE OF DOS ESTABLISHES THE REQUIRED LINKAGE. A MAXIMUM OF 43 INDICATORS, INCLUDING NUMERIC, LEVEL, HALT, AND THE MATCHING RECORDS INDICATOR CAN BE DISPLAYED. WHEN THE EXIT IS PLACED AT THE END OF THE CALCULATION SPECIFICATIONS, THE INDICATORS SHOWN ARE THOSE ON PRIOR TO ENTERING THE OUTPUT SPECIFICATIONS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-03.8.005 SUBROUTINES TO PERFORM
 FORTRAN FUNCTIONS NOT AVAILABLE IN BPS OR FORTRAN E
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-03.8.005

AUTHORS..MR. J.E. CAIN MR. R.E. MEYERS

DIRECT INQUIRIES TO..

MR. J.E. CAIN,IBM CORP.,P.O. BOX 3467,SANTA BARBARA, CALIF.

TITLE...BINARY FUNCTIONS ADDED TO FORTRAN IV /BPS/
 ***N 41.0 06.6 ***

THESE SUBROUTINES PERFORM FORTRAN FUNCTIONS NOT AVAILABLE IN 360 BPS OR E LEVEL FORTRAN. THE PACKAGE INCLUDES ,,OR,, AND ,,AND,, FUNCTIONS AND SUBROUTINES; SHIFT RIGHT AND LEFT, AND A RANDOM NUMBER GENERATOR WITH ITS CORRESPONDING RANDOM NUMBER SET. THESE ROUTINES WERE WRITTEN IN BASIC ASSEMBLER LANGUAGE, AND HAVE BEEN USED IN BOTH BPS FORTRAN AND PRE-BETA FORTRAN E LEVEL PROGRAMS. THESE ROUTINES REQUIRE APPROXIMATELY 1200 BYTES IN TOTAL AND CAN BE USED INDIVIDUALLY. THE MACHINE REQUIREMENTS ARE THE SAME AS ARE NEEDED BY THE FORTRAN BEING USED.

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360D-03.8.006 OS/360 DIRECT ACCESS ACCOUNT ROUTINE

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.8.006

AUTHOR...MR. R.M. PLACE

DIRECT INQUIRIES TO..

MR. R.M. PLACE, XEROX CORP., INFORMATION SYSTEMS DIV.,
1350 JEFFERSON RD., ROCHESTER, N.Y. 14623

TITLE...XEROX INFORMATION SYSTEM DIVISION ACCOUNT ROUTINE
S XEC ASMA 01.4 29.1 19.5 13.1

THE PURPOSE OF THE XEROX ACCOUNT ROUTINE IS TO PROVIDE A FACILITY TO RECORD THE JOB TO JOB ACCOUNTING INFORMATION ON DIRECT ACCESS UNDER CONTROL OF OPERATING SYSTEM/360. THE XEROX ACCOUNT ROUTINE IS ENTERED AT STEP AND JOB TERMINATION TIME VIA AN EXT. FROM THE IBM JOB SCHEDULER. IT IS PLACED IN THE OPERATING SYSTEM WITH THE METHOD DESCRIBED IN THE SYSTEM PROGRAMMERS GUIDE /FORM C28-6550/. THE ROUTINE IS READ ONLY AND REENTERABLE. ITS SIZE IS 3000 BYTES PLUS 1000 BYTES OF DYNAMIC CORE. THE ACCOUNT ROUTINE UTILIZES AN EIGHTY CHARACTER CARD IMAGE DATA SET ON A DIRECT ACCESS DEVICE. ACCOUNTING DATA IS RECORDED AT IPL TIME, STEP TERMINATION AND JOB TERMINATION TIME.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-03.8.007 DOS TPLAB SUBROUTINES

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-03.8.007

AUTHOR...MR. W.R. MAPLE

DIRECT INQUIRIES TO..

MR. W.R. MAPLE, IBM CORP., 675 W. MARKET, LIMA, OHIO

TITLE...EASING DOS TPLAB RESTRICTIONS
***N 03.4 ***

CURRENT IMPLEMENTATION OF THE DOS VERSION 2 TPLAB CARD MAKES IT DIFFICULT TO USE. THE DIFFICULTY LIES IN THE REQUIREMENT FOR ALL FIELDS - REEL SERIAL, ETC. - TO BE PUNCHED PRIOR TO USE. THIS PACKAGE CONSISTS OF TWO TRANSIENT ROUTINES INSERTED IN THE STRING OF ROUTINES USED TO OPEN FILES. THESE ROUTINES CAUSE, IN GENERAL, ONLY THOSE FIELDS THAT ARE PUNCHED TO BE CHECKED WHILE THE FIELDS THAT ARE BLANK WILL BE FILLED WITH PROPER DATA BEFORE LABEL CHECKING IS PERFORMED. RESTRICTION FACILITIES ARE PROVIDED AS WELL AS AN OPTIONAL INDICATION ON SYSLOG THAT OPENING IS OCCURRING. THE MACHINE CONFIGURATION REQUIRED IS THE SAME AS THAT FOR DOS/360.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-04.0.003 PROGRAM TO LIST NON-RESERVED KEY ELEMENT NAMES, DATA NAMES, OR PARAGRAPH NAMES

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.0.003

AUTHOR...D.E. FOWLER

DIRECT INQUIRIES TO..

D.E. FOWLER, IBM CORP., 9045 LINCOLN BLVD.,
LOS ANGELES, CALIF. 90045

TITLE...COBOL CROSS REFERENCE PROGRAM
***N 02.0 06.7 ***

THE COBOL LANGUAGE HAS ENJOYED WIDE ACCEPTANCE AMONG IBM CUSTOMERS AS THE CODING LANGUAGE FOR COMMERCIAL APPLICATIONS. THE LANGUAGE PROVIDES EXCELLENT DOCUMENTATION AND IS EASY TO WRITE. HOWEVER, COBOL DOES NOT PROVIDE AS A NORMAL BY-PRODUCT, DOCUMENTATION TO AID THE PROGRAMMER IN EITHER CONVERSION EFFORTS OR DEBUGGING EFFORTS. THE COBOL CROSS REFERENCE PROGRAM LISTS EACH NON-RESERVED KEY ELEMENT /FILE NAME, DATA NAME, OR PARAGRAPH NAME/ AND REPORTS THE CARD IMAGE OF EVERY STATEMENT WHICH REFERS TO THAT ELEMENT. AT A GLANCE, A PROGRAMMER CAN SEE THE IMPACT OF A FORMAT CHANGE OR A DELETION. THE PROGRAM FACILITATES CONVERSION BY ISOLATING ALL ACTIONS ON KEY ELEMENTS FOR REVIEW AND REAPPRAISAL. THE PROGRAM IS WRITTEN IN COBOL AND IS PRESENTLY OPERATIONAL ON SYSTEM/360 UNDER OPERATING SYSTEM/360.

360D-04.1.001 OS/360 CORE-DUMP BCD-HEX-OUTPUT

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.1.001

AUTHOR...R.G. BROWN

DIRECT INQUIRIES TO..

R.G. BROWN, IBM CORP., 59 MAIDEN LANE, NEW YORK, N.Y.

TITLE...OS/360 CORE DUMP MODULE
***N 08.4 08.5 04.6 ***

THIS S/360 MODULE ENABLES THE PROGRAMMER TO OBTAIN A PRINT-OUT OF ANY OR ALL OF MAIN STORAGE ASSOCIATED WITH HIS PROGRAM WHILE IT IS EXECUTING. THE THREE FULL-WORD INPUT PARAMETERS TO BE SPECIFIED ARE--

1. THE ADDRESS OF THE LOCATION TO BE PRINTED.
2. THE LENGTH OF THE AREA IN BYTES.
3. THE OUTPUT FORMAT TO BE USED.

THERE ARE THREE CHOICES OF OUTPUT FORMAT--

1. BCD ONLY.
2. HEX ONLY.
3. BOTH BCD AND HEX -- THE BCD CHARACTER ON PRINT LINE 1

CONTINUED FROM PRIOR COLUMN--

WITH THE ZONE AND NUMERIC PORTION OF THE HEX CHARACTER DIRECTLY UNDERNEATH ON LINES 2 AND 3 RESPECTIVELY. THE MODULE IS OPTIMIZED FOR MINIMUM EXECUTION TIME. IT CAN BE EXECUTED ON ANY S/360 WITH THE STANDARD INSTRUCTION SET AND OCCUPIES 11,574 BYTES OF MAIN STORAGE. THE SOURCE LANGUAGE IS ASSEMBLER AND IT RUNS UNDER THE OPERATING SYSTEM. THE MODULE MAY BE ACCESSED IN COBOL VIA THE CALL STATEMENT OR IN ASSEMBLER LANGUAGE VIA THE CALL OR LINK MACRO-INSTRUCTIONS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-04.1.002 1620 EMULATOR MAPPED CORE DUMP PROGRAM

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.1.002

AUTHOR...J.H. CARMAN

DIRECT INQUIRIES TO..

J.H. CARMAN, IBM CORP., DEPT. 235, ENDICOTT, N.Y.

TITLE...1620 EMULATOR MAPPED CORE DUMP PROGRAM
***N 02.0 04.0 11.1 ***

USED WITH THE 1620 COMPATIBILITY FEATURE, THIS PROGRAM DUMPS 1620 MAPPED CORE ON THE PRINTER. A 16K 360 MODEL 30 WITH A CARD READER, PRINTER, CONSOLE TYPEWRITER, AND THE 1620 EMULATOR FEATURE IS THE MINIMUM CONFIGURATION REQUIRED. THE PROGRAM IS WRITTEN IN 8K BOS.

360D-04.4.001 DEBUGGING ASSEMBLE TEST

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.4.001

AUTHOR...MR. M.F. THRASHER

DIRECT INQUIRIES TO..

MR. JOHN L. WILLIAMS, IBM CORP., 425 PARK AVE., NEW YORK, N.Y.

TITLE...PAT/360 A PROCEDURE FOR AUTOMATIC TESTING OF SYSTEM/360 PROGRAMS
***N ***

PAT/360 IS A MODIFICATION OF THE S/360 BPS 8K TAPE ASSEMBLY SYSTEM TO PROVIDE ASSEMBLE-AND-TEST CAPABILITY WITHIN ONE RUN. THE MAIN PURPOSE IS TO MAKE REMOTE TESTING PRACTICAL AND TO IMPROVE THE PRODUCTIVITY OF TESTING. A SIGNIFICANT ADVANTAGE IS THE ABILITY TO MAINTAIN PROGRAMS IN THEIR SOURCE LANGUAGE THROUGHOUT DEVELOPMENT. IT IS ALSO INTENDED FOR LOCAL TESTING WITH ON-LINE INPUT AND OUTPUT. THE DEBUGGING AIDS PROVIDED CAN BE USED OUTSIDE OF STRICT PAT/360 USAGE. THESE ARE TAPE FILE GENERATION, TAPE PRINT AND STORAGE PRINT ROUTINES THAT CAN BE CALLED VIA CONTROL CARDS AS NEEDED. THE REMOTE PROCEDURE PREPARES A TEST TAPE ON THE IBM 1401 USING THE PAT INPUT PROGRAM, PERFORMS THE ASSEMBLY AND TEST ON THE S/360 USING THE PAT SUPERVISOR PROGRAM AND PRODUCES THE TEST OUTPUT ON THE IBM 1401 USING THE PAT OUTPUT PROGRAM. THE PAT/360 SYSTEM HAS BEEN PRIMARILY TESTED AT THE 16 AND 32K LEVELS WITH SOME FURTHER TESTING AT 64 AND 128K.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED. THE OPTIONAL SOURCE CARDS ARE AVAILABLE ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE. THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360D-04.4.002 MODEL 20 BOS RPG TESTING ASSEMBLE DIAGNOSTICS

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.4.002

AUTHORS...ROBERT W. HEALD E. RAYMOND CULLOM

DIRECT INQUIRIES TO..

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TITLE...MODEL 20 CARD RPG TESTING WITH 8K BOS RPG
***N 02.0 04.3 ***

TWO SERIES OF S/360 PROGRAMS ARE WRITTEN IN S/360 8K BOS RPG-- ONE SERIES IS USED TO ASSEMBLE FOR DIAGNOSTICS S/360 MODEL 20 CARD RPG PROGRAMS., THE OTHER IS USED TO ASSEMBLE AND TEST THEM. NEITHER REQUIRES ANY CHANGES IN THE MODEL 20 SOURCE DECK, AND BOTH RUN ON S/360 USING 8K BOS RPG. THE USER OF THESE PROGRAMS NEEDS TO PLACE ONE SET OF JOB CONTROL STATEMENTS IN FRONT OF THE MODEL 20 CARD RPG SOURCE DECK TO USE THE ENTIRE SERIES OF PROGRAMS. THIS MINIMIZES THE CARD DECK PREPARATION TIME FOR THE PERSON UNFAMILIAR WITH 8K BOS OPERATION. ONE 2311, THREE TAPE DRIVES AND A 16K SYSTEM FOR OPERATING 8K BOS RPG IS REQUIRED. THE RECOMMENDED PROCEDURE FOR USE OF THESE TWO SERIES OF PROGRAMS IS TO USE THE ASSEMBLE FOR DIAGNOSTICS PROGRAMS UNTIL ALL SERIOUS DIAGNOSTIC ERRORS ARE ELIMINATED. THIS WILL GENERALLY RESULT IN A TIME SAVING SINCE THE DIAGNOSTIC ONLY OPERATION IS FASTER THAN THE ASSEMBLE AND TEST OPERATION.

THE BASIC MACHINE READABLE MATERIAL IS A 9-TRACK DISTRIBUTION TAPE REEL WHICH WILL BE SUPPLIED BY THE PROGRAM INFORMATION DEPARTMENT.

360D-04.4.003 OS/360 FORTRAN DIAGNOSTIC TESTING PROGRAM-ERRORS

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.4.003

AUTHORS...W.P. GEWIN

J.G. ROGERS

Contributed Programs

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CONTINUED FROM PRIOR PAGE--

DIRECT INQUIRIES TO..

W.P. GEWIN,630 ELLIS ST.,AUGUSTA, GA. 30901

TITLE...SETDF - A DIAGNOSTIC ROUTINE FOR OS/360 FORTRAN
***N ***

THIS SUBROUTINE IS FOR USE WITH OS/360 FORTRAN OBJECT PROGRAMS. IT PROVIDES HELPFUL DIAGNOSTIC INFORMATION WHEN THE FORTRAN LIBRARY ROUTINES DETECT PROGRAM ERRORS. THE PACKAGE IS WRITTEN MAINLY IN OS/360 ASSEMBLER LANGUAGE WITH A FORTRAN CODED ROUTINE FOR MESSAGE OUTPUTTING. THE ROUTINE PROVIDES-
- ,,TCHMM,, ERROR CODE /WITH ENGLISH DESCRIPTION WHEN THE ERROR WAS DETECTED BY IBCOM OR FIDCS/.
- CURRENT DATA SET REFERENCE NUMBERS.
- BACK TRACE OF ESCLS WITH ISN/S, SUBROUTINE NAMES AND CONTENTS OF REGISTERS.
CAN BE USED ON ANY MACHINE SUPPORTING OS/360 FORTRAN E.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-04.4.005 OS/360 2250 DISPLAY ON-LINE
DEBUGGING

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-04.4.005

AUTHOR...MR. L. ZIMMERMAN

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TITLE...GBUG - A GRAPHIC TOOL FOR ON-LINE PROGRAM DEBUGGING
***N 00.6 08.7 ***

THIS PROGRAM ALLOWS ON-LINE DEBUGGING TO BE DONE VIA AN IBM 2250 DISPLAY UNIT. DEBUGGING OPTIONS ARE DISPLAYED ON THE CRT AND MAY BE SELECTED FOR USE WITH THE LIGHT PEN. OPTIONS INCLUDE /1/ DISPLAY AND ALTERATION OF SELECTED MEMORY LOCATIONS, /2/ IN BOTH DECIMAL AND HEXADECIMAL, /3/ GENERAL AND FLOATING POINT REGISTERS, /4/ MEMORY DUMPS, WITH CRT OUTPUT, /5/ ADDRESSING RELATIVE TO THE USERS PROGRAM ORIGIN, /6/ BREAKPOINTS, /7/ AUTOMATIC INTERCEPTION OF PROGRAM EXCEPTIONS AS THEY OCCUR, WITH APPROPRIATE DIAGNOSTICS DISPLAYED, /8/ ABILITY TO RETURN CONTROL TO THE USERS PROGRAM AT ANY POINT. USE OF A DISPLAY PROVIDES A CONSIDERABLE ADVANTAGE OVER CONVENTIONAL TERMINALS IN OPERATOR CONVENIENCE AND ESPECIALLY IN SPEED OF REQUESTS AND REPLIES. GBUG OPERATES UNDER OS/360 OR SPS/360 CONTROL /ANY RELEASE SUPPORTING EXPRESS GRAPHICS/ AND REQUIRES A 4K IBM 2250 WITH CHARACTER GENERATOR, A/N KEYBOARD AND LIGHT PEN.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 2400 FOOT REEL OF MAGNETIC TAPE. THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED.

360D-05.1.001 REMOTE ACCESS COMPILER
EXECUTE TIME-SHARE MONITOR

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-05.1.001

AUTHORS..MR. T. MCDERMOTT JAN SISK

DIRECT INQUIRIES TO..

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TITLE...REMOTE ACCESS COMPUTING SYSTEM
***N 03.4 06.3 ***

RACS IS A PROGRAM TO ALLOW THE 360 MOD. 30, 40, AND 50 TO COMPILE AND EXECUTE CONCURRENTLY, IN A TIME-SHARED, TIME-SLICED MODE OF OPERATION, BPS FORTRAN IV AND BAP JOBS FROM UP TO 14 REMOTE 1050 AND THE ONLINE CARD READER AND PRINTER. A 360 MOD. 30, 40, OR 50 WITH 64K CORE, ONE 2311, A 2702, AND THE ABOVE-MENTIONED I/O IS THE MINIMUM MACHINE REQUIRED. INPUT TO RACS IS ACCORDING TO RULES FOR PREPARING INPUT FOR BPS FORTRAN IV AND BAP AS OUTLINED IN IBM PUBLICATION SRL FORMS NUMBERED C28-6504 AND C28-6503, RESPECTIVELY. THE COMPILER AND ASSEMBLER THAT IS AN INHERENT PART OF THE SYSTEM IS AN EARLY VERSION OF AN IBM COMPILER AND ASSEMBLER AND DOES NOT REPRESENT THE LATEST VERSION OF THOSE SYSTEMS. BPS FORTRAN CORRECTIONS HAVE BEEN INSERTED UP TO VERSION 2 OF THAT SYSTEM. IT HAS EXTENSIVE MODIFICATIONS TO MAKE IT DISK RESIDENT.

THIS SYSTEM IS BEING MADE AVAILABLE TO SATISFY THE NEED FOR 360 REMOTE COMPUTING AND TIME-SHARING SOFTWARE. ADDITIONALLY, ITS USE AS A DISK-ORIENTED PROCESSOR AND SOURCE OF 1050-2702 CODING WILL MAKE IT VALUABLE TO FIELD INSTALLATIONS.

TO OBTAIN THE BASIC PROGRAM MATERIAL TWO FULL 2400 FOOT REELS OF MAGNETIC TAPE ARE REQUIRED. THE TAPES REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED.

360D-05.1.003 CSP BPS/BOS INTERFACE 1400
COMPATIBILITY

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-05.1.003

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TITLE...CSP/360 /COMPATIBILITY SUPPORT PACKAGE/
***N 11.1 ***

CSP/360 /COMPATIBILITY SUPPORT PACKAGE/ IS A SET OF PROGRAMS INTERFACING THE 1401/1440/1460 COMPATIBILITY FEATURE ON THE MODEL 30 AND WILL FUNCTION WITH THE FRAMEWORK OF BPS-BOS STAND ALONE. THE CSP/360 PACKAGE PROVIDES MEANS BY WHICH 1400 PROGRAMS CAN BE EXECUTED IN COMPATIBILITY MODE ON THE MODEL 30 IN A STACKED JOB ENVIRONMENT INTERMIXING 1400 PROGRAMS AND NORMAL 360 PROGRAMS IN THE INPUT JOB STREAM. ANOTHER

CONTINUED FROM PRIOR COLUMN--

PROVISION IS THE STANDARDIZED INTERFACE TO THE CSP SUPERVISOR WHICH ALLOWS USER ATTACHMENT OF CUSTOM ROUTINES FOR DEVICE SIMULATION OR SUBSTITUTION USING THE PROGRAM MODE SWITCH. DEVICE ROUTINES FOR 1402 ARE A PART OF THE SUPERVISOR AS PRESENTED. GENERALIZED DEVICE ROUTINES FOR MAGNETIC TAPE, AND 1405 SIMULATION ARE ALSO PROVIDED. REQUIRES SYSTEM/360 MODFI 30 WITH 1400 I/O COMPATIBILITY FEATURES; PMS AND DECIMAL ARITHMETIC FEATURES. OTHER REQUIREMENTS ARE THOSE NEEDED TO SATISFY BPS OR BOS.

360D-05.1.004 MULTI-PROGRAMMING
PERIPHERAL PROCESSING INPUT/OUTPUT TASKS UTILITIES SUPPORT
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-05.1.004

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TITLE...LINCOLN LABORATORY MULTI-PROGRAMMING SUPERVISOR /LLMPS/
S LL MPS1 05-2 00.1 08.8 07.6

A SUPERVISOR PROGRAM HAS BEEN WRITTEN FOR THE IBM SYSTEM/360 WHICH ALLOWS THE MULTIPROGRAMMING OF SEVERAL JOBS, EACH WITH ITS OWN INPUT-OUTPUT REQUIREMENTS. A JOB PROGRAM OPERATES IN PROBLEM STATE, AND REALIZES ALL OF ITS INPUT/OUTPUT DEMANDS THROUGH SUPERVISOR CALLS. I/O OPERATIONS OF ONE JOB ARE OVERLAPPED WITH THOSE OF OTHER JOBS, AND CAN ALSO BE OVERLAPPED WITHIN A SINGLE JOB. EACH JOB IS WRITTEN COMPLETELY INDEPENDENT OF ALL OTHER JOBS. A JOB IS INITIATED BY A REQUEST TYPED ON THE CONSOLE TYPEWRITER AND RUNS, WITH FREQUENT I/O WAITS, UNTIL IT CALLS FOR ITS OWN TERMINATION, OR IS TERMINATED BY THE OPERATOR VIA THE CONSOLE TYPEWRITER. DURING THE OPERATION OF THE SUPERVISOR, A JOB CAN BE INITIATED, CAN TERMINATE, AND CAN BE INITIATED AS OFTEN AS DESIRED. ALL JOBS RESIDE IN CORE TOGETHER WITH THE SUPERVISOR. TO MINIMIZE SPACE, BUFFERS ARE ASSIGNED AT THE INITIATION OF A JOB AND ARE RELEASED UPON TERMINATION. JOB PROGRAMS MAY BE WRITTEN AS RE-ENTRANT, WHEREBY A SINGLE COPY OF A JOB PROGRAM CAN BE ACTIVE FOR MORE THAN ONE TASK. RE-ENTRANT JOBS, THUS, HAVE DIFFERENT BUFFER AREAS FOR EACH DISTINCT INITIATION. WHEN A JOB IS STARTED, THE OPERATOR SPECIFIES THE I/O DEVICES REQUIRED /E.G., A PARTICULAR PRINTER AND TAPE UNIT FOR A PRINT JOB/, AND ANY INITIAL PARAMETERS DESIRED /E.G., TAPE DENSITY SETTING, INSTRUCTIONS TO SKIP TO A SPECIFIED LISTING, INSTRUCTIONS TO STOP AFTER A TAPE MARK, AND SO FORTH/. THE JOB IS THEN STARTED IF THE REQUISITE I/O DEVICES AND BUFFERS ARE AVAILABLE. THE I/O DEVICES REMAIN ASSIGNED TO THAT JOB UNTIL IT TERMINATES. HOWEVER, AT ANY TIME A JOB CAN ISSUE MESSAGES TO THE OPERATOR VIA THE CONSOLE TYPEWRITER. MULTI-PROGRAMMING IS ACHIEVED BY CENTRAL HANDLING OF I/O, AND BY THE FACT THAT THE JOBS RUN ARE, IN EVERY CASE, I/O BOUND. THUS, WHILE A JOB IS WAITING ON I/O, OTHER JOBS CAN MAKE USE OF THE CENTRAL PROCESSOR. WHEN AN I/O DEVICE HAS COMPLETED ITS OPERATION, THE JOB WHICH STARTED THE I/O OPERATION, THROUGH A SUPERVISOR CALL, IS PERMITTED TO CONTINUE. NO STANDARD CHANNEL PROGRAMS, ERROR ROUTINES ARE BUILT INTO THE SUPERVISOR, BUT A FAMILY OF SUBROUTINES IS DEVELOPING WHICH JOBS CAN CALL UPON TO PROVIDE ERROR RECOVERY. UNIT CHECK AND UNIT EXCEPTION INDICATIONS ARE PROVIDED TO THE JOB AT THE TIME THE JOB EXECUTES THE SUPERVISOR CALL TO WAIT ON A DEVICE.

THE CONVENTIONS WHICH A JOB PROGRAM MUST FOLLOW DEAL WITH SUPERVISOR CALL CALLING SEQUENCES SINCE IT CANNOT USE PRIVILEGED INSTRUCTIONS. A JOB CONTROLS ITS INPUT/OUTPUT BY ISSUING A SUPERVISOR CALL TO EXECUTE A CHANNEL COMMAND. /COMMAND CHAINING, DATA CHAINING, AND TICING ARE ALLOWED, BUT PCI/S ARE PROHIBITED./ IF CERTAIN SUGGESTIONS ARE FOLLOWED IN THE WRITING OF CHANNEL PROGRAMS, THE SYSTEMS EFFICIENCY IS IMPROVED, HOWEVER, THE SUPERVISOR DOES NO POLICING OF CHANNEL PROGRAMS. ERRORS COMMITTED IN THE RUNNING OF A JOB CAUSE THE JOB TO BE TERMINATED WITH A JOB DUMP. STORAGE PROTECTION IS NOT USED AND THUS ONE CANNOT GUARD AGAINST ALL ERRORS, HENCE, ALL JOB PROGRAMS SHOULD BE DEBUGGED BEFORE THEY ARE INCLUDED IN THE SYSTEM.

- OUR LIBRARY OF JOBS INCLUDES-
1. SYSTEM JOBS - TO LIST THE JOBS IN THE SYSTEM, TO LIST THE ACTIVE JOBS, I.E., TASKS ON TO TERMINATE AN ACTIVE JOB.
 2. TAPE MOVE JOBS - SKIPS FILES OR RECORDS EITHER FORWARD OR BACKWARD AS DESIRED.
 3. PRESTORE JOB - PLACES BCD OR BINARY CARD IMAGES ONTO TAPE WITH STANDARD LOOK-AHEAD CHARACTERS.
 4. PRINT JOB - READS, DEBLOCKS, AND PRINTS A BCD TAPE WITH FORTRAN CARRIAGE CONTROL CHARACTERS.
 5. PUNCH JOB - READS, DEBLOCKS, AND PUNCHES CARD IMAGES FROM TAPE.
 6. TAPE COPY AND COMPARE JOB - COPIES AND COMPARES A MIXED MODE TAPE OF ANY DENSITY.
 7. TAPE DUMP JOBS - DUMPS A 7-TRACK TAPE IN BCD OR OCTAL FORMAT OR A 9-TRACK TAPE IN HEXIDECIMAL OR EBCDIC.

THE BASIC MACHINE READABLE MATERIAL CAN BE ORDERED ON EITHER 9- OR 7-TRACK TAPE. IF 7-TRACK IS REQUESTED THE DATA CONVERSION FEATURE IS REQUIRED. EITHER 9- OR 7-TRACK TAPE MUST BE INDICATED ON THE PROGRAM REQUEST CARD. IF NOT SPECIFIED, 9-TRACK TAPE WILL BE FORWARDED. THE ONE REEL OF TAPE NECESSARY TO OBTAIN THE PROGRAM MATERIAL MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE SHOULD BE 2400 FEET IN LENGTH.

360D-05.1.005 BOS/DDDS/TDS 1400
COMPATIBILITY SUPERVISE MONITOR

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-05.1.005

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Contributed Programs

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TITLE...COS - COMPATIBILITY OPERATING SYSTEM
 ***N 11.1 ***

COS IS A MONITOR PROGRAM OPERATING IN CONJUNCTION WITH THE BASIC OPERATING SYSTEM, THE DISK OPERATING SYSTEM OR THE TAPE OPERATING SYSTEM. ITS PURPOSE IS TO SUPERVISE AND LEND SERVICES TO THE 1400 SERIES PROGRAMS RUNNING UNDER COMPATIBILITY ON THE MODEL 30 SYSTEM/360. COS PROVIDES FOR -
 - INCREASED THROUGHPUT, SINCE 1400 I/O IS PERFORMED IN S/360 MODE AND OVERLAPPED WITH PROCESSING ACCORDING TO THE CHANNEL CONFIGURATION OF THE S/360.
 - 100 PERCENT STACKED JOB PROCESSING. 1400 AND S/360 PROGRAMS CAN BE INTERMIXED IN THE JOB STREAM WITHOUT OPERATOR INTERVENTION.
 - 2311 DISK DRIVES CAN BE ATTACHED TO THE SELECTOR CHANNELS AND TWO 1311/5 MAY BE SIMULATED ON EACH 2311.
 - COMPATIBILITY SUPPORT FOR 1405 AND 1301 DISK DRIVES AND 1404 PRINTER.
 - EXITS FOR USER MODIFICATIONS TO SUPPORT OTHER DEVICES NOT SUPPORTED BY HARDWARE COMPATIBILITY.
 - MULTIPROGRAMMING OR SPOOLING MAY BE IMPLEMENTED WHILE EXECUTING A BACKGROUND 1400 PROGRAM. ALSO, THE 1400 REFERENCED CARD READER, CARD PUNCH AND/OR PRINTER MAY BE SIMULATED ON A MAGNETIC TAPE UNIT OR A 2311 DISK UNIT.
 - ELIMINATION OF COMPATIBILITY INITIALIZATION DECKS /CID/.
 - OPERATOR SERVICE FUNCTIONS INITIATED FROM THE CONSOLE PROVIDE A WIDE VARIETY OF ADDITIONAL COMPATIBILITY SUPPORT.
 - THE ABILITY TO CATALOG AND FETCH 1400 PROGRAMS FROM THE S/360 CORE IMAGE LIBRARY.
 - NO MODIFICATION NEED BE MADE TO ANY 1400 PROGRAMS.

MINIMUM SYSTEM REQUIREMENTS - 32K SYSTEM/360 MODEL 30... DECIMAL ARITHMETIC... BASIC 1400 COMPATIBILITY FEATURE... PROGRAMMED MODE SWITCH... REQUIREMENT FOR OPERATING SYSTEM USED MUST BE SATISFIED. IT IS ALSO RECOMMENDED THAT THE I/O COMPATIBILITY FEATURES BE INCLUDED.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-05.1.007 OS/360 DEVICES OPERATION
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-05.1.007

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TITLE...HOUSTON AUTOMATIC SPOOLING PRIORITY SYSTEM
 ***N ***

THE HOUSTON AUTOMATIC SPOOLING PRIORITY SYSTEM IS AN AUTOMATIC SYSIN/SYSOUT/SYSPUNCH SPOOLING PACKAGE WITH THE ABILITY TO OPERATE AN ESSENTIALLY UNLIMITED NUMBER OF PERIPHERAL DEVICES CONCURRENTLY IN CONJUNCTION WITH OS/360 PROCESSING UTILIZING A VARIABLE NUMBER OF 2311 AND/OR 2314 DIRECT-ACCESS MODULES FOR INTERMEDIATE STORAGE. HASP OPERATES WITH NO MODIFICATIONS TO OS/360. ANY OPTION 2 INSTALLATION MAY USE HASP BY SIMPLY ADDING IT TO HIS PROGRAM LIBRARY AND ADDING ONE USER SVC ROUTINE TO OS/360. HASP MAY THEN BE INVOKED /OPTIONALLY/ AT ANY TIME BY STANDARD PARTITION LOADING PROCEDURES. HASP HAS BEEN DESIGNED TO OPERATE AS INDEPENDENTLY AS POSSIBLE OF OS/360 RELEASE LEVELS AND, EXCLUDING MAJOR DESIGN CHANGES, SHOULD ADAPT TO NEW RELEASES OF THE OPERATING SYSTEM WITH NO MODIFICATIONS. THE PROGRAM SOURCE IS IN OS/360 ASSEMBLY LANGUAGE, AND MINIMUM CORE REQUIREMENTS ARE LESS THAN 27K.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-05.1.008 MODEL-30 MULTIPROGRAMMING
 MONITOR WHICH CONTROLS TWO 1401 PROGRAMS
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-05.1.008

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TITLE...MULTI-COMPATIBILITY CONTROL /MCC-II/ FOR 1401
 COMPATIBILITY ON SYSTEM/360 MODEL 30
 ***N 05.2 ***

MULTI-COMPATIBILITY CONTROL II IS A SYSTEM/360 MODEL 30 MULTIPROGRAMMING MONITOR WHICH CONTROLS THE OPERATION OF TWO 1401 PROGRAMS. THIS VERSION OF MCC IS WRITTEN IN 8K BOS SUPPORT AND REQUIRES 7040 BYTES OF STORAGE. MCC-II IS DESIGNED TO CONTROL THE SIMULTANEOUS RUNNING OF AN 8 AND 16K 1401 SINGLE-PHASE PROGRAM, BUT CAN EASILY BE MODIFIED TO ACCOMMODATE DIFFERENT SIZED PARTITIONS. THE USE OF THE MONITOR REQUIRES THE MINIMUM OF A 16K SYSTEM/360 MODEL 30 WITH THE 1401 COMPATIBILITY FEATURE, PROGRAM MODE SWITCH, 1052 CONSOLE TYPEWRITER, AND A 2540 CARD READER. EITHER OF THE REQUIRED I/O DEVICES CAN BE UTILIZED BY THE 1401 PROGRAMS. THE REMAINDER OF THE CONFIGURATION IS DICTATED BY THE REQUIREMENTS OF THE 1401 PROGRAMS.

MCC-II DOES NOT REQUIRE THE RE-ASSEMBLY OR PATCHING OF EXISTING 1401 PROGRAMS. THE LOADING OF 1401 PROGRAMS IS FROM THE 2540 CARD READER. THIS PROGRAM GIVES THE ILLUSION OF TWO INDEPENDENT CENTRAL PROCESSING UNITS BY NOT HALTING BOTH PROGRAMS UNLESS ENCOUNTERING I/O ERRORS WHICH ARE TOTALLY HANDLED BY 1401 COMPATIBILITY. NON-STOP HALT ROUTINES AND A S/360 I/O SCHEDULER HAVE MAXIMIZED SYSTEM THRUPT. OPERATIONAL CAPABILITIES INCLUDE THE LOGGING OF OPERATOR ACTIONS SUCH AS HALTS, THE SETTING AND DISPLAYING OF I/O

CONTINUED FROM PRIOR COLUMN--

AND SENSE SWITCHES, AND THE ALLOCATION OF I/O DEVICES. JOB ACCOUNTING ROUTINES ARE INCLUDED FOR USE WITH THE INTERVAL TIMER. THESE AND OTHER FEATURES HAVE ENABLED SYSTEM UTILIZATION TO NUDDGE THE 195 PER CENT MARK.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-05.1.009 MODEL 40 1401 EMULATOR AND
 DDS IN STACKED JOB ENVIRONMENT
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-05.1.009

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TITLE...MODEL 40 1401 EMULATOR AND DDS IN STACKED JOB
 ENVIRONMENT
 ***N 01.5 ***

THIS PROGRAM IS TO GIVE THE 360 MODEL 40 USER CONVERTING FROM 1401/1460 THE ADVANTAGES OF STACKED JOB PROCESSING. MACHINE REQUIREMENTS ARE A 64K MODEL 40 PLUS THE REQUIRED I/O FOR DDS AND THE MODEL 40 1401 EMULATOR. TWO CYLINDERS OF THE DDS SYSRES PACK /2311/ ARE USED. 1401 PROGRAMS MUST BE PRECEDED AND FOLLOWED BY STANDARD DDS JOB CONTROL CARDS. EMULATOR OPERATION IS OTHERWISE UNALTERED EXCEPT FOR AN **, CONTROL CODE WHICH RETURNS CONTROL TO DDS AND WITH AN EQU MACRO. A ROLL-OUT TECHNIQUE IS USED THAT COULD BE ADAPTED TO OTHER EMULATOR AND OPERATING SYSTEM COMBINATIONS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

*N 360D-05.2.001 BOS MODIFICATION MULTIPLE
 FOREGROUND TASKS

AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-05.2.001

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TITLE...MODIFICATION TO IBM BOS/360 /8K DISK/
 ***N 03.4 06.3 ***

THESE MODIFICATIONS TO THE IBM BOS/360 /8K-DISK/ PROVIDE THE ABILITY TO PERMIT MULTIPLE FOREGROUND TASKS TO RESIDE AND OPERATE CONCURRENTLY WITH A BACKGROUND PROGRAM. THESE RESIDENT TASKS CAN INCLUDE TELEPROCESSING SUPPORT, /2701/2702/1050/2740/ FILE-TO-FILE SPOOL, AUTODIN ADAPTER SUPPORT OR A TIMER INTERRUPT SUPPORT CONTROLLED PROGRAM. USING THE SUPPLIED GENERAL PURPOSE FOREGROUND MACROS, UNIQUE USER FOREGROUND PROGRAMS CAN BE WRITTEN. THE 2321 DATA CELL IS SUPPORTED BY DIRECT, SEQUENTIAL AND INDEXED SEQUENTIAL ACCESS METHODS. MACHINE CONFIGURATION- SYSTEM/360 MODEL 30 OR LARGER. 16K MIN-CONSOLE TYPEWRITER.

THE TAPE NECESSARY TO OBTAIN THE PROGRAM MATERIAL MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE. THE TAPE SHOULD BE 2400 FEET IN LENGTH.

360D-05.2.002 OS/360 FORTRAN H INVOKE
 FORTRAN COMPILER LINKAGE EDITOR LOAD MODULE
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-05.2.002

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TITLE...FHMCLG/ONESTEP - A FORTRAN H PROGRAM FOR MULTIPLE
 COMPILE, LINK EDIT AND GO
 ***N 01.1 ***

THESE PROGRAMS PROVIDE INCREASED OS/360 FORTRAN H PERFORMANCE BY AVOIDING THE USE OF THE JOB SCHEDULER BETWEEN JOBS AND JOB STEPS. THEY ARE WRITTEN IN ASSEMBLY LANGUAGE TO INVOKE THE FORTRAN COMPILER, THE LINKAGE EDITOR AND THE RESULTANT LOAD MODULE. THESE PROGRAMS ARE INTENDED FOR BOTH PRODUCTION AND DEMONSTRATION ENVIRONMENTS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-05.2.003 PROGRAM WHICH OPERATES ON
 MODEL 30 TO ALLOW TWO 1401 PROGRAMS TO SHARE CPU TIME
 AVAILABLE 3RD QUARTER 1967.
 SPECIFY FILE NUMBER 360D-05.2.003

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Contributed Programs

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CONTINUED FROM PRIOR COLUMN--
SUPPRESS ZEROS,, INSTRUCTIONS.

TITLE...MULTIPLE COMPATIBILITY CONTROL
***N 05.1 11.1 ***

MCC, IS A PROGRAM WHICH OPERATES ON A SYSTEM/360 MODEL 30 TO ALLOW TWO 4K 1401 PROGRAMS TO SHARE EXECUTION TIME IN THE COPY. THIS IS ACCOMPLISHED BY PLACING INVALID OP CODES IN THE 1401 PROGRAMS WHERE AN INTERLOCKING UNIT RECORD OPERATION WOULD TAKE PLACE. THE INVALID OP CODE CAUSES A SWITCH FROM ONE PROGRAM TO THE OTHER. THIS ALLOWS THE OTHER PROGRAM TO EXECUTE DURING THE NORMAL MECHANICAL TRANSFER TIME OF THE FIRST PROGRAM WHICH WOULD INTERLOCK THE FIRST PROGRAM DURING I/O BOUND EXECUTIONS. AN ADVANTAGE IS GAINED WHEN THE PROGRAMS BEING EXECUTED ARE UNIT-RECORD I/O BOUND AND OPERATING UNDER COMPATIBILITY ON THE 360/30. MINIMUM MACHINE REQUIREMENTS- S/360 MODEL 30, 16K, 1401 COMPATIBILITY, ONE 2400 SERIES TAPE DRIVE, PMS /PROGRAM MODE SWITCH/ FEATURE, ONE 2540, ONE 1403, 1052 CONSOLE.

360D-05.2.004 S/360 PROGRAM TO MONITOR
1401 PROGRAMS RUN IN COMPATIBILITY MODE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-05.2.004

AUTHOR...JOHN J. MORRISSEE

DIRECT INQUIRIES TO..

JOHN J. MORRISSEE,IBM CORP.,2 BROADWAY,NEW YORK, N.Y. 10004

TITLE...EXTRA LARGE COMPATIBILITY INITIALIZATION DECK EL-CID
N 05.2 00.0 01.0 11.1

EL CID, IS A S/360 PROGRAM USED TO MONITOR 1401 PROGRAMS RUN IN COMPATIBILITY MODE. THE PROGRAM HAS 4 MAIN FEATURES. FIRST, IT PERFORMS THE I/O TO BE RUN IN STACKED-JOB, NON-STOP ENVIRONMENT. THIS SHOULD HELP CUSTOMERS IN MAKING THE TRANSITION BETWEEN THE SINGLE JOB ATMOSPHERE OF THE 1400 SERIES AND THE OPERATING SYSTEM ENVIRONMENT OF THE S/360. SECOND, THE PROCESSING OF JOB CONTROL CARDS TO SET SENSE SWITCHES AND MAKE TAPE DRIVE ASSIGNMENTS VIRTUALLY ELIMINATES THE NEED FOR TIME CONSUMING DIALING AND BUTTON PUSHING NORMALLY REQUIRED WITH THE CID DECK. THIRD, COMPLETE DOCUMENTATION OF OPERATIONS IS AVAILABLE VIA THE IBM 1052 PRINTER AND KEYBOARD. ALL JOB CONTROL CARDS ARE LOGGED AS WELL AS ANY SPECIAL COMMENTS TO THE OPERATOR, SUCH AS INSTRUCTIONS TO INSERT SPECIAL FORMS IN THE PRINTER. AT 1401 HALTS THE I,A, AND B ADDRESSES ARE PRINTED ON THE CONSOLE TYPEWRITER. WHEN A 1401 ERROR STOP CONDITION IS ENCOUNTERED, THE STOP CODE NORMALLY DISPLAYED IN THE MAIN STORAGE DATA REGISTER IS PRINTED ALONG WITH THE I,A, AND B ADDRESSES WHERE THE ERROR OCCURRED. CONTROL IS THEN TURNED OVER TO THE OPERATOR WHO MAY TYPE HIS RESPONSE TO THE MONITOR. FOURTH, FREQUENTLY USED UTILITY PROGRAMS AND SUBROUTINES HAVE BEEN MADE CORE RESIDENT AND CALLABLE VIA THE 1052 THIS SAVING TIME IN LOADING AND MAINTENANCE. FURTHERMORE, THE OPERATOR DOES NOT HAVE TO INTERRUPT THE NORMAL JOB STREAM TO RUN THEM. THE PROGRAM REQUIRES 36K AND/OR A PUNCHED, 1403, PROGRAMMED MODE SWITCH, 1052 AND BASIC COMPATIBILITY. IT IS WRITTEN IN BPS-BAL.

360D-05.3.001 BPS FORTRAN FORTRAN E H
COBOL E BASIC ASSEMBLER OBJECT-TO-ASSEMBLY LANGUAGE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-05.3.001

AUTHOR...MR. I.M. MILLER

DIRECT INQUIRIES TO..

MR. I.M. MILLER,IBM CORP.,P.O. BOX 390,POUGHKEEPSIE, N.Y.

TITLE...DISASSEMBLER FOR SYSTEM/360
***N 06.8 04.4 ***

THE DISASSEMBLER WILL TRANSLATE OBJECT DECKS GENERATED BY BPS FORTRAN, FORTRAN E, FORTRAN H, COBOL E AND THE BASIC ASSEMBLER TO ASSEMBLY LANGUAGE CODE. IT IS A STAND ALONE SYSTEM WHICH CAN BE LOADED FROM THE CARD READER OR FROM A TAPE DRIVE. IT CAN PRODUCE LISTINGS AND/OR A PUNCHED DECK OF THE DISASSEMBLED CODE WITH OR WITHOUT USER SPECIFIED SYMBOLS. THE PROGRAM WILL OPERATE ON AT LEAST A 64K S/360 MODEL 30 WITH A CARD READER /OOC/ AND PRINTER /OOE/. FOR TAPE AND PUNCHED OUTPUT FEATURES, IT NEEDS A TAPE DRIVE /180/ AND PUNCH /OOD/. THE PROGRAM CAN BE USED TO PRODUCE LISTINGS FOR PROGRAMS IN WHICH THEIR LISTINGS WERE NOT AVAILABLE, INADEQUATE, OR LOST. IT CAN BE USED TO PUNCH A DECK FOR PURPOSES OF HAND OPTIMIZING, AND IT CAN BE USED TO PROVIDE INSTRUCTION COUNTS FOR PURPOSES OF SYSTEMS EVALUATION. PROVIDES AN INTERFACE FOR CORREGATIONS TO OS/360. THERE ARE OTHER FEATURES BEING CONSIDERED FOR THE DISASSEMBLER WHICH WILL BE IMPLEMENTED WHEN THE NEED FOR THEM ARISES.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-06.0.002 MODEL 20 SUPPRESS ZEROS
SUBROUTINE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.0.002

AUTHOR...JAMES J. KLEIN

DIRECT INQUIRIES TO..

JAMES J. KLEIN,IBM CORP.,402 SWANK BLDG.,JOHNSTOWN, PA.

TITLE...IBM S/360-20 RPG/BAL ALPHANUMERIC ZERO SUPPRESS
SUBROUTINE
***N 06.8 01.4 ***

THIS S/360-20 ASSEMBLER LANGUAGE SUBROUTINE IS USED TO SUPPRESS LEADING ZEROS IN AN ALPHANUMERIC FIELD. IT IS DESIGNED TO BE USED IN CONJUNCTION WITH A S/360-20 RPG PROGRAM. THE SUBROUTINE WILL OPERATE ON A FIELD OF MAXIMUM LENGTH 256 CHARACTERS. THE SAME FACILITY IS PROVIDED HERE AS IS AVAILABLE ON IBM 1400 SYSTEMS WITH THE ,,MOVE CHARACTERS AND

360D-06.0.003 OS/360 FREE-FORM CARD-IMAGE
TEXT-PROCESSING
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.0.003

AUTHOR...G.M. BERNS

DIRECT INQUIRIES TO..

G.M. BERNS,IBM CORP.,11141 GEORGIA AVE.,WHEATON, MD. 20902

TITLE...FORMAT - A TEXT PROCESSING PROGRAM
***N

FORMAT IS A TEXT-PROCESSING PROGRAM WHICH ACCEPTS FREE-FORM CARD-IMAGE TEXT AND PRODUCES A DOCUMENT IN UPPER AND LOWER CASE WHICH IS FORMATED ACCORDING TO USER INSTRUCTIONS. AMONG THE OPTIONS AVAILABLE ARE- UP TO 8 COLUMNS PER PAGE, RIGHT-JUSTIFICATION, AUTOMATIC SENTENCE CAPITALIZATION, AND TAB-SETTINGS. COMMAND OPERANDS IN COMMAND WORDS WHICH MAY BE FREELY INTERSPERSED THROUGHOUT THE TEXT INPUT, PROVIDE THE CAPABILITY TO START A NEW LINE, PARAGRAPH, COLUMN, AND PAGE., TO TABULATE., TO UNDERLINE /AND TO STOP/., TO READ GROUPS OF CONTROL CARDS., TO CENTER TEXT WITHIN A COLUMN-LINE /AND TO STOP/., TO PRINT TEXT ,,AS IS,, /AND TO STOP/., TO PRINT TEXT IN UPPER CASE /AND TO STOP/., AND TO PRINT TEXT WITH EACH WORD CAPITALIZED /AND TO STOP/ SPECIAL OPERANDS PROVIDE FOR CAPITALIZATION AND SPECIAL CHARACTERS. FORMAT IS WRITTEN IN FORTRAN AND RUNS IN A 64K SYSTEM/360 UNDER D.S. /NO SPECIAL UNITS REQUIRED/.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-06.1.001 A SERIES OF SUBROUTINES TO
ALLOW USER TO SORT FIXED-LENGTH 1400 TAPE RECORDS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.1.001

AUTHOR...MR. R. MACKINNON

DIRECT INQUIRIES TO..

MR. R. MACKINNON,IBM CORP.,520 BOYLSTON ST.,BOSTON, MASS.

TITLE...BOS DISK SORT/MERGE MODULES
***N 06.2 00.3 01.6 ***

THE MODULES ARE A SERIES OF SIX SOURCE LANGUAGE SUBROUTINES WHICH SUPPORT EXITS 11, 31, AND 41 TO ALLOW THE USER TO SORT OR MERGE FIXED-LENGTH 1400 TAPE RECORDS UNDER THE BASIC OPERATING SYSTEM. THE ASSUMPTION IS MADE THAT INPUT TO THE PROGRAM IS ON A TAPE DRIVE. THE PROGRAM REQUIRES 36K AND/OR A PUNCHED DECK OF THE DISASSEMBLED CODE WITH OR WITHOUT USER SPECIFIED SYMBOLS. THE PROGRAM WILL OPERATE ON AT LEAST A 64K S/360 MODEL 30 WITH A CARD READER /OOC/ AND PRINTER /OOE/. FOR TAPE AND PUNCHED OUTPUT FEATURES, IT NEEDS A TAPE DRIVE /180/ AND PUNCH /OOD/. THE PROGRAM CAN BE USED TO PRODUCE LISTINGS FOR PROGRAMS IN WHICH THEIR LISTINGS WERE NOT AVAILABLE, INADEQUATE, OR LOST. IT CAN BE USED TO PUNCH A DECK FOR PURPOSES OF HAND OPTIMIZING, AND IT CAN BE USED TO PROVIDE INSTRUCTION COUNTS FOR PURPOSES OF SYSTEMS EVALUATION. PROVIDES AN INTERFACE FOR CORREGATIONS TO OS/360. THERE ARE OTHER FEATURES BEING CONSIDERED FOR THE DISASSEMBLER WHICH WILL BE IMPLEMENTED WHEN THE NEED FOR THEM ARISES.

THE LANGUAGE OF THE MODULES IS BOS ASSEMBLER LANGUAGE, USING THE EXCP, WAIT, AND CCB MACRO INSTRUCTIONS. FIELD-LENGTH DESIGNATIONS IN THE MODULES ARE DONE SYMBOLICALLY TO FACILITATE MODIFICATION AND A DISCUSSION IS INCLUDED ON THE PROCEDURES FOR MODIFICATION REQUIRED BECAUSE OF CERTAIN DEVICES OR THE DISK OPERATING SYSTEM. OBJECT MACHINE REQUIREMENTS ARE THOSE SYSTEM COMPONENTS NEEDED TO EXECUTE THE BOS SORT/MERGE AS WELL AS A 1052 CONSOLE TYPEWRITER AND AT LEAST ONE 2400-SERIES MAGNETIC TAPE UNIT. THE MODULES ASSUME SEVEN-TRACK HEADS. THE NUMBERS 2311 DISK DRIVES AVAILABLE TO THE PROGRAM HAS A DIRECT BEARING UPON THE MAXIMUM FILE SIZE COMPUTED DURING PHASE 0 OF THE PROGRAM.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-06.1.003 1401 SORT-2 OR /SORT-7/
CONTROL /CARDS/ TO BPS /SORT/MERGE/ /CONTROL/ /CARDS/
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.1.003

AUTHOR...MR. C.B. CONN

DIRECT INQUIRIES TO..

MR. C.B. CONN,IBM CORP.,330 MADISON AVE.,
NEW YORK, N.Y. 10017

TITLE...SORT 2 OR SORT 7 TO BPS SORT CONTROL CARD CONVERSION
UTILITY PROGRAM
***N

THIS PROGRAM CONVERTS 1401 SORT 2 OR SORT 7 CONTROL CARDS TO CONTROL CARDS USED BY THE BPS SORT/MERGE PROGRAM. CONVERSATIONAL MODE VIA THE 1052 CONSOLE TYPEWRITER IS USED TO DEVELOP PARAMETERS NOT AVAILABLE IN THE 1401 SORT CONTROL CARDS. CONTROL CARDS FOR PROCESSING FIXED- OR VARIABLE-LENGTH RECORDS, BLOCKED OR UNBLOCKED, CAN BE CREATED. FROM THREE TO SIX TAPES MAY BE SPECIFIED BY THE USER, AND FROM ONE TO FIVE CONTROL FIELDS WILL BE ACCEPTED. ASCENDING OR DESCENDING FILE SEQUENCE IS SUPPORTED. THE PROGRAM IS WRITTEN IN BPS ASSEMBLER LANGUAGE FOR TAPE SYSTEM ABOVE THE MODEL 20.

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CONTINUED FROM PRIOR PAGE--

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-06.4.001 BOS/OS BINARY TABLE SEARCH
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.4.001

AUTHOR...R.W. SANDSTEDT

DIRECT INQUIRIES TO...
R.W. SANDSTEDT, IBM CORP., 220 CHURCH ST., NEW YORK, N.Y. 10013

TITLE...SYSTEM/360 BINARY SEARCH
***N 06.4 07.1 04.6 ***

THIS S/360 REENTERABLE MODULE PERFORMS A BINARY SEARCH OF ONE OR MORE TABLES IN MAIN STORAGE. THE FIXED LENGTH SEARCH ARGUMENT MAY BE ALPHAMERIC /256 BYTES MAXIMUM/, PACKED DECIMAL /16 BYTES MAXIMUM/, OR FIXED POINT HALF OR FULL WORD BINARY. EACH TABLE MAY CONTAIN 9999 ENTRIES MAXIMUM IN ASCENDING SEQUENCE. EACH ENTRY MUST BE A FIXED LENGTH OF 9999 BYTES MAXIMUM. A TABLE ARGUMENT MUST BE LOCATED WITHIN THE FIRST 256 BYTES OF AN ENTRY. THE MODULE RETURNS A MATCHING TABLE ENTRY OR THE NEXT HIGHER ENTRY IF NO MATCH EXISTS. THE MODULE IS OPTIMIZED FOR MINIMUM EXECUTION TIME. IT REQUIRES A S/360 MODEL 30 WITH STANDARD INSTRUCTION SET /PACKED DECIMAL SEARCHES REQUIRE THE DECIMAL INSTRUCTION SET/ AND OCCUPIES 450 BYTES OF MAIN STORAGE. SOURCE LANGUAGE IS ASSEMBLER, WHICH CAN BE ASSEMBLED AND RUN UNDER BOS OR OS. THE MODULE MAY BE ACCESSED IN COBOL VIA THE CALL STATEMENT OR IN ASSEMBLER LANGUAGE VIA THE CALL OR LINK MACRO-INSTRUCTIONS. THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-06.5.001 SUBROUTINE TO CONVERT
PACKED DECIMAL TO BINARY
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.5.001

AUTHOR...MR. J. NAGELMANN

DIRECT INQUIRIES TO...
MR. J. NAGELMANN, IBM CORP., 6055 E. WASHINGTON BLVD.,
LOS ANGELES, CALIF. 90022

TITLE...CONVERT TO BINARY SUBROUTINE FOR SYSTEM/360-20
***N 07.2 08.1 ***

THIS SUBMISSION IS A SUBROUTINE THAT WILL TAKE A POSITIVE PACKED FIELD AND CONVERT IT TO ITS BINARY EQUIVALENT. THE SIZE OF THE PACKED FIELD IS FIVE NUMERIC DIGITS BUT THE LARGEST INTEGER THAT CAN BE CONVERTED IN THE SUBROUTINE IS 32,767. THE NEED FOR THIS HAS ARISEN BECAUSE THE MODEL 20 DOES NOT HAVE A CONVERT TO BINARY OPERATION CODE, AND TO DO ANY DIRECT ADDRESSING TO A TABLE LOCATION IN CORE YOU MUST BE IN A BINARY MODE. THE SOURCE LANGUAGE IS THE BASIC ASSEMBLER LANGUAGE FOR THE MODEL 20. THERE IS NO REQUIRED CONFIGURATION FOR THIS SUBROUTINE TO EXECUTE AS IT IS ONLY A PROGRAMMING TECHNIQUE. IT IS DESIGNED TO BE IMPLEMENTED BY THE USER IN ITS SOURCE FORM AND THE OBJECT DOCUMENTATION IS FOR TESTING PURPOSES ONLY.

360D-06.5.002 CONVERT SIGN OVERPUNCHED
NUMBERS TO NUMBER PLUS SIGN CODE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.5.002

AUTHOR...F. STEPHEN GAUSS

DIRECT INQUIRIES TO...
F. STEPHEN GAUSS, UNITED STATES NAVAL OBSERVATORY,
WASHINGTON, D.C.

TITLE...SNV650 SUBROUTINE
***S USNO 06.6 12.1 03.8 ***

CNV650 IS WRITTEN AS A FORTRAN IV SUBROUTINE SUBPROGRAM FOR THE IBM SYSTEM 360 TO CONVERT BCD SIGNED NUMBERS /OVERPUNCHED/ INTO A NUMERIC CHARACTER AND A SIGN CHARACTER. THE TYPE OF ZONE OVERPUNCH IS ALSO RETURNED. SPECIAL CHARACTERS USED AS INPUT WILL PRODUCE AN ERROR MESSAGE AND A NUMERIC VALUE OF PLUS 0. ON THE 360/40 892 WORDS OF STORAGE ARE USED. IT SHOULD RUN ON ANY SYSTEM 360 WITH FORTRAN IV. THE BASIC REQUIREMENTS ARE A 32-BIT WORD LENGTH AND SYSTEM 360 INTERNAL CODING.

360D-06.5.003 A MACRO TO GENERATE THE
REQUIRED CODE FOR DECIMAL SHIFTS IN CORE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.5.003

AUTHOR...MR. R.A. BELZ

DIRECT INQUIRIES TO...
MR. R.A. BELZ, IBM CORP., 5DD, DEPT. 050, BLDG. 706, BOX 390,
POUGHKEEPSIE, N.Y. 12602

TITLE...DECIMAL SHIFTS MACRO
***N 03.7 40.3 ***

THIS PROGRAM IS A MACRO FOR USE AT ASSEMBLY TIME ON THE IBM SYSTEM/360. IT GENERATES THE REQUIRED CODE FOR DECIMAL SHIFTS IN CORE STORAGE LOCATIONS. IT IS CODED IN ASSEMBLER /E/ LANGUAGE. THE OBJECT MACHINE MUST HAVE THE DECIMAL INSTRUCTION SET INSTALLED.

360D-06.7.002 CREATE MAINTAIN LIBRARY OF
SOURCE PROGRAMS

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.7.002

AUTHOR...MR. R.E. STOKES

DIRECT INQUIRIES TO...
MR. R.E. STOKES, IBM CORP., 650 N. MAIN ST., ROCKFORD, ILL.

TITLE...SPLMAIN - CREATES AND MAINTAINS A SOURCE LIBRARY OF
S/360 PROGRAMS UNDER DOS
***N ***

THIS IS A SOURCE PROGRAM LIBRARIAN PROGRAM TO CREATE AND MAINTAIN A LIBRARY OF SYSTEM/360 SOURCE PROGRAMS ON DISK OR TAPE. IT IS WRITTEN IN COBOL FOR USE PRIMARILY WITH D.O.S.. IT CAN PROCESS SOURCE DECKS CODED IN RPG, FORTRAN OR COBOL. SPECIFICALLY IT WILL-

- CREATE AN INITIAL LIBRARY.
- ADD, DELETE + REPLACE ENTIRE PROGRAMS.
- SELECT PROGRAMS FROM CARD OR TAPE OUTPUT.
- EDIT PROGRAMS BY SEQUENCE NUMBER.
- RESEQUENCE PROGRAMS.
- LIST PROGRAMS.
- LIST ALL LIBRARY PROGRAM NAMES.
- SELECT PROGRAMS FOR IMMEDIATE COMPILATION.

THIS PROGRAM ENABLES A USER TO MAINTAIN BULKY SOURCE PROGRAM DECKS ON TAPE. A SIMPLE METHOD IS OFFERED FOR ALTERING SOURCE PROGRAMS. THE JOB CONTROL STREAM CAN BE EASILY ARRANGED FOR BATCH COMPILATION OF UPDATED SOURCE PROGRAMS. STORAGE REQUIREMENTS- 24K BYTES.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-06.7.003 CATALOGING A PROGRAM LIBRARY
ON TAPE

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-06.7.003

AUTHOR...P.D. BOWMAN

DIRECT INQUIRIES TO...
P.D. BOWMAN, IBM CORP., 100 S. WACKER DR., CHICAGO, ILL. 60606

TITLE...S/360 BOS PROGRAM LIBRARY CATALOGING TAPE UTILITY
PROGRAM 00.3 ***

THIS PROGRAM MAINTAINS AN INSTALLATION PROGRAM LIBRARY ON TAPE. THE OBJECTS DECKS ON THE TAPE ARE SEPARATED BY CONTROL CARDS SUPPLIED BY THE MAINTENANCE PROGRAM WHICH ALLOW CATALOGING DECKS OR TAPE FROM THE TAPE. DURING MAINTENANCE RUNS ON THE TAPE, A REPORT IS GENERATED GIVING PROGRAM NAME, LOCATION ON THE TAPE /STARTING RECORD NUMBER FOR PUNCHING/ AND STATUS /NEW, REPLACEMENT THIS RUN, OR MERELY COPIED THIS RUN/. THE CATALOGING FUNCTION PROVIDES A FAST, CLEAN APPROACH TO ADDING USER PROGRAMS TO A SYSRES CORE IMAGE LIBRARY WHEN INSTALLING NEW RELEASES OF THE OPERATING SYSTEM. MINIMUM CONFIGURATION- SYSTEM/360 MODEL 30 OR ABOVE, 16K STORAGE. DECIMAL ARITHMETIC... A 2311 DISK DRIVE... TWO 2400 TAPE DRIVES... A 1052 CONSOLE TYPEWRITER... A CARD READER... A CARD PUNCH.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-08.6.001 /SUBROUTINE/ FOR TIME SERIES
PLOTTING ON A /PRINTER/

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-08.6.001

AUTHOR...R.H. KARPINSKI

DIRECT INQUIRIES TO...
J.B. YEATON, UNIVERSITY OF CALIFORNIA, MEDICAL CENTER,
110 M.R.-4, SAN FRANCISCO, CALIF. 94122

TITLE...PLOTS - A SUBROUTINE FOR TIME-SERIES PLOTTING ON A
PRINTER
***S UCS PLTS 03.8 ***

TO USE ,,PLOTS,, TO PLOT N CURVES - CALL PLOTS /-N, RANGES/ WHERE N EQUALS NUMBER OF CURVES /THIS ARGUMENT SHOULD BE NEGATIVE FOR THE SETUP CALL, CAUSING A NEW PLOT TO BE STARTED/, AND RANGES EQUALS AN ARRAY OF SIZE 3N PLUS 3.,

- RANGES /1/ - TIME ZERO /TIME OF BEGINNING OF PLOT/.
- RANGES /2/ - DELTA TIME /TIME INCREMENT PER PLOT LINE/.
- RANGES /3/ - L/TIME WILL BE PRINTED EVERY L LINES, UNLESS L IS LESS THAN ZERO/.
- RANGES /4/ - X1/MIN. /MINIMUM VALUE TO BE PLOTTED FOR FIRST CURVE/.
- RANGES /5/ - X1/MAX. /MAXIMUM VALUE TO BE PLOTTED FOR FIRST CURVE/.
- RANGES /6/ - X1/CHAR. /CHARACTER TO BE PLOTTED TO INDICATE FIRST CURVE/.
- RANGES /3N PLUS 1/ - X/N/ MIN.
- RANGES /3N PLUS 2/ - X/N/ MAX.
- RANGES /3N PLUS 3/ - X/N/ CHAR.

FOR EACH LINE DESIRED /I.E. CALL ,,PLOTS,, MANY TIMES ONCE FOR EACH TIME INCREMENT/, CALL PLOTS /near/ WHERE N EQUALS THE NUMBER OF CURVES AND X1/I/ EQUALS THE CURRENT VALUE OF THE ITH CURVE. ,,PLOTS,, WILL ACTUALLY PLOT A VALUE UP TO, BUT NOT INCLUDING, MAX. /MAX-MIN/ *0.01 IN THE 101ST POSITION.

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360D-08.6.002 PLOTTING CALCOMP PL/I
INTERFACE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-08.6.002

AUTHOR...MR. E.H. REMY

DIRECT INQUIRIES TO...
MR. I.L. JORDAN, EASTMAN KODAK CO., BLDG. 56, KODAK PARK,
ROCHESTER, N.Y. 14650

TITLE...INTERFACE BETWEEN PL/I USER PROGRAMS AND CALCOMP
ROUTINES
***S KP PLOT 03.8 03.0 ***

THE OS/360 PLOTTING ROUTINES PROVIDED BY CALCOMP ARE WRITTEN
IN FORTRAN AND ASSEMBLER AND ARE DESIGNED TO BE USED BY A
FORTRAN PROGRAM. THESE ROUTINES MAY BE CALLED BY A PL/I
PROGRAM BUT SUCH USE DOES NOT PERMIT SOME COMMONLY USED PL/I
FEATURES SUCH AS CHARACTER STRINGS. IT IS ALSO AN INCONVENIENCE
FOR A PL/I PROGRAMMER TO ADHERE TO FORTRAN LINKAGE CONVENTIONS
SUCH AS AVOIDING PASSING DOPE VECTORS. TO PERMIT THE PL/I
PROGRAMMER TO USE STRAIGHT-FORWARD PL/I STATEMENTS IN PLOT
PROGRAMS, THIS INTERFACE HAS BEEN WRITTEN TO INTERCEPT THE
LINKAGE BETWEEN THE USERS PROGRAM AND THE ROUTINES PROVIDED
BY CALCOMP. LINKAGE EDITOR ,,CHANGE,, CARDS ARE USED TO
PERMIT THE INTERFACE TO HAVE ENTRY POINTS WITH THE SAME NAMES
AS THE ROUTINES PROVIDED BY CALCOMP. THE JCL MAY BE MODIFIED
TO CONFORM TO AN INSTALLATIONS PROCEDURES AND NAMING CONVENTIONS.

360D-08.7.001 BPS FORTRAN 2250 DISPLAY
SUBROUTINES INITIALIZATION GENERATION SCALING
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-08.7.001

AUTHOR...MR. D.A. HOLLU

DIRECT INQUIRIES TO...
MR. D.A. HOLLU, IBM CORP., 112 EAST POST RD., WHITE PLAINS, N.Y.

TITLE...GRAPHIC FORTRAN SYSTEM FOR THE IBM 2250 DISPLAY UNIT
N 03.8 00.6 06.5 08.7

A COLLECTION OF 80 GRAPHIC SUBROUTINES TO ALLOW THE FORTRAN
PROGRAMMER TO EASILY MAKE USE OF THE IBM 2250 DISPLAY UNIT
IN AN APPLICATION PROGRAM. THE SUBROUTINES ARE USED WITH
BASIC PROGRAMMING SUPPORT /BPS/ FORTRAN IV, LEVEL D TAPE 16K.
THE SYSTEM REQUIRES A SINGLE, DEDICATED IBM 2250 MODEL 1
DISPLAY UNIT WITH BUFFER STORAGE, CHARACTER GENERATOR AND
ABSOLUTE VECTOR FEATURES. INCLUDED ARE ROUTINES FOR
INITIALIZATION, ATTENTION HANDLING FROM THE FUNCTION KEYS
AND LIGHT PEN, IMAGE GENERATION, SCALING, ROUTINES TO
GENERATE GRIDS, CIRCLES, LINE CLASS, DIMENSION LINES,
GEOMETRIC SOLUTION AND A 3-D DISPLAY SYSTEM. THE HARDWARE
DEPENDENT ROUTINES ARE WRITTEN IN BASIC ASSEMBLY LANGUAGE
AND THE HARDWARE INDEPENDENT ROUTINES ARE WRITTEN IN
FORTRAN IV LEVEL D.
MACHINE CONFIGURATION OF THE GFS SYSTEM TAPE EMBODIES ALL THE
FEATURES OF FORTRAN IV BPS, LEVEL D, TAPE 16K, AND SUPPORTS
A SINGLE 2250 MODEL 1 DISPLAY CONSOLE WHICH MUST BE EQUIPPED
WITH 4K OR 8K BUFFER, THE CHARACTER GENERATOR, AND THE
ABSOLUTE VECTOR FEATURE. THE SYSTEM WILL RUN ON ANY SYSTEM/360
MODEL 30 OR HIGHER, HAVING 64K OR MORE, EQUIPPED WITH
1052 TERMINAL, CARD-READER PUNCH, EITHER 2540 OR 1442,
1403 PRINTER AND FOUR TAPE UNITS. OPTIONAL FEATURES SUPPORTED
ARE THE LIGHT PEN, THE FUNCTION KEY AND THE INDICATOR LIGHTS.

BASIC MATERIAL CONSISTS OF A FORTRAN SYSTEM TAPE WITH THE
GFS SUBROUTINES IN THE SYSTEMS LIBRARY. ONE MAGNETIC TAPE
REQUIRED. OPTIONAL MATERIAL ONE TAPE FOR THE PROGRAM SOURCE
CARDS, ONE TAPE FOR THE AUTOCHART TAPE. THE TAPES REQUIRED
MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE.

360D-08.7.002 OS 2250 DISPLAY SUBROUTINES
ATTENTION HANDLING IMAGE GENERATION DATA MANAGEMENT
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-08.7.002

AUTHORS...H. WOLPE R. ARMSTRONG D. CHRISTIANSEN
H. GANSKE H. HOGSET A. LIPPERT
D. MORSKI S. STARR R. WRENN

DIRECT INQUIRIES TO...
H. WOLPE, IBM CORP., 10889 WILSHIRE BLVD., KIRKBY CENTER,
SUITE 540, LOS ANGELES, CALIF.

TITLE...GPAK - ON-LINE GRAPHIC DATA PROCESSING SOFTWARE SYSTEM
WITH REAL-TIME 2250 MOD 1 INPUT AND DISPLAY
***N 03.8 00.6 08.7 ***

GPAK /GRAPHIC PACKAGE/ IS A SET OF SUBROUTINES WHICH
PROVIDES SUPPORT FOR THE IBM 2250 I DISPLAY CONSOLE. IT
UTILIZES OS/360 EXPRESS GRAPHICS SUPPORT. GPAK ASSISTS
THE 2250 I USER IN THE FOLLOWING AREAS- ATTENTION HANDLING,
IMAGE GENERATION /CREATION OF 2250 ORDERS/, GRAPHIC DATA
MANAGEMENT, LIGHT PEN HANDLING AND CONSOLE PROCEDURES.
GPAK ROUTINES MAY BE CALLED FROM BOTH ASSEMBLY LANGUAGE AND
FORTRAN. GPAK IS A MODULAR AND OPEN ENDED SYSTEM ALLOWING THE
APPLICATION PROGRAMMER TO SELECT FROM A SET OF GENERALIZED
TOOLS OR CREATE HIS OWN. A PROGRAM WILL BE PROVIDED THAT
SERVES AS AN INSTALLATION TEST PROGRAM. GPAK REQUIRES AT
LEAST A 64K S/360 MOD 30 WHICH CAN RUN OS/360 AND A 2250
MODEL I WITH BUFFER, CHARACTER GENERATOR AND ABSOLUTE VECTOR
FEATURES.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK
OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE
REEL /DTR/. IF TRACK REQUIREMENT NOT SPECIFIED, A 9 TRACK
DTR WILL BE PROVIDED. THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-10.1.001 FORTRAN IV PROGRAM TO
CALCULATE DISTANCES AND COMMON CARRIER LINE COSTS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-10.1.001

AUTHORS...MR. P.M. JUNEMANN MR. D.F. HEALY

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TITLE...TELEPROCESSING DISTANCE AND LINE COST CALCULATION
PROGRAM
***N 16.0 17.0 41.5 ***

THIS IS A FORTRAN IV PROGRAM THAT CAN BE RUN ON THE
IBM SYSTEM/360, 1130, 7090, AND OTHER COMPUTERS THAT HAVE A
FORTRAN IV COMPILER. THE PROGRAM CALCULATES AND TABULATES
THE DISTANCES AND THE COMMON CARRIER LINE COSTS BETWEEN
50 /OR LESS/ CITIES. THE INPUT IS THE VERTICAL AND HORIZONTAL
COORDINATES OF THE CITIES AS OBTAINED FROM THE AT+ FCC
TARIFF 225, AND LINE CHARGES FROM THE APPROPRIATE TARIFF FOR THE
LINE GRADES USED. THE OUTPUT IS A PRINTED TABLE OF THE
DISTANCES AND LINE COSTS BETWEEN EACH OF THE INPUT CITIES.
THE PROGRAM HAS THE ABILITY TO OUTPUT A DISTANCE-ONLY TABLE
AND ALSO A COMBINATION DISTANCE-LINE COST TABLE. THE PROGRAM
GREATLY ASSISTS IN THE PRELIMINARY OR MANUAL DESIGN OF A
SMALL /50 CITIES OR LESS/ COMMUNICATIONS NETWORK. THE SYSTEM
USED TO EXECUTE THE PROGRAM MUST HAVE AN ON-LINE /OR PERIPHERAL/
CARD READER AND PRINTER /1120 PRINT POSITIONS OR LARGER/.
A 32K-360, OR AN 8K-1130 ARE LARGE ENOUGH TO EXECUTE THE
PROGRAM. TO ALTER THIS PROGRAM TO RUN ON A SPECIFIC MACHINE,
ONLY TWO STATEMENTS IN THE SOURCE DECK NEED TO BE CHANGED.,
TO CHANGE THE LOGICAL DESIGNATION FOR THE INPUT AND OUTPUT UNITS.

360D-10.2.001 INDEX SEQUENTIAL ANALYZER
BLOCKING-FACTOR CYLINDER-OVERFLOW FILE-SPACE-REQUIREMENTS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-10.2.001

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TITLE...ISA360 - INDEX SEQUENTIAL ANALYZER
***N 01.6 04.3 ***

THE PURPOSE OF INDEX SEQUENTIAL ANALYZER 360 IS TO EASILY
RECOGNIZE THE IMPLICATION OF BLOCKING FACTOR AND CYLINDER
OVERFLOW IN DETERMINING FILE SPACE REQUIREMENTS FOR THE
INDEX SEQUENTIAL FILE MANAGEMENT SYSTEM. WITH A SINGLE INPUT
CARD DESCRIBING THE DEVICE, NUMBER OF RECORDS, RECORD LENGTH
AND KEY LENGTH, ISA360 PRINTS OUT THE NUMBER OF RECORDS
POSSIBLE ON A CYLINDER AND NUMBER OF CYLINDERS REQUIRED FOR
THE WHOLE FILE WITH VARIOUS COMBINATIONS OF BLOCKING FACTORS
AND CYLINDER OVERFLOW. AN ANALYST SUCH AS THAT PROVIDED BY
ISA360 IS A NECESSITY IN AVOIDING ARBITRARY OR POOR CHOICES
OF BLOCKING FACTOR IN PARTICULAR, AND THIS CAN PROVE ESPECIALLY
EXPENSIVE BOTH IN FILE SPACE REQUIREMENTS AND PERFORMANCE.
THE PROGRAM IS ALSO USEFUL FOR JUDGING THE EFFECT OF CHANGES
IN RECORD AND/OR KEY LENGTH. ISA360 IS ALSO USED TO HELP
DECIDE BETWEEN THE 2311, 2321, 2314 AND 2302 IN CONFIGURATING
S/360. THE STAND-ALONE OBJECT DECK RUNS ON AN 8K S/360
MODEL 30 WITH STANDARD INSTRUCTION SET, A 2540, AND A 1403.
THE ASSEMBLER LANGUAGE SOURCE DECK IS EASILY MODIFIED TO ANY
S/360 MODEL 30 OR LARGER WITH ANY CARD READER AND ANY PRINTER
UNDER ANY OPERATING SYSTEM.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK
WILL BE FORWARDED.
THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-10.2.002 DISK AND CORE REQUIREMENT
ANALYZER FOR THE S/360 BILL OF MATERIAL PROCESSOR
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-10.2.002

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TITLE...DISK AND CORE REQUIREMENT ANALYZER FOR THE S/360 BILL
OF MATERIAL PROCESSOR.
***N 01.6 06.7 24.2 ***

THE DISK AND CORE REQUIREMENT ANALYZER FOR THE SYSTEM/360
BILL OF MATERIAL PROCESSOR CONSISTS OF TWO PROGRAMS WRITTEN
IN FORTRAN AND RUN ON EITHER AN IBM 1130 OR SYSTEM/360
COMPUTER. THE FIRST PROGRAM ANALYZES MASTER FILE REQUIREMENTS,
AND THE SECOND PROGRAM ANALYZES CHAIN FILE REQUIREMENTS.
THESE PROGRAMS FOLLOW CLOSELY THE ANALYSIS PRESENTED BY THE
FLOW CHARTS IN APPENDIX E OF THE SYSTEM/360 BILL OF MATERIAL
PROCESSOR PROGRAMMERS MANUAL /H20-0246/. THESE PROGRAMS
PROVIDE NO SINGLE, DEFINITE SOLUTION, BUT INSTEAD A NUMBER
OF POSSIBLE SOLUTIONS WHICH ARE PRESENTED IN TABULAR FORM.
THE USER CAN ANALYZE AND WEIGH THE ADVANTAGES OF ONE SOLUTION
OVER ANOTHER AND ARRIVE AT THE OPTIMAL SOLUTION TAILORED TO HIS
NEEDS AND HARDWARE CONFIGURATION. THESE PROGRAMS SAVE MANY
HOURS OF MANUAL CALCULATION WHICH NORMALLY WOULD NOT BE
PERFORMED TO ARRIVE AT THE OPTIMAL SOLUTION FOR A PARTICULAR
INSTALLATION.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-11.1.001 PROGRAM TO PROCESS ON
SYSTEM/360 OBJECT PROGRAMS /WRITTEN/ FOR A B280
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-11.1.001

AUTHOR...MR. TOM TARRANT

Contributed Programs

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TITLE...BURROUGHS B280 SIMULATOR PROGRAM
N 07.0 08.0 12.0 02.0

THIS PROGRAM WILL PROCESS, ON A SYSTEM/360, OBJECT PROGRAMS WRITTEN FOR A B280 ,,IMPROVED MODEL 0,, THREE TAPE SYSTEM HAVING 4800 MEMORY POSITIONS. IT WAS WRITTEN USING THE BK TAPE ASSEMBLER FOR A MODEL 30 AND REQUIRES 16K MEMORY, THE COMMERCIAL INSTRUCTION SET, AND A CONSOLE TYPEWRITER. IT SIMULATES I/O FUNCTIONS OF ONE CARD READER, PUNCH, PRINTER, AND THREE MAGNETIC TAPE UNITS, OVERLAPPING ALL BUT TAPE READ OPERATIONS. TAPE ADDRESS DIALING BETWEEN JOBS IS HANDLED THROUGH ASSIGN CARDS. OPERATOR COMMUNICATION ROUTINES VIA TYPEWRITER, ALLOWING SIMULATION OF ALL B280 CONSOLE CONTROL OPERATIONS, INCLUDE HALT, CONTINUE, MEMORY DISPLAY, ALTER MEMORY, INSTRUCTION BRANCHING, FLOW TRACE, PROGRAM LOAD, AND B280 CORE DUMP. MACHINE CONFIGURATION - S/360 MODEL 30, 16K, 2540 READER PUNCH, 1403 PRINTER AND THREE 2400 TAPE DRIVES /9 TRACK/. TO OBTAIN THE BASIC MACHINE READABLE MATERIAL ONE 2400 FOOT REEL OF MAGNETIC TAPE IS REQUIRED. THE MATERIAL IS IN NINE-TRACK FORMAT. THE TAPE REQUIRED MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE.

360D-11.1.002 PROGRAM TO PROCESS ON SYSTEM/360 PROGRAMS /WRITTEN/ FOR THE BURROUGHS B280 AVAILABLE 3RD QUARTER 1967. SPECIFY FILE NUMBER 360D-11.1.002

AUTHORS..MR. TOM TARRANT LINDA TARRANT

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TITLE...BURROUGHS B280 SIMULATOR PROGRAM FOR IBM SYSTEM/360
N 07.0 08.0 12.0 02.0

THIS PROGRAM WILL PROCESS, ON A SYSTEM/360, OBJECT PROGRAMS WRITTEN FOR A B280 4-TAPE SYSTEM HAVING EITHER 4800 OR 9600 MEMORY POSITIONS. IT WAS WRITTEN IN ASSEMBLY LANGUAGE FOR A MODEL 40 AND REQUIRES 32K MEMORY, DECIMAL INSTRUCTION SET, AND A CONSOLE TYPEWRITER. IT SIMULATES I/O FUNCTIONS OF ONE CARD READER, PUNCH, PRINTER, AND FOUR MAGNETIC TAPE UNITS,, OVERLAPPING ALL BUT TAPE READ OPERATIONS. SUPERVISOR ROUTINES PROVIDE OPERATOR COMMUNICATION VIA TYPEWRITER AND ALLOW SIMULATION OF B280 CONSOLE OPERATIONS FOR HALT, CONTINUE, MEMORY DISPLAY, ALTER MEMORY, INSTRUCTION BRANCHING, FLOW TRACE, AND PROGRAM LOAD. TAPE ADDRESS DIALING BETWEEN JOBS IS HANDLED THROUGH ASSIGN CARDS. DISTINCTION OF BURROUGHS 4800 POSITION AND 9600 POSITION PROGRAMS IS HANDLED THROUGH A SPECIAL CONTROL CARD.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-11.1.003 PROGRAM TO PROCESS OBJECT PROGRAMS WRITTEN FOR A BURROUGHS B280 AVAILABLE 3RD QUARTER 1967. SPECIFY FILE NUMBER 360D-11.1.003

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TITLE...BURROUGHS B280 SIMULATOR PROGRAM FOR IBM S/360 TO BE USED WITH HARDWARE ASSISTANCE PACKAGE
***N 04.0 02.0 ***

THIS PROGRAM WILL PROCESS, ON A SYSTEM/360, OBJECT PROGRAMS WRITTEN FOR A B280 ,,IMPROVED MODEL 0,, FOUR TAPE SYSTEM HAVING EITHER 4.8 OR 9.6K MEMORY POSITIONS. IT WAS WRITTEN USING THE BK TAPE ASSEMBLER FOR A MODEL 40, AND REQUIRES 32K MEMORY, THE COMMERCIAL INSTRUCTION SET, A CONSOLE TYPEWRITER, AND THE HARDWARE ASSISTANCE PACKAGE. IT SIMULATES I/O FUNCTIONS OF ONE CARD READER, PUNCH, PRINTER, AND FOUR MAGNETIC TAPE UNITS, OVERLAPPING ALL BUT TAPE READ OPERATIONS. TAPE ADDRESS DIALING BETWEEN JOBS IS HANDLED THROUGH ASSIGN CARDS. THE MEMORY SIZE OF THE B280 PROGRAM IS SET BY A SPECIAL CONTROL CARD. OPERATOR COMMUNICATION ROUTINES VIA TYPEWRITER, ALLOWING SIMULATION OF ALL B280 CONSOLE CONTROL OPERATIONS, INCLUDE HALT, CONTINUE, MEMORY DISPLAY, ALTER MEMORY, INSTRUCTION BRANCHING, FLOW TRACE, PROGRAM LOAD, AND B280 CORE DUMP.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-11.1.008 PROGRAM TO PROCESS ON A 360 OBJECT PROGRAMS WRITTEN FOR AN RCA 501 AVAILABLE 3RD QUARTER 1967. SPECIFY FILE NUMBER 360D-11.1.008

AUTHORS..W.G. KELLY MR. J.J. COHEN LYNN G. BASCH
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425 PARK AVE., NEW YORK, N.Y.

TITLE...RCA 501 SIMULATOR PROGRAM FOR THE IBM SYSTEM/360.
***N ***

THIS PROGRAM WILL PROCESS ON A SYSTEM/360 OBJECT PROGRAMS WRITTEN FOR AN RCA 501. THE PROGRAM WILL REQUIRE 100,000 BYTES OF MEMORY PLUS STORAGE ROOM FOR THE RCA PROGRAM. THE SOURCE LANGUAGE IS BASIC ASSEMBLER. THE SIMULATOR CONTAINS ALL THE ROUTINES REQUIRED TO SIMULATE 501 INSTRUCTIONS AND RESERVES AN AREA OF SYSTEM/360 MAIN STORAGE TO SIMULATE THE 501 HIGH SPEED MEMORY. BY MEANS OF OS/360 DATA DEFINITION CARDS, SYSTEM/360 INPUT/OUTPUT DEVICES ARE ASSIGNED TO PERFORM THE CORRESPONDING FUNCTIONS OF THE 501 INPUT/OUTPUT DEVICES. THE SIM 501 PROGRAM PACKAGE CONTAINS THE SIMULATION MONITOR AND THE 501 INTERPRETER PROGRAMS.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR 7-TRACK REEL OF MAGNETIC TAPE. THE TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.

360D-11.1.009 SIMULATE RCA-301 UNDER DOS AVAILABLE 3RD QUARTER 1967. SPECIFY FILE NUMBER 360D-11.1.009

AUTHOR...MR. G. DRAKE

DIRECT INQUIRIES TO..

MR. G. DRAKE,3424 WILSHIRE BLVD.,LOS ANGELES, CALIF. 90005

TITLE...RCA 301 SIMULATOR FOR S/360
***N ***

A PROGRAM TO OPERATE UNDER DOS TO SIMULATE MOST FEATURES OF THE RCA 301 SYSTEM. 64K SYSTEM/360 IS REQUIRED FOR 10K AND 20K 301 PUNCH, RACE FILE, PAPER TAPE READER, TAPE DRIVES, DISK FILE AND MONITOR PRINTER WILL BE SIMULATED ON THE APPROPRIATE SYSTEM/360 DEVICES. THE SIMULATOR IS CODED IN DOS ASSEMBLY LANGUAGE, OPTIMIZED FOR THE SYSTEM/360 MOD 40, AND USES DOS LIOCS AND PIOCS MACROS TO SIMULATE I/O. RCA 301 TAPE FILES AND PAPER TAPE MUST BE FILE CONVERTED BEFORE USE BY THE SIMULATOR.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-11.1.010 A 1401 PROGRAM TO RUN 1440 OBJECT PROGRAMS ON MODEL 30 IN 1401 COMPATIBILITY MODE AVAILABLE 3RD QUARTER 1967. SPECIFY FILE NUMBER 360D-11.1.010

AUTHOR...V.F. YEZZI

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TITLE...1401 PROGRAM TO RUN 1440 PROGRAMS ON S/360 IN 1401 COMPATIBILITY MODE
***N 07.6 08.8 30.0 ***

THIS IS A 1401 AUTOCODER PROGRAM THAT WILL RUN 1440 OBJECT PROGRAMS ON THE MODEL 30 SYSTEM/360 IN 1401 COMPATIBILITY MODE. IT IS TO BE USED PRIMARILY FOR DEMONSTRATION PURPOSES TO RUN 1440 PROGRAMS WHERE 1440 COMPATIBILITY IS NOT AVAILABLE. THE PROGRAM READS THE 1440 OBJECT DECK CARDS AND LOADS THEM INTO THEIR PROPER CORE STORAGE POSITION. THEN THE PROGRAM SCANS ALL OF CORE, LOOKING FOR 1440 READER, PRINTER AND PUNCH I/O INSTRUCTIONS. THESE ARE CHANGED TO CONFORM TO THE 1401 I/O INSTRUCTION SET. THIS OPERATION TAKES APPROXIMATELY 10-15 SECONDS. ONCE ALL OF CORE IS TRANSLATED INTO 1401 LANGUAGE, THE 1440 PROGRAM IS THEN EXECUTED. THIS PROGRAM HAS BEEN TESTED WITH READER, PRINTER, PUNCH, DISK, AND TAPE I/O INSTRUCTIONS. A BASIC REQUIREMENT IS THAT ALL 1440 I/O AREAS BE MADE IDENTICAL TO THOSE IN THE 1401 SYSTEM. MACHINE REQUIREMENTS- S/360 MODEL 30 WITH 16K BYTES AND THE 1401/1460 COMPATIBILITY FEATURE.

360D-11.3.001 1401/1460 SENSE SWITCH PROGRAM FOR USE IN RUNNING ON SYSTEM/360 IN COMPATIBILITY MODE AVAILABLE 3RD QUARTER 1967. SPECIFY FILE NUMBER 360D-11.3.001

AUTHOR...R.A. MACKINNON

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TITLE...1401/1460 SENSE SWITCH PROGRAM FOR S/360 COMPATIBILITY MODE

THE SENSE SWITCH PROGRAM IS DESIGNED TO RUN IN 1401/1460 COMPATIBILITY MODE ON A S/360 MODEL 30 AND PROVIDE HARD-COPY DOCUMENTATION OF SENSE SWITCH SETTINGS IN AUXILIARY STORAGE PRIOR TO LOADING A USERS 1401/1460 OBJECT DECK. THE SENSE SWITCH PROGRAM LOADS THE USERS PROGRAM USING A SERIES OF PROGRAM STEPS WHICH SIMULATE THE LOAD KEY ON A 1402 CARD READER. ASSEMBLED FOR AN BK 1401/1460 SYSTEM, THE PROGRAM RUNS ON ANY S/360 MODEL 30 WHICH HAS THE 1401/1460 BASIC COMPATIBILITY FEATURE, CARD READER, AND 1052 CONSOLE TYPEWRITER. USER REQUIREMENTS WILL DICTATE WHAT OTHER COMPONENTS ARE REQUIRED FOR THE MACHINE.

THE PROGRAM USES THE 1052 AND EXECUTES INDEXING AND SBR INSTRUCTIONS WHICH ARE A PART OF THE BASIC COMPATIBILITY FEATURE EVEN THOUGH THE USERS 1400 PROGRAMS DO NOT NECESSARILY USE THESE DEVICES OR FEATURES. THE INTENT OF THE PROGRAM IS ONLY TO DOCUMENT SENSE SWITCH SETTINGS AT PROGRAM LOAD TIME AND TO FACILITATE OPERATOR CHANGES BY GIVING PRINTED EVIDENCE OF MICRO-PROGRAMMED CONSOLE MANIPULATIONS. THE PROGRAM IS WRITTEN IN 1401 TAPE AUTOCODER.

360D-11.3.006 NON-CONSOLE SENSE SWITCH PROGRAM FOR USE IN RUNNING ON SYSTEM/360 IN COMPATIBILITY MODE AVAILABLE 3RD QUARTER 1967. SPECIFY FILE NUMBER 360D-11.3.006

Contributed Programs

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CONTINUED FROM PRIOR PAGE--

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TITLE...1401/1460 SENSE SWITCH PROGRAM FOR S/360 COMPATIBILITY
MODE
***N 03.4 03.6 ***

THE SENSE SWITCH PROGRAM IS DESIGNED TO RUN IN 1401/1460
COMPATIBILITY MODE ON A S/360 AND PRINT SENSE SWITCH SETTINGS
ON A 1403 PRINTER. THE INTENT OF THE PROGRAM IS ONLY TO DOCUMENT
SENSE SWITCH SETTINGS BEFORE PROGRAM LOAD TIME AND TO FACILITATE
OPERATOR CHANGES BY GIVING PRINTED EVIDENCE OF MICROPROGRAMMED
CONSOLE MANIPULATIONS. MACHINE CONFIGURATION- ASSEMBLED FOR
A 4K 1401/1460 SYSTEM, THE PROGRAM RUNS ON ANY S/360 WHICH HAS
THE 1401/1460 BASIC COMPATIBILITY FEATURE, CARD READER, AND
1403 PRINTER. USER REQUIREMENTS WILL DICTATE WHAT OTHER
COMPONENTS ARE REQUIRED FOR THE MACHINE.

360D-11.3.009 MODIFICATION OF 1401
EMULATOR TO /SUPPORT/ SECTOR AND TRACK 1405 /OPERATIONS/
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-11.3.009

AUTHOR...W.A. MARSH

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TITLE...EMULATION OF 1405 DISK STORAGE UNDER THE 1401 EMULATOR.
***N 00.4 12.0 ***

THIS IS A MODIFICATION TO VERSION III OF THE 1401 EMULATOR
360C-EU-074. IT WILL SUPPORT SECTOR AND TRACK 1405
OPERATIONS IN MOVE MODE ONLY. REQUIREMENTS ON S/360 MOD. 40
FOR THIS MODIFICATION ARE IDENTICAL TO THOSE FOR THE BASIC
EMULATOR WHICH SUPPORTS 1311 COMPATIBILITY. ONE 2311 DRIVE
IS REQUIRED FOR EACH 25,870 1405 SECTOR. SOURCE LANGUAGE
FOR THE MODIFICATION IS ASSEMBLER LANGUAGE.
NOTE- 1311 OPERATIONS CANNOT BE PERFORMED WHEN THIS MODIFICATION
IS BEING USED.

360D-11.3.010 SUBROUTINE FOR SIMULATING
THE 1419/360 FOR TESTING /PURPOSES/
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-11.3.010

AUTHOR...MISS J.M. BLAIR

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TITLE...1419 SIMULATOR FOR PROGRAMS WRITTEN UNDER 1419/360
INPUT OUTPUT CONTROL PROGRAM
***N 06.1 12.0 04.3 ***

THE 1419/360 SIMULATOR IS A SUBROUTINE WRITTEN AS A
PREINSTALLATION AID IN ORDER TO ALLOW THE TESTING OF
READER-SORTER PROGRAMS WHEN A 1419 IS NOT AVAILABLE ON THE
360 SYSTEM. WRITTEN IN BASIC ASSEMBLER LANGUAGE, THE
SIMULATOR IS ASSEMBLED WITH THE PROBLEM PROGRAM AND THROUGH
CARD INPUT SIMULATES THE READING OF MICR DOCUMENTS UNDER
IDCP /360P-ID-058/. THE MACHINE CONFIGURATION NECESSARY
TO RUN UNDER THE SIMULATOR WOULD INCLUDE A 360, MODELS 30 OR 40,
AND A CARD READER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-11.3.011 EMULATION OF 1405 DISK
STORAGE ON MODEL 40 WITH 2311 DRIVES
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-11.3.011

AUTHORS..STANLEY BERNOLD P. MACGREGOR

DIRECT INQUIRIES TO..

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TITLE...EMULATION OF IBM 1405 DISK STORAGE ON MOD 40 WITH
2311 DISK DRIVES.
***N 00.4 ***

THE 1410 EMULATOR PROGRAM /360C-EU-728/ FOR THE 360/40 HAS
BEEN MODIFIED TO ALLOW EMULATION OF 1405 DISK STORAGE ON 2311
DISK DRIVES. THE ROUTINE ANALYZES 1405 INSTRUCTIONS, CONVERTS
1405 ADDRESSES TO 2311 CYLINDER, HEAD, AND RECORD ADDRESSES,
SETS UP 2311 CHANNEL COMMAND WORDS, AND EXECUTES THE I/O
COMMAND CHAIN. 2311/S ARE FORMATTED WITH 200 BYTE DATA
FIELDS EQUIVALENT TO 200 CHARACTER 1405 SECTORS. THE APPROACH
APPEARS VALID FOR EMULATION OF 1301 OR 1311 ON 360/40 WITH 1410
1401 EMULATOR. THIS APPROACH REQUIRES NO USER PROGRAM
MODIFICATION.

MACHINE CONFIGURATION- THE PHILOSOPHY AND TECHNIQUE OF 1405
EMULATION OUTLINED HERE WOULD, WITH SLIGHT MODIFICATION, ALSO
BE VALID FOR EMULATION OF 1301 OR 1311 DISK DEVICES ON 360/40
WITH 1410 OR 1401 EMULATOR.

360D-11.3.012 PROGRAM TO HANDLE 1401
STACKER SELECT DELAY RPQ ON MODEL 30
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-11.3.012

AUTHOR...MR. R. STANDFAST

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TITLE...BIGCID FOR SYSTEM/360 MODEL 30 EMULATING 1401 W
STACKER SELECT DELAY
***N ***

THE PROGRAM WAS WRITTEN TO HANDLE THE 1401 RPQ NO. W-92210
STACKER SELECT DELAY ON THE 360 MODEL 30. IT REQUIRES 32K,
BASIC COMPATIBILITY, PMS, 1402-1403, AND NO DISK COMPATIBILITY.
TAPES MUST BE ON A SELECTOR CHANNEL. THE PROGRAM UTILIZES
A STANDARD BPS SUPERVISOR AND COULD BE READILY MODIFIED TO BE
INCORPORATED IN BOS 8K OR 16K FOR STACKED JOB PROCESSING -
INTERSPERSING 360 AND 1401 JOBS. SLIGHT MODIFICATIONS ARE
NECESSARY FOR 64K. PRINT /1403/. PUNCH AND READER /2540/
OPERATIONS ARE HANDLED IN 360 MODE. STACKER SELECT ON CARD N
IS BASED ON LAST STACKER SELECT COMMAND RECEIVED BEFORE
READING CARD N PLUS 1. LAST CARD SWITCH IS SET ON BY
READING A /# AS THE NEXT TO LAST DATA CARD. READ SPEED
REDUCED BY /# PERHAPS 200 CPM DEPENDING ON AMOUNT OF PROCESSING.
PRINT AND PUNCH SPEEDS NOT SERIOUSLY EFFECTED. COLUMN BINARY AND
PRINT STORAGE ARE SUPPORTED. USEFUL AS A GUIDE TO PMS
PROGRAMMING UTILIZING BPS OR BOS SUPERVISORS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM
OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/
DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE
WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED,
A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED-
THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-11.3.013 1410-7010 EMULATOR
1301-EMULATED ON 2311
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-11.3.013

AUTHORS..J.T. SOX

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GREENVILLE, S.C. 29601

TITLE...EMULATION OF 1410-7010 1301 ON 360/40 2314
***N 03.4 11.1 11.2 ***

THE 1410-7010 EMULATOR /360A-EU-728/ PROGRAM HAS BEEN MODIFIED
TO USE A 2314 INSTEAD OF A 2302 FOR EMULATION OF A 1301.
IMPROVED PERFORMANCE GAINED BY USE OF A 2314. THE MACHINE
REQUIREMENTS ARE THE SAME FOR USING A 2302. THREE 2314 DRIVES
ARE REQUIRED FOR EACH 1301 MODULE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/
DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL
BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE
SUBMITTAL IS REQUIRED.

360D-11.4.001 SIMULATOR PROGRAM
IMPLEMENTING THE NOBIS EDUCATIONAL COMPUTER DESIGN
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-11.4.001

AUTHORS..R. LORD

G. BARRATT

DIRECT INQUIRIES TO..

G. BARRATT, CUSTOMER EDUCATION, IBM AUSTRALIA LIMITED,
BOX 88, P.O., ST. KILDA, MELBOURNE, VICTORIA, AUSTRALIA

TITLE...A SIMULATOR PROGRAM IMPLEMENTING THE NOBIS EDUCATIONAL
COMPUTER DESIGN
***N 30.1 12.1 ***

THIS PROGRAM IS INTENDED AS SUPPORT FOR AN EDUCATION CENTRE
COURSE AND ACTS AS THE MEDIUM THROUGH WHICH STUDENTS CAN
GAIN PRACTICAL PROGRAMMING EXPERIENCE USING A SIMPLE INSTRUCTION
SET AND PROGRAMMING AT THE MACHINE LEVEL. THE PROGRAM
SIMULATES THE NOBIS /NUMERICALLY ORIENTED BASIC INSTRUCTION
SYSTEM/ COMPUTER. IT HAS BEEN WRITTEN TO RUN UNDER 8K BOS
BUT MODIFICATION FOR OTHER SYSTEMS HAS BEEN TAKEN INTO ACCOUNT.
A SYSTEM/360 WITH 16K, ONE 2540 AND ONE 1403 IS REQUIRED.
THE MONITOR OCCUPIES 4640 POSITIONS OF CORE STORAGE FROM
LOCATION 7648. CORE LOCATIONS 12K TO 16K ARE RESERVED AS THE
CORE AREA FOR THE NOBIS PROGRAM. THE SOURCE LANGUAGE IS
ASSEMBLER LANGUAGE.

THE BASIC PROGRAM MATERIAL IS AVAILABLE IN CARD FORM OR ON
ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR.
IF TRACK REQUIREMENT IS NOT INDICATED ON THE ORDER CARD
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-12.0.001 MODEL 20 CARD CODE VALIDITY
CHECK CONVERSION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-12.0.001

AUTHOR...R.A. LONG

DIRECT INQUIRIES TO..

R.A. LONG, IBM CORP., SEVEN PENN CENTER, PHILADELPHIA, PA.

TITLE...S/360 MODEL 20 CARD CODE VALIDITY CHECKING PROGRAM
***N 06.5 01.6 12.1 ***

THE CARD CODE VALIDITY CHECKING PROGRAM IS USED TO PURGE
CARD FILES OF ALL CARDS HAVING COLUMNS PUNCHED WITH CHARACTERS
WHICH ARE CONSIDERED INVALID BY THE 360 MODEL 20. THIS FILE
CONVERSION PROGRAM IS DESIGNED TO VALIDATE FILES WHICH
WERE PREVIOUSLY USED IN A UNIT RECORD INSTALLATION AND WHICH
ARE TO BE TRANSFERRED DIRECTLY TO USE IN A MODEL 20 INSTALLATION.
THE PROGRAM, WRITTEN IN MODEL 20 BASIC ASSEMBLER LANGUAGE,
UTILIZES A 4K MODEL 20 WITH A 2560 MFCM. THE INVALID CARDS
ARE SELECTED INTO STACKER POCKET 2, WHILE ALL VALID CARDS
FALL INTO STACKER POCKET 1.

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360D-12.0.002 PROGRAM TO FAMILIARIZE
OPERATORS WITH 1401/1460 EMULATOR ON MODEL 40
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-12.0.002

AUTHOR...R.A. MACKINNON

DIRECT INQUIRIES TO...

MR. R.A. MACKINNON, IBM CORP., 520 BOYLSTON ST., BOSTON, MASS.

TITLE...FAMILIARIZATION PROGRAM FOR THE MODEL 40 1401/1460
EMULATOR.
***N 30.2 11.0 ***

THE PROGRAM PRESENTS A CONTROLLED ENVIRONMENT WITH WHICH
CONSOLE OPERATORS, WHO WILL RUN THE MODEL 40 IN COMPATIBILITY
MODE, CAN COMMUNICATE WITH THE 1401/1460 EMULATOR PROGRAM.
USED IN CONJUNCTION WITH A FORMAL PRESENTATION OF EMULATOR
CONCEPTS, CONTROL STATEMENTS, AND COMMANDS, THE
FAMILIARIZATION PROGRAM CAN TEST AND STRENGTHEN EACH
OPERATORS LEVEL OF KNOWLEDGE ON AN INDIVIDUAL AND PERSONAL BASIS.
SPECIFICALLY, THE EXERCISE PRESENTS THE OPERATOR WITH THE TWO
TYPES OF 1401 HALTS, REQUIRES BRANCHING AND TURNING ON AND OFF OF
A SENSE SWITCH, ASKS THE USER TO ENTER A JULIAN DATE IN
LOAD MODE, AND ASKS THE USER TO INITIALIZE THE EXERCISE EITHER
BY BRANCHING TO A SPECIFIED LOCATION OR THROUGH AN EMULATOR
FACILITY FOR LOADING AN OBJECT DECK FROM THE CARD READER.
WHEREVER POSSIBLE, THE OPERATORS ACTIONS ARE VERIFIED AND
APPROPRIATE NOTIFICATION OF CORRECT OR INCORRECT PROCEDURE IS
GIVEN ON THE 1052. MACHINE CONFIGURATION- IBM SYSTEM/360
MODEL 40 WITH 1401/1460 COMPATIBILITY FEATURE, 1052 PRINTER
KEYBOARD, AND CARD READER. BPS PROGRAM 360-EU-074 MUST FIRST BE
LOADED TO ACCOMPLISH EMULATION OF THE FAMILIARIZATION PROGRAM.
THE PROGRAM IS WRITTEN IN 1401 TAPE AUTOCODER.

360D-12.0.003 SIFT BCD /CODES/ TO EBC AND
DIAGNOSE FORTRAN IV CONVERSION /PROBLEMS/ OS/360
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-12.0.003

AUTHOR...MR. D. JACOBS

DIRECT INQUIRIES TO...

MR. D. JACOBS, THE BOEING CO., VERTOL DIV., 100 WOODLAND AVE.,
PLANT 3-01, MAIL STOP P30-47, RIDLEY PARK, PA.

TITLE...SIFT BCD CODES TO EBC AND DIAGNOSE FORTRAN IV CONVERSION
PROBLEMS UNDER OS/360
N VDB SFTO 00.0 04.3 06.5 12.1

THIS PROGRAM SIFTS BCD CODES INTO EBC AS WELL AS DIAGNOSING
CERTAIN CONVERSION PROBLEMS WHICH A FORTRAN IV PROGRAM WILL
HAVE UPON CONVERTING TO THE 360. THE PROBLEMS WHICH ARE
DIAGNOSED ARE-

- ALL FORMAT STATEMENTS CONTAINING ,,A5 FORMATS,, OR
GREATER FLAGGED WITH AN ,,A,, ALL FORMAT STATEMENTS
CONTAINING ,,D FORMATS,, ARE FLAGGED WITH AN ,,D,, AT
THE END OF EACH ROUTINE /END INDICATED BY AN ,,END CARD,,/
A REFERENCE TABLE IS PRODUCED INDICATING THE LOCATION OF
EVERY FORMAT STATEMENT /BY ISN/ AND THE LOCATION OF THEIR
RESPECTIVE READ-WRITE STATEMENTS /BY ISN/.
- EVERY BINARY READ-WRITE STATEMENT IS FLAGGED WITH A ,,B,,
- EVERY CALL TO A SUBROUTINE WHICH IS NOT IN THE SUBROUTINE
LIBRARY IS FLAGGED WITH A ,,C,, THE STANDARD SUBROUTINE
LIST IS COMPILED BY THE USER AND PUT IN A SEQUENTIAL DATA
SET. A REFERENCE TABLE OF CALLED SUBROUTINES AND WHETHER
OR NOT THEY ARE FLAGGED IS PRODUCED AFTER THE
FORMAT-READ-WRITE REFERENCE TABLE. MONITOR OR OPERATING
SYSTEM REQUIRED- OS/360.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON
ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-12.0.004 SIFT BCD /CODES/ TO EBC AND
DIAGNOSE FORTRAN IV CONVERSION /PROBLEMS/ BOS/360
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-12.0.004

AUTHOR...MR. D. JACOBS

DIRECT INQUIRIES TO...

MR. D. JACOBS, THE BOEING CO., VERTOL DIV., 100 WOODLAND AVE.,
PLANT 3-01, MAIL STOP P30-47, RIDLEY PARK, PA.

TITLE...SIFT BCD CODES TO EBC AND DIAGNOSE FORTRAN IV CONVERSION
PROBLEMS UNDER BOS/360.
S VDB SFTB 00.0 04.3 06.5 12.1

THIS PROGRAM SIFTS BCD CODES INTO EBC AS WELL AS DIAGNOSING
CERTAIN CONVERSION PROBLEMS WHICH A FORTRAN IV PROGRAM WILL
HAVE UPON CONVERTING TO THE 360. THE PROBLEMS WHICH ARE
DIAGNOSED ARE-

- ALL FORMAT STATEMENTS CONTAINING ,,A5 FORMATS,, OR
GREATER FLAGGED WITH AN ,,A,, ALL FORMAT STATEMENTS
CONTAINING ,,D FORMATS,, ARE FLAGGED WITH AN ,,D,, AT
THE END OF EACH ROUTINE /END INDICATED BY AN ,,END CARD,,/
A REFERENCE TABLE IS PRODUCED INDICATING THE LOCATION OF
EVERY FORMAT STATEMENT /BY ISN/ AND THE LOCATION OF THEIR
RESPECTIVE READ-WRITE STATEMENTS /BY ISN/.
- EVERY BINARY READ-WRITE STATEMENT IS FLAGGED WITH A ,,B,,
- EVERY CALL TO A SUBROUTINE WHICH IS NOT IN THE SUBROUTINE
LIBRARY IS FLAGGED WITH A ,,C,, THE STANDARD SUBROUTINE
LIST IS COMPILED BY THE USER AND PUT IN A SEQUENTIAL DATA
SET. A REFERENCE TABLE OF CALLED SUBROUTINES AND WHETHER
OR NOT THEY ARE FLAGGED IS PRODUCED AFTER THE
FORMAT-READ-WRITE REFERENCE TABLE.

THE SUBROUTINE TABLE IS READ IN WRITE AFTER THE END CARD OF THE
OBJECT MODULE. EACH NAME SHOULD APPEAR ON A CARD BEGINNING IN
COLUMN 1. THE LAST NAME SHOULD BE ,,9END,, CARDS ARE READ IN
VIA SYSIPT. LISTINGS ARE PRODUCED VIA SYSLST. PUNCHED OUTPUT
IS PRODUCED VIA SYSOPT. MONITOR OR OPERATING SYSTEM REQUIRED-
BOS/360.

CONTINUED FROM PRIOR COLUMN--

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-12.1.011 OS 7094 BINARY TAPE READING
AND CONVERSION SUBROUTINES
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-12.1.011

AUTHORS..MR. G.M. KNAUP MR. D.J. MARTIN

DIRECT INQUIRIES TO...

MR. G.M. KNAUP, IBM CORP., 1120 CONNECTICUT AVE., N.W.,
WASHINGTON, D.C. 20036

TITLE...OS FORTRAN IV SUBROUTINES FOR READING AND CONVERTING
BINARY TAPES GENERATED BY A 7094
***N 07.1 00.3 12.1 ***

THIS PACKAGE, WRITTEN IN S/360 OS ASSEMBLY LANGUAGE, CONSISTS
OF TWO SETS OF SUBROUTINES. THE FIRST SET FACILITATES THE
READING OF A 7-TRACK BINARY TAPE GENERATED BY AN IBM 7094
COMPUTER INTO A S/360 PROGRAM. SUBROUTINES ARE PROVIDED TO
READ AND DEBLOCK TAPES WITH THE FOLLOWING FORMATS-

- DCS - FORTRAN IV.
- DCS - NON-FORTRAN IV.
- 7094 NON-DCS-FORTRAN IV.
- ANY 7-TRACK TAPE.

THE SECOND SET FACILITATES THE CONVERSION OF 7094 GENERATED
DATA, READ BY THE FIRST SUBROUTINE SET, FROM A 36-BIT WORD
SIZE TO A 32-BIT WORD SIZE. ONE REEL OF MAGNETIC TAPE IS
REQUIRED TO OBTAIN THE BASIC PROGRAM MATERIAL. THIS TAPE
MAY BE SUPPLIED OR ORDERED FROM YOUR IBM REPRESENTATIVE.
THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.

360D-12.1.012 PROGRAM TO EDIT UNIT RECORD
FILES AND SELECT INVALID PUNCH COMBINATIONS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-12.1.012

AUTHOR...J.F. SLOAN

DIRECT INQUIRIES TO...

J.F. SLOAN, IBM CORP., 618 SOUTH MICHIGAN, CHICAGO, ILL.

TITLE...EDIT UNIT RECORD FILES FOR THE MODEL 20.
***N 06.6 06.0 ***

THIS PROGRAM EDITS UNIT RECORD FILES AND SELECTS THOSE
WHICH HAVE EITHER INVALID 360 PUNCH COMBINATIONS /NOT ONE
OF THE 256 VALID CHARACTERS/ OR VALID 360 PUNCHES, BUT PROBABLY
NOT WANTED BY THE USER. THIS INSURES THAT THE DATA FILES
WILL BE PROCESSED AND READ CORRECTLY BY ANY 360. PROGRAM
IS WRITTEN FOR A 4K MODEL 20, MFCM AND A PRINTER.

360D-12.1.013 1620 COMPATIBILITY DATA DISK
GENERATION /CONVERSION OF BCD 7 TRK BACK-UP OF ORIGINAL 1620 DISK PAK/
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-12.1.013

AUTHOR...MR. D.M. KNIGHT

DIRECT INQUIRIES TO...

MR. D.M. KNIGHT, NORDEN DIV. OF UNITED AIRCRAFT CORP.,
NORWALK, CONN.

TITLE...360/1620 DATA DISK GENERATION FROM 1401 7 TRACK TAPE
***S UAN 06.5 06.6 ***

THIS STAND-ALONE UTILITY DECK READS A 7 TRACK 1401 TAPE
/BLOCK SIZE EQUALS 2120, RECORD LENGTH EQUALS 106/ THAT HAS
BEEN PREPARED FROM A 1620 - 1311 DISK PAK. THE DATA IS PUT
THROUGH A CHARACTER CONVERSION AND WRITTEN ON A 2311 DISK IN
1620 COMPAT. THE METHOD USED IS BYTE BY BYTE
SCAN OF DATA, MOVING FLAGS TO FLAG BYTES AND PACKING CONDENSE
EACH 106 DIGIT RECORD TO THE 63 BYTE RECORD USED IN 1620
COMPATIBILITY. THE DISK MUST CONFORM TO COMPATIBILITY SPECS
AND HAVE BEEN PREVIOUSLY FORMATTED USING THE STANDARD 1620
COMPATIBILITY DISK FORMATTING PROGRAM. THIS PROGRAM IS
DESIGNED FOR CONVERSION OF DATA DISKS, NOT PROGRAM DISKS.
ONE 7 TRACK TAPE DRIVE AND ONE 2311 DISK DRIVE ARE REQUIRED.
SOURCE LANGUAGE IS B.P.S. ASSEMBLER WITH ALL MACROS EXPANDED.
RUNNING TIME IS ABOUT 18 MINUTES PER DISK.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR
ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE
REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED
9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-
NO TAPE SUBMITTAL IS REQUIRED.

360D-12.2.001 BPS CONVERT H400-SOURCE-
EASY TO S/360 SOURCE-AL
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-12.2.001

AUTHOR...LARRY A. WHITNEY

DIRECT INQUIRIES TO...

LARRY A. WHITNEY, IBM CORP., 701 WEST BROAD ST.,
BETHLEHEM, PA. 18016

TITLE...H400/S360 TRANSLATOR
***N ***

THIS BPS PROGRAM WILL CONVERT H400 SOURCE EASY PROGRAMS TO
S/360 SOURCE AL PROGRAMS. THE RECOMMENDED TRANSLATION EFFORT
IS BROKEN INTO FOUR STEPS- /1/ CARD-TO-TAPE WITH THE H400
SOURCE,, /2/ TRANSLATION, CREATING S/360 AL SOURCE TAPE,,
/3/ UPDATING 360 SOURCE TAPE WITH MANUAL CORRECTIONS,, OR
PUNCHING SOURCE TAPE AND INSERTING MANUAL CORRECTIONS,,
/4/ ASSEMBLING AND TESTING TRANSLATED PROGRAM. CONFIGURATION-
S/360, 65K MIN-256K MAX. DECIMAL FEATURE, 1052, 1 SEL CHAN.,
1403, 2540, TIMER /OPTIONAL/ 4 TAPES MIN /AT LEAST 1 9 TRK/ -

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CONTINUED FROM PRIOR PAGE--
6 TAPES MAX.

ONE MAGNETIC TAPE IS REQUIRED TO OBTAIN THE BASIC PROGRAM MATERIAL. THIS TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH.

360D-13.1.001 TALLY TWO-DIGIT NUMERIC FIELDS AND PRINT FREQUENCY DISTRIBUTION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-13.1.001

AUTHOR...MR. R.T. JOHNSON

DIRECT INQUIRIES TO...
MR. R.T. JOHNSON, AMERICAN INSTITUTES FOR RESEARCH,
P.O. BOX 1113, PALO ALTO, CALIF.

TITLE...MODEL 20 - DOUBLE DIGIT COUNT
***N 01.0 13.0 ***

UP TO 22 TWO-DIGIT NUMERICAL FIELDS ARE TALLIED IN A SINGLE PASS OF THE DATA, AND THE RESULTING FREQUENCY DISTRIBUTIONS PRINTED. A SINGLE PARAMETER CARD IDENTIFIES THE CARD COLUMNS TO BE COUNTED, AND OUTPUT INCLUDES THE CARD COLUMN NUMBER FOR IDENTIFICATION. THE TWO-DIGIT NUMBER, FREQUENCY, PERCENT OF TOTAL, CUMULATIVE FREQUENCY, AND CUMULATIVE PERCENT ARE PRINTED STARTING WITH HIGHEST OBTAINED NUMBER, AND FINISHING WITH THE LOWEST OBTAINED NUMBER. BLANKS ARE NOT INCLUDED IN THE COUNT FOR PERCENTAGE CALCULATIONS, BUT THE FREQUENCY OF BLANKS IS PRINTED.
MACHINE REQUIREMENTS- 8K WITH A CARD READER AND PRINTER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-13.1.002 TALLY 1 OR 2 THREE-DIGIT FIELDS AND PRINT FREQUENCY DISTRIBUTION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-13.1.002

AUTHOR...MR. R.T. JOHNSON

DIRECT INQUIRIES TO...
MR. R.T. JOHNSON, AMERICAN INSTITUTES FOR RESEARCH,
P.O. BOX 1113, PALO ALTO, CALIF. 94302

TITLE...MODEL 20 - TRIPLE DIGIT COUNT
***N 01.0 13.0 ***

EITHER 1 OR 2 THREE-DIGIT NUMERICAL FIELDS CAN BE TALLIED IN A SINGLE PASS OF THE DATA, AND THE RESULTING FREQUENCY DISTRIBUTIONS PRINTED. A SINGLE PARAMETER CARD IDENTIFIES THE CARD COLUMNS TO BE COUNTED, AND OUTPUT INCLUDES THE CARD COLUMN NUMBER FOR IDENTIFICATION. THE THREE-DIGIT NUMBER, FREQUENCY, PERCENT OF TOTAL, CUMULATIVE FREQUENCY, AND CUMULATIVE PERCENT ARE PRINTED STARTING WITH THE HIGHEST OBTAINED NUMBER, AND FINISHING WITH THE LOWEST OBTAINED NUMBER. BLANKS ARE NOT INCLUDED IN THE COUNT FOR PERCENTAGE CALCULATIONS, BUT THE FREQUENCY OF BLANKS IS PRINTED.
MACHINE REQUIREMENTS- 8K WITH A CARD READER AND PRINTER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-13.1.003 CALCULATES MEANS, STANDARD DEVIATIONS UP TO EIGHTY NUMERIC FIELDS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-13.1.003

AUTHOR...MR. R.T. JOHNSON

DIRECT INQUIRIES TO...
MR. R.T. JOHNSON, AMERICAN INSTITUTES FOR RESEARCH,
P.O. BOX 1113, PALO ALTO, CALIF. 94302

TITLE...MODEL 20 - MEANS AND STANDARD DEVIATIONS
***N 01.0 13.0 ***

MEANS AND STANDARD DEVIATIONS FOR UP TO EIGHTY NUMERICAL FIELDS ARE CALCULATED IN A SINGLE PASS OF THE DATA. A PARAMETER CARD IDENTIFIES THE COLUMN NUMBERS AND SIZE OF THE FIELDS TO BE PROCESSED, AND THE OPTION TO ELIMINATE ANY ZERO FIELDS. THE NUMBER OF CASES, SUM OF X, SUM OF X SQUARED, MEAN AND STANDARD DEVIATION ARE PRINTED OUT FOR EACH. FIELDS ARE RESTRICTED TO LESS THAN OR EQUAL TO 9 DECIMAL DIGITS, N TO 7, SUM X TO 15, AND SUM X SQUARED TO 31 DIGITS. BLANKS ARE CHANGED TO ZEROS.
MACHINE REQUIREMENTS- 8K WITH A CARD READER AND PRINTER.

360D-13.6.001 STEPWISE MULTIPLE REGRESSION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-13.6.001

AUTHOR...M.P. ROSENTHAL

DIRECT INQUIRIES TO...
M.P. ROSENTHAL, IBM CORP., 340 MARKET ST., SAN FRANCISCO, CALIF.

TITLE...STEPWISE MULTIPLE REGRESSION PROGRAM
***N 06.5 ***

THIS PROGRAM PERFORMS A STEP-WISE REGRESSION ANALYSIS ON UP TO 9999 SETS OF OBSERVATIONS ON ONE DEPENDENT VARIABLE AND UP TO 57 EXPLANATORY VARIABLES. THE PROGRAM ALLOWS FOR NINE TYPES OF ALGEBRAIC TRANSFORMATIONS OF ORIGINAL DATA. OUTPUT CONSISTS OF MEANS, STANDARD DEVIATIONS, SIMPLE CORRELATION COEFFICIENTS, AND STEP-WISE RESULTS. STEP-WISE RESULTS CONSIST OF THE STANDARD ERROR OF ESTIMATE, THE MULTIPLE CORRELATION COEFFICIENT, F, CONSTANT TERM, AND REGRESSION COEFFICIENTS AND THEIR STANDARD DEVIATIONS, STUDENTS T/S, AND BETA COEFFICIENTS. OUTPUT OF

CONTINUED FROM PRIOR COLUMN--
RESIDUALS IS OPTIONAL. THE PROGRAM IS WRITTEN IN FORTRAN AND REQUIRES 32K AND BPS FORTRAN FEATURES FOR COMPILATION AND EXECUTION.

360D-15.1.001 MANAGEMENT DECISION GAME FOR UNIVERSITY ADMINISTRATORS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.1.001

AUTHOR...MR. W.W. KLAPROTH

DIRECT INQUIRIES TO...
MR. W.W. KLAPROTH, IBM CORP., 1130 SO. SIXTH ST.,
SPRINGFIELD, ILL.

TITLE...UNIVERSITY ADMINISTRATORS DECISION LABORATORY
***N 15.5 30.2 ***

THE UNIVERSITY ADMINISTRATORS DECISION LABORATORY APPLIES THE TECHNIQUES OF GAMING SIMULATION AND THE DECISION PROCESS TO UNIVERSITY ADMINISTRATION. PARTICIPANTS ARE GROUPED IN FROM TWO TO NINE TEAMS AND ACT AS UNIVERSITY EXECUTIVES MAKING PERIODIC HIGH LEVEL DECISIONS FOR THEIR SCHOOLS. THE DECISIONS INVOLVE THE ALLOCATION OF FUNDS WITHIN A UNIVERSITY TO MEET OBJECTIVITY. A COMPUTER SIMULATES THE ACTIVITY OF EACH UNIVERSITY AND PREPARES REPORTS SHOWING THE RESULTS AND THE DECISIONS. THE MATH MODEL WAS PROGRAMMED IN 360 COBOL E. A 32K PROCESSOR IS REQUIRED WITH DOS OR TOS. USE UNDER FOS REQUIRES A 64 MACHINE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9-TRACK OR 7-TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9-TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-15.1.002 MATHEMATICAL MODEL OF A BUSINESS ECONOMY WITH /COMPETING/ SUPERMARKETS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.1.002

AUTHOR...FRANKLIN MILLS

DIRECT INQUIRIES TO...
FRANKLIN MILLS, IBM CORP., 100 SOUTH WACKER DR.,
CHICAGO, ILL. 60606

TITLE...PURDUE SUPERMARKET MANAGEMENT GAME.
N 15.2 29.0 30.0 15.5

A MATHEMATICAL MODEL OF A BUSINESS ECONOMY HAS BEEN DESIGNED, WITHIN WHICH TWO TO FIVE SUPERMARKETS COMPETE FOR THEIR SHARE OF THE MARKET. THE SYSTEM/360, UNDER CONTROL OF THE PROGRAM, THEN SIMULATES THE BUSINESS ACTIVITY DURING THE WEEK IN ACCORDANCE WITH THE RULES OF THE MODEL AND PREPARES A SERIES OF REPORTS SHOWING THE RESULTS OF THE WEEKS ACTIVITY. THE PROGRAM HAS BEEN WRITTEN IN FORTRAN IV FOR OPERATION ON A SYSTEM/360 64K MODEL 30 AND UP WITH DECIMAL ARITHMETIC AND FLOATING POINT.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-15.1.003 INVENTORY MANAGEMENT SIMULATOR
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.1.003

AUTHOR...R.T. LILLY

DIRECT INQUIRIES TO...
R.T. LILLY, IBM CORP., FIELD SYSTEMS CTR., 520 BOYLSTON ST.,
BOSTON, MASS. 02116

TITLE...INVENTORY MANAGEMENT SIMULATOR
***N 25.0 30.0 15.7 ***

AN INVENTORY SIMULATION PROGRAM WHICH PROVIDES AT EXECUTION TIME-
- FOUR MODEL OPTIONS, CONSTANT, TREND, SEASONAL AND SEASONAL WITH TREND.
- FOUR ORDER QUANTITY OPTIONS.
- SAFETY STOCK BASED ON THE PERCENTAGE OF SERVICE DESIRED.
- OPTION OF FAST SMOOTHING.
- OPTION OF BACK-ORDERS.
- IMPLIED PARAMETERS.
CONTROL CARDS ARE NECESSARY ONLY IF ALTERING PARAMETERS DURING EXECUTION. THE PROGRAM IS WRITTEN IN DOS COBOL.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-15.2.001 DIRECT SEARCH ZERO-ONE INTEGER
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.2.001

AUTHORS...MR. K. SPIELBERG MR. C.E. LEMKE

DIRECT INQUIRIES TO...
MR. K. SPIELBERG, IBM CORP., 590 MADISON AVE., NEW YORK,
NEW YORK 10022

TITLE...DIRECT SEARCH ZERO-ONE INTEGER PROGRAMMING.
***N ***

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THE PROGRAM USES A DIRECT TREE SEARCH DEVELOPED BY THE AUTHORS. PRELIMINARY RESULTS INDICATE THAT THE METHOD USED IS CONSIDERABLY FASTER, PERHAPS BY A FACTOR OF 2 TO 4, THAN THE ADDITIVE ALGORITHM OF E. BALAS. A 35 VARIABLE, 28 CONSTRAINT, TEST PROBLEM HAS BEEN SOLVED OPTIMALLY IN 4 MINUTES ON THE IBM 360 MOD 40. THE PROGRAM SHOULD GIVE AT LEAST SUBOPTIMAL SOLUTIONS FOR PROBLEMS OF 30 TO 80 VARIABLES AND A SIMILAR NUMBER OF CONSTRAINTS. THE PROGRAM IS WRITTEN IN FORTRAN FOR THE IBM 360 MOD 40 AND THE SIZE OF THE PROBLEMS IS LIMITED BY THE RESTRICTIONS IMPOSED BY THE CURRENT VERSION OF THE FORTRAN PROGRAM. HOWEVER, MODIFICATIONS FOR HANDLING BIGGER PROBLEMS CAN EASILY BE MADE.

360D-15.2.002 PROGRAM TO SOLVE THE WAREHOUSE-DISTRIBUTOR PROBLEM
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.2.002

AUTHOR...JOHN S. SEGAL

DIRECT INQUIRIES TO..

JOHN S. SEGAL, IBM CORP., POST OFFICE BOX 6517,
MOBILE, ALA. 36606

TITLE...TRANSPORTATION PROBLEM.
***N 27.4 15.5 ***

THIS PROBLEM SOLVES THE WAREHOUSE-DISTRIBUTOR TYPE OF TRANSPORTATION PROBLEM USING A COLUMN MINIMA TO GENERATE AN INITIAL FEASIBLE SOLUTION. COLUMN OR ROW SLACK NECESSITATED BY INEQUALITY OF AVAILABILITY AND REQUIREMENTS IS AUTOMATICALLY GENERATED. PROGRAMMING LANGUAGE IS DOS FORTRAN. MACHINE REQUIREMENTS ARE ANY/360 WITH AT LEAST 32K CORE. ACTUAL CORE REQUIRED DEPENDS ON PROBLEM SIZE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-15.2.003 LINEAR PROGRAMMING CODE FOR SYSTEM/360 MODEL 20 CARD SYSTEM
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.2.003

AUTHORS...MRS. W. BIRTCH MR. J.E. STODOLA

DIRECT INQUIRIES TO..

MRS. W. BIRTCH, IBM CO. LTD., 5 PLACE VILLE MARIE,
MONTREAL 2, QUEBEC, CANADA

TITLE...LINEAR PROGRAMMING CODE FOR SYSTEM/360 MODEL 20 CARD SYSTEM.
***N 45.0 ***

THIS PROGRAM MAXIMIZES OR MINIMIZES A LINEAR OBJECTIVE FUNCTION SUBJECT TO SPECIFIED CONSTRAINTS. THE SIMPLEX METHOD IS USED, WITH THE BASIS CARRIED AS A COLUMN VECTOR. AT OPTIMIZATION, THE INVERSE OF THE STARTING BASIS AND SIMPLEX MULTIPLIERS ARE AVAILABLE FOR OUTPUT ANALYSIS. OUTPUT INCLUDES THE OPTIMAL SOLUTION REPORT, CHECK REPORT, COST RANGE REPORT, REDUCED COST REPORT AND RHS ANALYSIS REPORT. INPUT CAN BE IN DECIMAL OR IN EXCESS FIFTY FLOATING POINT. PROCESSING IS IN EXCESS FIFTY WITH 7 DIGIT PRECISION AND OUTPUT IS IN DECIMAL FORM. PROGRAM SUBROUTINES REQUIRE 2,816 BYTES, AND THE FOLLOWING RESTRICTION APPLIES TO PROBLEM SIZE., /M PLUS N/3 PLUS /M X N X 5/ MUST BE LESS THAN OR EQUAL TO MACHINE SIZE MINUS 2,816, WHERE M IS THE NUMBER OF CONSTRAINTS PLUS 2 AND N IS THE NUMBER OF STRUCTURAL VARIABLES PLUS THE NUMBER OF, GREATER THAN, CONSTRAINTS PLUS 2. THE PROGRAM IS WRITTEN IN ASSEMBLER LANGUAGE FOR AN 8K, 12K OR 16K MODEL 20, WITH A 2560 MFCM AND A 2203 PRINTER.

OPTIONAL MATERIAL- SOURCE DECK. OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

THE BASIC OR OPTIONAL PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-15.2.005 BRANCH AND BOUND MIXED INTEGER PROGRAM
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.2.005

AUTHOR...R. SHARESHIAN

DIRECT INQUIRIES TO..

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590 MADISON AVE., NEW YORK, N.Y. 10022

TITLE...BRANCH AND BOUND MIXED INTEGER PROGRAMMING-BBIMP
***N 13.0 ***

THE PROGRAM EMPLOYS A BRANCH AND BOUND ALGORITHM BASED UPON THE LAND AND DOIG METHOD TO SOLVE MIXED INTEGER PROGRAMMING PROBLEMS OF LIMITED SIZE. HOWEVER, THE PROGRAM MAY ALSO BE USED TO SOLVE PURE INTEGER PROBLEMS. THE LINEAR PROGRAMMING MINIMIZATION PROBLEM IS FIRST SOLVED WITHOUT REGARD TO INTEGRALITY CONSTRAINTS. FROM THIS POINT THE PROGRAM PROCEEDS AS IF TO ENUMERATE THE SET OF ALL POSSIBLE MIXED INTEGER SOLUTIONS BY CONSTRAINING EACH INTEGER VARIABLE SINGLY AND IN TURN TO AN INTEGER VALUE WITHIN ITS RANGE. A DUAL SIMPLEX LP ALGORITHM IS USED AS A BOUND-ESTABLISHING MECHANISM IMMEDIATELY AFTER EACH INTEGER VARIABLE IS CONSTRAINED. LARGE SUBSETS OF POSSIBLE SOLUTIONS, CORRESPONDING TO CONTINUATIONS OF PARTIAL SEQUENCES OF INTEGER-CONSTRAINED INTEGER VARIABLES, MAY BE ELIMINATED FROM CONSIDERATION ONCE IT HAS BEEN DEMONSTRATED THAT THEY MUST BE INFERIOR TO THE "BEST", FEASIBLE SOLUTION OBTAINED SINGLY AND IN TURN. WHEN THE TOTAL SET HAS BEEN EXHAUSTED THE BEST FEASIBLE SOLUTION IS OPTIMAL. THE PROGRAM WAS WRITTEN IN THE FORTRAN IV LANGUAGE FOR THE IBM/360 UNDER THE BPS SYSTEM.

CONTINUED FROM PRIOR COLUMN--

PROBLEM SIZE IS LIMITED BY THE AMOUNT OF CORE MEMORY AVAILABLE. THE LP ROUTINE IS SINGLE PRECISION.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-15.4.001 PROGRAM TO PERFORM STANDARD NETWORK CALCULATIONS AND PRODUCE A DATED SCHEDULE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.4.001

AUTHOR...D.G. DOUGLAS, JR.

DIRECT INQUIRIES TO..

D.G. DOUGLAS, JR., IBM CORP., 570 BROAD ST., NEWARK, N.J. 07102

TITLE...CPM PERT TIME
***N 23.1 10.1 ***

THIS PROGRAM PERFORMS STANDARD NETWORK TIME CALCULATIONS AND PRODUCES A DATED PREDECESSOR-SUCCESSOR SCHEDULE. ON A 65K SYSTEM/360, THE CAPACITY IS 1100 ACTIVITIES. THE DESIGN AND IMPLEMENTATION IS SIMILAR TO NASA PERT TIME I., HOWEVER, PROBABILITIES ARE NOT CALCULATED AND SORTED REPORTS ARE NOT PRODUCED. AN OUTPUT TAPE AND/OR CARDS ARE PRODUCED FOR FURTHER PROCESSING IF ADDITIONAL REPORTS ARE REQUIRED. REQUIRES A 65K SYSTEM/360 WITH 3 TAPE DRIVES. THE PROGRAM CAN BE MODIFIED TO HANDLE MORE ACTIVITIES WITH MORE CORE STORAGE. THE PROGRAM IS WRITTEN ENTIRELY IN BPS FORTRAN.

360D-15.4.002 DOS CRITICAL PATH MANPOWER-LEVELING
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.4.002

AUTHOR...JOHN S. SEGAL

DIRECT INQUIRIES TO..

JOHN S. SEGAL, IBM CORP., P.O. BOX 6517, MOBILE, ALA. 36606

TITLE...CRITICAL PATH AND MANPOWER LEVELING SYSTEM
***N 13.4 ***

THIS SYSTEM ACCEPTS CARD INPUT CONTAINING I, J, D, MANPOWER REQUIRED BY UP TO 10 CRAFTS, AND DESCRIPTION FOR UP TO 2,000 JOBS, AND COMPUTES EARLY START, EARLY FINISH, LATE START, AND FINISH TIME FOR ALL JOBS. IN ADDITION, IF DESIRED, IT WILL GO THROUGH ANOTHER PASS AND COMPUTE START TIMES, WITHIN THE CRITICAL PATH, TO GIVE THE MOST EVEN MANPOWER USAGE POSSIBLE. THE PROGRAMMING LANGUAGE IS DOS FORTRAN. PROGRAM REQUIRES 65K/360 WITH TWO DISKS AND A PRINTER WITH 132 PRINT POSITIONS.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-15.5.001 MANAGEMENT DECISION-MAKING GAME FOR SYSTEM/360
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.5.001

AUTHORS...T.G. KAPLITS W.R. HALLETT S.J. KRASNOW

DIRECT INQUIRIES TO..

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CLEVELAND, OHIO 44115

TITLE...MANAGEMENT DECISION MAKING EXERCISE
***N 15.1 30.2 ***

THE SYSTEM/360 MANAGEMENT GAME PROGRAM, AN EXERCISE MODELED AFTER THE BUSINESS STRATEGY GAME CONSTRUCTED FOR THE AMERICAN MANAGEMENT ASSOCIATION, PERMITS FIVE TEAMS OR COMPANIES TO COMPETE IN AN ECONOMIC MARKET. EACH TEAM HAS CONTROL OVER A NUMBER OF DECISION VARIABLES WHICH DETERMINE ITS SUCCESS OR FAILURE IN COMPETING WITH EACH OTHER. THE RESULTS FROM ONE DECISION ENABLE EACH TEAM TO MAKE FURTHER DECISIONS FOR THE NEXT PERIOD., EACH PERIOD IS A QUARTER OF A YEAR. EVERY FOURTH QUARTER, ANNUAL STATEMENTS ARE PRODUCED FOR EACH TEAM. THE GAME, CONSISTING OF TWO FORTRAN PROGRAMS AND ONE ASSEMBLER PROGRAM, PERMITS THE OPERATOR TO VARY PARAMETERS TO CONTROL THE ECONOMIC MARKET FOR EACH QUARTER. SYSTEM/360 MANAGEMENT GAME WAS DESIGNED TO RUN UNDER 16K DOS ON A SYSTEM WITH A MINIMUM OF 32K OF CORE, DECIMAL AND FLOATING POINT ARITHMETIC, TWO TAPES, A CARD READER OR TAPE, ONE-2311 WITH ROOM FOR ONE DATA FILE, A CONSOLE TYPEWRITER AND PRINTER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

OPTIONAL PROGRAM MATERIAL - LISTINGS ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE. THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.
OPTIONAL MATERIAL DESIRED MUST BE ITEMIZED ON THE ORDER CARD.

360D-15.5.002 PROGRAM PROVIDES A COMPUTERIZED MATHEMATICAL MODEL OF HOSPITAL ADMINISTRATION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-15.5.002

AUTHOR...MR. S.B. LUCAS

Contributed Programs

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CONTINUED FROM PRIOR PAGE--

DIRECT INQUIRIES TO..
MR. S.B. LUCAS, IBM CORP., 112 E. POST RD.,
WHITE PLAINS, N.Y. 10601

TITLE...HOSPITAL ADMINISTRATION DECISION MAKING LABORATORY.
***N 15.1 20.2 ***

THIS PROGRAM PROVIDES A COMPUTERIZED MATHEMATICAL MODEL AS THE BASIS OF A MANAGEMENT GAME ORIENTED TO HOSPITAL ADMINISTRATION. WHILE GENERAL MANAGEMENT GAMES OR DECISION MAKING LABORATORIES ARE APPLICABLE TO MANY INDUSTRIES, THE MEDICAL HOSPITAL INDUSTRY HAS SIGNIFICANT OPERATIONAL DIFFERENCES. THE HOSPITALS SERVICE AND NONPROFIT CHARACTERISTICS REQUIRE DIFFERENT DECISION CRITERIA AND SUCCESS EVALUATION FACTORS. WRITTEN IN FORTRAN IV, THE PROGRAM REQUIRES A 64K MODEL SYSTEM/360 WITH THE SCIENTIFIC INSTRUCTION SET, AND IS OPERATIONAL UNDER THE DISK OPERATING SYSTEM.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID-NO TAPE SUBMITTAL IS REQUIRED.

360D-16.1.001 AEROSPACE VEHICLE DESIGN
TRAJECTORIES, ORBITS, ROCKETS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-16.1.001

AUTHORS..B. BOEHM J. RIEBER

DIRECT INQUIRIES TO..
MISS P. LEONHARDT, THE RAND CORP., 1700 MAIN ST.,
SANTA MONICA, CALIF.

TITLE...ROCKET - FORTRAN 4 VERSION
***S RS RK74 43.1 10.3 ***

ROCKET IV IS A FORTRAN IV PROGRAM WHICH MATHEMATICALLY SIMULATES THE FLIGHT OF AEROSPACE VEHICLES BY NUMERICAL INTEGRATION OF THEIR EQUATIONS OF MOTION. A SPECIAL-PURPOSE INPUT FORM ENABLES THE USER TO SPECIFY THE CHARACTERISTICS OF HIS VEHICLE AND ITS FLIGHT PLAN, BOTH OF WHICH CAN VARY THROUGH A WIDE RANGE OF CHOICES, WITH COMPARATIVELY LITTLE EFFORT. THE PROGRAM REQUIRES THE USE OF A FORTRAN COMPILER, READS INPUT FROM TAPE 5, AND WRITES OUTPUT ON TAPE 6. IT OCCUPIES ABOUT 25,000 WORDS OF CORE. MONITOR OR OPERATING SYSTEM REQUIRED- FORTRAN 4.

NOTES- THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE. THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.

360D-16.2.001 TSOP/360 VEHICULAR TRAFFIC
CONTROL - TRAFFIC SIGNAL PROGRESSION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-16.2.001

AUTHOR...L. ARIE YARDENI

DIRECT INQUIRIES TO..
L. ARIE YARDENI, IBM CORP., 1000 WESTCHESTER AVE.,
WHITE PLAINS, N.Y. 10604

TITLE...TSOP/360 VEHICULAR TRAFFIC CONTROL - TRAFFIC SIGNAL
OPTIMAL PROGRESSION /TIME-SPACE OFFSET/
***N 15.2 ***

THIS PROGRAM DESCRIBES THE BASIC CONCEPTS AND OPERATION AND THE INPUT AND OUTPUT FEATURES EMPLOYED IN A COMPUTER PROGRAM, WHICH PROVIDES THE TRAFFIC ENGINEER WITH A TOOL FOR EITHER THE OFF-LINE DESIGN OF TRAFFIC SIGNAL PROGRESSIONS FOR FIXED-TIME CONTROL, OR THE ON-LINE COMPUTATION OF CONTROL VARIABLES FOR REAL-TIME COMPUTER SIGNAL CONTROL. WEIGHTED LEAST-SQUARES FIT MODELS OR MIN-MAX DEVIATIONS ALGORITHMS CAN BE SELECTED TO DERIVE LINEAR UNI-SPEED THROUGH BANDS FOR GIVEN VOLUME REQUIREMENTS AND WITHIN GIVEN LIMITS OF SPEEDS AND CYCLE TIMES. ALTERNATIVE ALGORITHMS FOR OFFSET COMPUTATION WITH THREE-PHASE DESIGN CAPABILITY ARE ALSO INCLUDED IN THE PROGRAM. THE PROGRAM IS WRITTEN IN FORTRAN IID FOR IBM 1620-40K WITH IBM 1311 DISK MONITOR PROCESSING, IN FORTRAN IV FOR IBM 7040/90 18BSYS MONITOR PROCESSING, IN FORTRAN E FOR THE IBM SYSTEM/360 AND IN IBM 1130 FORTRAN FOR THE IBM 1130 DISK MONITOR SYSTEM.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-16.4.001 DESIGN AND ANALYSIS OF
ELECTRONIC CIRCUITS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-16.4.001

AUTHOR...MR. G.R. HOGSETT

DIRECT INQUIRIES TO..
MR. G.R. HOGSETT, IBM CORP., 9045 LINCOLN BLVD.,
LOS ANGELES, CALIF. 90045

TITLE...ECAP/360-E - ELECTRONIC CIRCUIT ANALYSIS PROGRAM.
***N 17.0 10.2 ***

THE ECAP/360-E ELECTRONIC CIRCUIT ANALYSIS PROGRAM IS AN INTEGRATED SYSTEM OF PROGRAMS WHICH CAN BE USED BY THE ELECTRICAL ENGINEER IN THE DESIGN AND ANALYSIS OF ELECTRONIC CIRCUITS. THE SYSTEM OF PROGRAMS CAN PRODUCE DC, AC, AND/OR TRANSIENT ANALYSES OF ELECTRICAL NETWORKS FROM A DESCRIPTION OF THE CONNECTIONS OF THE NETWORKS /THE CIRCUIT TOPOLOGY/, A LIST OF THE CORRESPONDING CIRCUIT ELEMENT VALUES, A SELECTION OF THE TYPE OF ANALYSIS DESIRED, A DESCRIPTION OF THE CIRCUIT

CONTINUED FROM PRIOR COLUMN--

EXCITATION, AND A LIST OF THE OUTPUT DESIRED. THE ENGINEER REQUIRES NEITHER A KNOWLEDGE OF THE INTERNAL CONSTRUCTION OF THE SYSTEM OF PROGRAMS NOR COMPUTER PROGRAMMING TECHNIQUES TO USE ECAP EFFECTIVELY. ECAP/360-E IS WRITTEN IN FORTRAN-IV /E-LEVEL SUBSET/ AND WILL OPERATE ON A MODEL 40 OR GREATER, SYSTEM/360 HAVING AT LEAST 131,072 BYTES OF STORAGE. ECAP/360-E IS A CONVERSION OF THE 1620 ECAP, CONSEQUENTLY THE ECAP/360 DOCUMENTATION IS INTENDED TO BE USED IN CONJUNCTION WITH THE 1620 ECAP USERS MANUAL FORM NO. H20-0170. THIS MANUAL SHOULD ALSO BE ORDERED WHEN ORDERING ECAP/360-E. FORM NUMBER H20-0170 IS AVAILABLE AT YOUR LOCAL IBM BRANCH OFFICE.

360D-16.4.002 GRAPHICAL ELECTRONIC
CIRCUIT ANALYSIS PROGRAM
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-16.4.002

AUTHORS..C.W. DAY, JR. MR. G.R. HOGSETT MR. D. NISEWANGER
MR. W.H. MALONE

DIRECT INQUIRIES TO..
C.W. DAY, JR., IBM CORP., P.O. BOX 7421,
LONG BEACH, CALIF. 90807

TITLE...2250 ECAP
N 00.6 17.0 08.6 10.2

THIS PROGRAM IS A GRAPHICAL EXTENSION TO A 100 BRANCH, 25 NODE, SYSTEM/360 VERSION OF ,,1620 ELECTRONIC CIRCUIT ANALYSIS PROGRAM, /ECAP/ /1620-EE-02X/. IT RUNS UNDER OS 360 WITH 2250 EXPRESS /TYPE I/ AND GRAF /TYPE I/ SUPPORT, UTILIZING FORTRAN /E LEVEL/ AS THE SOURCE LANGUAGE. THE MINIMUM HARDWARE CONFIGURATION REQUIRED IS- 128K MODEL 40, ONE 2311, ONE PRINTER OR 2400 TAPE, AND A 2250 MODEL 1 WITH LIGHT PEN, PROGRAMMED FUNCTION KEYBOARD, ABSOLUTE VECTORS AND CONTROL, CHARACTER GENERATOR, ALPHANUMERIC KEYBOARD, AND AN 8K BUFFER. AFTER MINOR MODIFICATION THE PROGRAM WOULD WORK WITH A 4K BUFFER ON LEXIS COMPLEX CIRCUITS. USING THE 2250 AS THE SOLE MEANS OF MAN-MACHINE COMMUNICATION, THIS PROGRAM ACCEPTS CIRCUIT MODELS EITHER IN SCHEMATIC FORM OR BY MEANS OF ECAP SOURCE STATEMENTS AND PRODUCES SELECTED PLOTS /OR LISTS/ OF THE ANALYSIS RESULTS. IT IS INTENDED THAT THIS TOOL BE USED IN AN ITERATIVE MANNER TO ACHIEVE GOOD CIRCUIT DESIGN EFFICIENTLY.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE. THIS TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.

360D-16.6.001 PROGRAMS FOR PROCESSING
DIGITAL SEISMIC DATA
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-16.6.001

AUTHORS..IBM INDUSTRY DEVELOPMENT PETROLEUM

DIRECT INQUIRIES TO..
R.N. HODGSON, IBM CORP., 2601 S. MAIN ST., HOUSTON, TEXAS

TITLE...A SET OF SYSTEM/360 ASSEMBLER LANGUAGE PROGRAMS FOR
PROCESSING DIGITAL SEISMIC DATA
***N 17.4 ***

A SET OF PROGRAMS TO ADJUST, SUMMARIZE, AND REFINE SEISMIC DATA USED IN PETROLEUM EXPLORATION. EACH PROGRAM IS A SEPARATE STAND-ALONE PROGRAM /NOT A SUBROUTINE/, ALTHOUGH SOME OF THE PROGRAMS ARE DATA DEPENDENT ON OTHERS. ALL PROGRAMS ARE WRITTEN IN ASSEMBLER LANGUAGE AND ARE DESIGNED TO RUN UNDER THE IBM BASIC OPERATING SYSTEM /8K DISK/. THE PROGRAMS INCLUDED IN THE SET ARE-

- DISK FORMAT FOR SEISMIC PROGRAMS.
- DATA PREPARATION.
- NORMAL MOVEOUT COMPUTATION.
- DEMULTIPLEX.
- NORMAL MOVEOUT APPLICATION.
- STACKING.
- AUTOCORRELATION AND THE POWER DENSITY SPECTRUM.
- BAND PASS FILTERING.
- POINT SORT.
- MULTIPLEX.
- INVERSE OPERATOR DETERMINATION /FORTRAN/.

THE REQUIRED S/360 MACHINE CONFIGURATION IS 131K, MODEL 40 WITH DECIMAL AND FLOATING POINT INSTRUCTIONS, 2 SELECTOR CHANNELS, 2-2311/S, 2-2400 TAPE UNITS. IF DATA ON SEVEN TRACK TAPES IS TO BE PROCESSED, THEN BOTH TAPES MUST BE SEVEN TRACK.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-19.1.001 PROGRAM TO CALCULATE AND
PRINT A LOAN AMORTIZATION SCHEDULE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-19.1.001

AUTHOR...R.A. LONG

DIRECT INQUIRIES TO..
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PHILADELPHIA, PA. 19103

TITLE...MODEL 20 LOAN AMORTIZATION SCHEDULE PROGRAM.
***N 19.7 ***

THIS PROGRAM CALCULATES AND PRINTS A LOAN AMORTIZATION SCHEDULE. THE INTEREST RATE, FACE AMOUNT OF LOAN, TERM OF LOAN, MONTHLY PAYMENT TO PRINCIPAL AND INTEREST AND PREMIUM RATE /E.G., SERVICE CHARGE, FHA INSURANCE RATE/, IF APPLICABLE, ARE OBTAINED FROM A MASTER CARD FOR EACH LOAN. MONTHLY FIGURES FOR PREMIUM, INTEREST, PAYMENT TO PRINCIPAL, TOTAL MONTHLY PAYMENT /INCLUDING PREMIUM/ AND REMAINING

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PRINCIPAL BALANCE ARE SHOWN. ANNUAL AND FINAL TOTALS OF PREMIUM PAID, INTEREST PAID, PRINCIPAL PAID AND TOTAL AMOUNT PAID ARE ALSO SHOWN. USING DIFFERENT HEADER CARDS, THE TITLE LINE OF THE SCHEDULE CAN BE VARIED, THUS PERMITTING THE MODEL 20 INSTALLATION TO SERVICE SEVERAL FINANCIAL INSTITUTIONS WITH THIS PROGRAM. THE PROGRAM IS WRITTEN IN BASIC ASSEMBLER LANGUAGE AND REQUIRES A MINIMUM CONFIGURATION OF A 4K MODEL 20 WITH A PRINTER AND CARD READER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-19.1.002 PROGRAM TO DETERMINE THE DISTRIBUTION OF RATE-OF-RETURN ON CAPITAL INVESTMENTS
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-19.1.002

AUTHOR...MR. T. REBACK

DIRECT INQUIRIES TO...
MR. T. REBACK, 8 RYDAL DR., TRENTON, N.J. 08638

TITLE...CAPITAL INVESTMENT RISK ANALYSIS APPLIED TO REAL ESTATE.
***N 19.4 ***

THIS PROGRAM DETERMINES THE DISTRIBUTION OF THE RATE OF RETURN AND NET PRESENT VALUE FOR CAPITAL INVESTMENTS SUBJECT TO UNCERTAIN INCOMES AND EXPENSES. THE PROGRAM CALCULATES EARNINGS, DEPRECIATION, INTEREST, AMORTIZATION, CASH FLOW, RECURRING CAPITAL OUTLAYS FOR EQUIPMENT REPLACEMENT, SALVAGE VALUE, AND RESALE VALUE FOR THE INVESTMENT FOR UP TO A 50 YEAR PERIOD. UNCERTAINTIES MAY BE UNIFORM, SKEWED, NORMAL OR NOT SUBJECT TO FLUCTUATION. BY CHANGING THE UNCERTAINTIES, MANAGEMENT CAN DETERMINE THE COSTS OR INCOME WHICH SHOULD BE TIGHTLY CONTROLLED TO MAXIMIZE THE RETURN. MANAGEMENT CAN MAXIMIZE ITS RETURN BY CHANGING DEPRECIATION METHODS, THE TERMS OF A LOAN, ETC. BEFORE THE METHODS ARE ACTUALLY ESTABLISHED. BY ANALYZING THE INVESTMENT UNDER UNCERTAINTY A TRUER MEASURE THAN ASSUMING DEFINITE CASH FLOWS MAY BE USED TO DETERMINE ECONOMIC FEASIBILITY OF THE INVESTMENT. THE PROGRAM WAS WRITTEN SPECIFICALLY FOR REAL ESTATE INVESTMENTS BUT IT CAN BE EASILY MODIFIED TO ENCOMPASS ANY CAPITAL INVESTMENT. THE PROGRAM IS WRITTEN IN FORTRAN IV /E/. THE MINIMUM MACHINE CONFIGURATION IS A 32K SYSTEM/360 CAPABLE OF PROCESSING FORTRAN IV /E LEVEL OR HIGHER/, A CARD READER AND A PRINTER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-19.1.003 RPG LOAN MORTGAGE AMORTIZATION SCHEDULE
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-19.1.003

AUTHOR...MR. JOE BRYAN

DIRECT INQUIRIES TO...
MR. JOE BRYAN, IBM CORP., P.O. BOX 6517, MOBILE, ALA. 36606

TITLE...RPG MORTGAGE AMORTIZATION SCHEDULE
***N ***

THIS RPG PROGRAM PRODUCES AN AMORTIZATION SCHEDULE FOR A LOAN OR MORTGAGE. THIS PROGRAM WILL BEGIN OR STOP AT A CERTAIN PAYMENT NUMBER IF SPECIFIED IN THE DATA CARD. THE PROGRAM WILL PROCESS FIXED-PRINCIPAL-PLUS-INTEREST PAYMENTS OR FIXED PAYMENTS. THE PAYMENTS CAN BE MONTHLY, BI-MONTHLY, QUARTERLY, SEMI-ANNUAL AND ANNUAL. A 16K 360 CARD SYSTEM IS THE MINIMUM SYSTEM REQUIRED.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-19.4.001 TRANSIT DISTRIBUTION FOR INDUSTRY, BANKING
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-19.4.001

AUTHOR...MR. W.R. BOLGER

DIRECT INQUIRIES TO...
MR. W.R. BOLGER, IBM CORP., 1011 SAN JACINTO ST., AUSTIN, TEX.

TITLE...INDUSTRY - BANKING, S/360 TRANSIT DISTRIBUTION
***N ***

THREE PROGRAMS FOR THE DISTRIBUTION OF TRANSIT ITEMS. OUTPUT CONSISTS OF BATCH PROOF LIST, CASH LETTERS, AND RECAPS, ALL ON THE FULL PAGE PRINTER. BATCH SLIPS AND DIVIDERS ARE THE ONLY CONTROL DOCUMENTS. EASY CONVERSION FROM AN ALL PROOF DEPARTMENT OPERATION. BALANCING AND CONTROL PROCEDURES ARE BASICALLY THE SAME. SORT PATTERNS ARE FLEXIBLE, AND CAN BE ADDED OR MODIFIED BY NON-COMPUTER PERSONNEL. THE PROGRAMS CAN BE ASSEMBLED ON A STANDARD 8K BOS CONFIGURATION. THE SOURCE LANGUAGE IS BAL UNDER 8K BOS LEVEL 8, WITH 1419 IOCP SUPERVISOR.

PROGRAM EXECUTION REQUIRES AT LEAST A S/360 MODEL 30 OR 40, 16K, WITH DECIMAL FEATURE AND ONE SELECTOR CHANNEL., ONE 1419, WITH FIXED OR VARIABLE LENGTH PROCESS CONTROL OR ACCOUNT NO. FEATURE., TWO 2311/S., ONE 2540., ONE 1052., ONE 1403 /NO SELECTIVE TAPE LISTER REQUIRED/.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-19.7.001 SAVINGS ACCOUNTING PACKAGE TO ASSIST USERS IN INSTALLING OFF-LINE PROCESSING
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-19.7.001

AUTHOR...MR. R.S. DANGELO

DIRECT INQUIRIES TO...
MR. R.S. DANGELO, IBM CORP., 2 BROADWAY, NEW YORK, N.Y.

TITLE...OFF-LINE PROCESSING FOR AN ON-LINE SAVINGS SYSTEM
***N ***

THIS SAVINGS ACCOUNTING PACKAGE IS DESIGNED TO ASSIST USERS WITH 3-DRIVER S/360 SYSTEMS WITH THE INSTALLATION OF OFF-LINE PROCESSING NECESSARY TO SUPPORT AN ON-LINE SAVING APPLICATION. THE UPDATE PROGRAM IS WRITTEN TO DO EITHER OF THE TWO MOST COMMON METHODS FOR INTEREST CALCULATIONS- ,DAY OF DEPOSIT TO END OF PERIOD, OR ,NTH DAY OF THE MONTH, . THE PROGRAMS ARE WRITTEN TO RUN UNDER CONTROL OF B.O.S., ANY UTILITY PROGRAMS REFERRED TO IN THE ACCOMPANYING GUIDE ARE RESIDENT ON THE B.O.S. SYSTEMS PACK.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9 TRACK OR 7 TRACK /DATA CONVERSION FEATURE REQUIRED/ DISTRIBUTION TAPE REEL /DTR/. THE REQUESTOR MUST INDICATE WHETHER A 9 TRACK OR 7 TRACK DTR IS REQUIRED. IF NOT SPECIFIED, A 9 TRACK DTR WILL BE PROVIDED. NO TAPE SUBMITTAL IS REQUIRED- THE DTR WILL BE PROVIDED BY THE LIBRARY.

360D-19.7.002 A SET OF SIX PROGRAMS TO PERFORM BANKS PROOF OF DEPOSIT TRANSIT FUNCTION
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-19.7.002

AUTHOR...DENNIS A. FAST

DIRECT INQUIRIES TO...
DENNIS A. FAST, IBM CORP., 2125 BISCAYNE BLVD., MIAMI, FLA.

TITLE...PROOF OF DEPOSIT TRANSIT
***N ***

A SET OF SIX PROGRAMS TO PERFORM A BANKS PROOF OF DEPOSIT TRANSIT FUNCTION. FEATURES- INDEPENDENT CHANGEABLE SORT PATTERNS, TRACERS, DIVIDERS, AND DESTINATION HEADERS., FULL PAGE APPROACH., PROVIDES DEPOSITS., WRITES BATCH PROOF LIST., AUTOMATICALLY WRITES CASH LETTERS AT END OF A PASS., ON-US CAPTURE, INCLUDING FLOAT AND ITEM COUNT., REMITTANCE ADVICES /CASH LETTER RECAPS/, CREATES AND UPDATES END POINT MASTER FILES., MAINTAINS END POINT ANALYSIS DATA.

TO RUN THESE PROGRAMS REQUIRES AT LEAST A S/360 MODEL 30 OR 40, 32K, WITH DECIMAL FEATURE AND ONE SELECTOR CHANNEL., ONE 1419, WITH FIXED OR VARIABLE LENGTH PROCESS CONTROL OR ACCOUNT NO. FEATURE, AND ROUTING AND TRANSIT FIELD DASH TRANSMISSION FEATURE., TWO 2311/S., ONE 2540., ONE 1052., ONE 1403 /NO SELECTIVE TAPE LISTER REQUIRED/. THE PROGRAMS CAN BE COMPILED ON A STANDARD 8K BOS CONFIGURATION. THE SOURCE LANGUAGE IS BAL UNDER 8K BOS LEVEL 8, WITH 1419 IOCP SUPERVISOR.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF TRACK REQUIREMENT IS NOT SPECIFIED 9-TRACK WILL BE FORWARDED. DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-19.7.003 DOS SINGLE, MULTI-BANK DEMAND DEPOSIT ACCOUNTING
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-19.7.003

AUTHOR...I.D. BAIRD

DIRECT INQUIRIES TO...
I.D. BAIRD, IBM CORP., 2911 CEDAR SPRINGS RD., DALLAS, TEXAS 75219

TITLE...SYSTEM/360 DEMAND DEPOSIT ACCOUNTING UNDER DOS
***N 03.5 ***

THIS PROGRAM IS A MODIFICATION OF THE TYPE II PROGRAM ,SYSTEM/360 DEMAND DEPOSIT ACCOUNTING /360A-FB-15X/,. THE PROGRAM IS ADAPTABLE BY COMMERCIAL BANKS TO ACCOMPLISH DEMAND DEPOSIT ACCOUNTING IN EITHER A SINGLE OR MULTIBANK ENVIRONMENT. IT IS WRITTEN IN S/360 ASSEMBLER LANGUAGE AND CONTAINS ALL FUNCTIONS OF THE TYPE II PROGRAM WITH THE FOLLOWING EXCEPTIONS-

- ANALYSIS PROCESSING
 - 1401-1440 FILE CONVERSION
 - MICR DOCUMENT PROCESSING
 - MULTIPLE STATEMENTS FOR A SINGLE ACCOUNT.
- THE PROGRAM SHOULD BE USEFUL IN THOSE INSTALLATIONS DESIRING TO USE THE DEMAND DEPOSIT PACKAGE BUT WHO HAVE SPECIFIC REQUIREMENTS FOR USE OF DOS.

BASIC MACHINE REQUIREMENTS- 32K MODEL 30, 3-2311 DISK DRIVE. THE PROGRAM MATERIAL IS AVAILABLE ON ONE 9-TRACK OR 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ REEL OF MAGNETIC TAPE. THE TAPE REQUIRED MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPE PROVIDED MUST BE 2400 FEET IN LENGTH. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED.

360D-19.7.004 RPG DEMAND DEPOSIT SERVICE CHARGE CALCULATING
AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-19.7.004

AUTHOR...M.J. BROWNELL

DIRECT INQUIRIES TO...
M.J. BROWNELL, IBM CORP., 2925 EUCLID AVE., CLEVELAND, OHIO 44115

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Contributed Programs

B-360D

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CONTINUED FROM PRIOR PAGE--

TITLE...DEMAND DEPOSIT SERVICE CHARGE FOR CARD SYSTEM/360 MOD-20
***N ***

THE DEMAND DEPOSIT SERVICE CHARGE PROGRAM IS AN RPG PROGRAM DESIGNED TO PROVIDE AN AUTOMATED SYSTEM FOR CALCULATING A MONTHLY CHECKING ACCOUNT SERVICE CHARGE BASED ON THE ACCOUNTS DAILY AVERAGE BALANCE, NUMBER OF CHECKS, AND DEPOSITS OBTAINED FROM THE ACTUAL HISTORICAL DATA CARDS USED TO WRITE THE CUSTOMERS CHECKING ACCOUNT STATEMENT. IN CALCULATING THE MONTHLY SERVICE CHARGE, THE DAILY AVERAGE BALANCE IS ACCUMULATED AS ARE THE NUMBER OF DEPOSITS AND CHECKS PER ACCOUNT. IT IS ONLY NECESSARY TO PERFORM THIS OPERATION ONCE DURING THE STATEMENT WRITING CYCLE, RATHER THAN ON A DAILY BASIS. THIS OPERATION MAY BE PERFORMED ONE STEP BEFORE THE STATEMENT WRITING CYCLE, THEREBY INCLUDING ALL PERTINANT AND INCLUSIVE SERVICE CHARGES ON THE CURRENT STATEMENT. THIS PROGRAM GREATLY REDUCES PROCESSING TIME ON A CARD SYSTEM IN CALCULATING CURRENT AND EXACT SERVICE CHARGES. MACHINE CONFIGURATION- SYSTEM 360/20 8K, 2560 MPCM AND PRINTER.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK REQUIREMENT IS NOT INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID- NO TAPE SUBMITTAL IS REQUIRED.

360D-21.1.001 FEDERAL WITHHOLDING TAX ROUTINE

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-21.1.001

AUTHOR...D.L. KNUTSON

DIRECT INQUIRIES TO..

D.L. KNUTSON, IBM CORP., 110 W. 21ST ST., NORFOLK, VA. 23517

TITLE...MODEL 20 RPG/BAL RELOCATABLE FEDERAL WITHHOLDING TAX ROUTINE
***N 03.8 ***

THE CALCULATION OF FEDERAL WITHHOLDING TAX IS STANDARD WITH ALL INSTALLATIONS DOING PAYROLL. MANY INSTALLATIONS HAVE FOUND IT DIFFICULT TO CODE THIS ROUTINE IN RPG USING A REASONABLE AMOUNT OF CODE WHICH ONLY COMPOUNDS THE CORE LIMITATIONS ON PAYROLL PROGRAMS, WHICH, BY THEIR NATURE, ARE ALREADY COMPLEX. ROUTINES FOR WEEKLY, BI-WEEKLY, SEMI-MONTHLY AND MONTHLY PAYROLLS ARE INCLUDED WHICH WILL REDUCE CONSIDERABLY THE DUPLICATION OF EFFORT BY SYSTEMS ENGINEERS AND PROGRAMMERS OF CODING AND DEBUGGING THIS PROBLEM. THE ROUTINES WERE WRITTEN IN 360/20 BAL AND WILL CALCULATE WITHHOLDING TAX TO \$999.99. THE PROGRAMMER PROVIDES GROSS, NUMBER OF EXEMPTIONS AND MARITAL STATUS TO THE ROUTINES AND USES THE RPG EXIT OPERATION. MACHINE CONFIGURATION- 360/20 NO SPECIAL FEATURES, PROGRAMMING SYSTEM REQUIREMENT- 360/20 RPG, SOURCE LANGUAGE- 360/20 BAL, STORAGE REQUIREMENT- 387 BYTES PER ROUTINE.

THE BASIC PROGRAM MATERIAL CAN BE OBTAINED IN CARD FORM OR ON ONE 9-TRACK OR ON ONE 7-TRACK /DATA CONVERSION FEATURE REQUIRED/ DTR. IF THE TRACK INDICATED 9-TRACK WILL BE FORWARDED. THE DTR WILL BE SUPPLIED BY PID - NO TAPE SUBMITTAL IS REQUIRED.

360D-25.2.002 WHOLESALE IMPACT LIBRARY /MODIFICATIONS/

AVAILABLE 3RD QUARTER 1967.
SPECIFY FILE NUMBER 360D-25.2.002

AUTHOR...MR. R.S. YATES

DIRECT INQUIRIES TO..

MR. R.S. YATES, IBM CORP., 2830 VICTORY PARKWAY, CINCINNATI, OHIO

TITLE...MODIFICATION OF S/360 WHOLESALE IMPACT LIBRARY FOR USE WITH A 16K - 4 TAPE S/360
***N 15.7 ***

THESE PROGRAMS ARE MODIFICATIONS TO TWO OF THE PROGRAMS IN THE SYSTEM/360 WHOLESALE IMPACT COMPUTER LIBRARY /360A-DW-05X/. THE IMPACT PROGRAM LIBRARY PROVIDES A USER WITH PROGRAMS THAT ENABLE HIM TO ESTABLISH AN INVENTORY STRATEGY WHICH MINIMIZES INVENTORY COSTS AT ANY PRESELECTED SERVICE LEVEL. CURRENT MACHINE REQUIREMENTS FOR USE OF THESE PROGRAMS ARE A MINIMUM OF 16K STORAGE AND AT LEAST ONE 2311 DISK DRIVE. THE MODIFIED PROGRAMS ARE SVA AND AP, TWO OF THE MOST FREQUENTLY USED PROGRAMS IN THE IMPACT LIBRARY. THE CHANGES IN THESE PROGRAMS WILL ALLOW A USER WITH A MINIMUM OF 16K STORAGE AND FOUR TAPE DRIVES TO USE THEM. WITH THESE MODIFIED PROGRAMS, THE TAPE-ORIENTED USER WILL BE ABLE TO BENEFIT FROM THESE APPLICATION PROGRAMS.

THE BASIC PROGRAM MATERIAL IS AVAILABLE ON ONE 2400 FOOT REEL OF TAPE. THIS TAPE MAY BE ORDERED FROM YOUR IBM REPRESENTATIVE OR SUPPLIED. THE TAPES PROVIDED MUST BE 2400 FEET IN LENGTH.

List of Program Deletions

ALPHABETIC KEY TO REASONS FOR REMOVAL.

- A. THIS PROGRAM HAS BEEN DELETED BECAUSE OF LOW USAGE.
- B. THIS PROGRAM HAS BEEN WITHDRAWN AT USER ORGANIZATION DIRECTION.
- C. THIS PROGRAM HAS BEEN DELETED BECAUSE OF LIMITED USEFULNESS.
- D. THIS PROGRAM IS OBSOLETE AND REPLACED BY ORDER NUMBER -----.
- F. THIS PROGRAM HAS BEEN WITHDRAWN BY THE AUTHOR.

Previous Deletions

PREVIOUS DELETIONS

ORDER NUMBER TITLE REASON FOR DELETION

360D DELETIONS

01.4.006	COBOL STACKER SELECT MACRO		D
		ORDER NO. CHANGED TO 03.7.001	
11.1.006	UNIVAC SOLID STATE 80/90 SIMULATOR		A
11.3.002	DOUBLE DISK COMPATIBILITY		A

PROGRAM ORDER NUMBER CHANGES

THE PROGRAM CLASSIFICATION CODES LIST HAS BEEN EXPANDED. THE NEW LIST APPEARS IN THE INTRODUCTION TO THIS CATALOG. DUE TO THE EXPANSION THE FOLLOWING PROGRAM ORDER NUMBERS HAVE BEEN CHANGED AND ARE EFFECTIVE WITH THE RELEASE OF THIS CATALOG.

360D CONTRIBUTED PROGRAMS

OLD PROGRAM ORDER NUMBER	NEW PROGRAM ORDER NUMBER	OLD PROGRAM ORDER NUMBER	NEW PROGRAM ORDER NUMBER
00.0.001	-	00.1.009	03.4.009
00.0.002	-	03.8.001	03.4.011
00.0.003	-	00.5.001	03.4.012
00.4.003	-	10.2.001	03.5.001
01.0.001	-	06.4.001	03.5.002
01.0.002	-	00.3.009	03.5.003
01.0.003	-	00.4.007	04.0.001
01.3.001	-	00.6.005	05.1.006
01.4.001	-	06.5.002	06.0.001
01.4.002	-	03.7.001	06.1.002
01.4.004	-	03.8.006	06.7.001
01.5.001	-	12.1.013	09.0.001
01.6.001	-	03.7.002	10.0.001
02.0.002	-	03.2.004	11.1.004
03.0.001	-	12.1.011	11.1.005
03.0.002	-	03.8.002	11.1.007
03.0.003	-	01.6.003	11.3.003
03.0.004	-	11.3.013	11.3.004
03.1.001	-	03.7.003	11.3.005
03.1.002	-	12.0.001	11.3.007
03.1.003	-	03.7.004	11.3.008
03.1.004	-	03.8.003	12.1.001
03.1.005	-	03.7.005	12.1.002
03.1.006	-	03.7.006	12.1.003
03.1.007	-	03.7.007	12.1.004
03.1.008	-	03.7.008	12.1.005
03.1.010	-	03.7.009	12.1.006
03.1.011	-	03.7.010	12.1.007
03.2.001	-	03.4.013	12.1.008
03.2.002	-	01.6.004	12.1.009
03.2.003	-	05.2.002	13.0.001
03.3.001	-	12.2.001	13.5.001
03.4.003	-	13.6.001	19.0.001
03.4.004	-	08.7.001	19.3.001
03.4.005	-	08.7.002	19.5.001
03.4.006	-	15.4.002	24.2.001
03.4.008	-	00.6.004	29.5.001

READER'S COMMENT FORM

Catalog of Programs for IBM System/360
August, 1967

C20-1619-3

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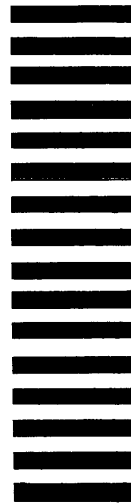
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