IBM World Trade Data Processing

Program Announcement 70

IBM WORLD TRADE KEYWORD IN CONTEXT INDEX (KWIC Index) - PROGRAMMING ANNOUNCEMENT LETTERS, ORDER NUMBER ZZ19-0006-0

A KWIC Index of IBM World Trade Programming Announcement Letters is available. The Index contains listings of P-Letters by keyword as well as a listing in numerical order with titles. Also included is a list of abbreviations of frequently used words.

This KWIC Index will be updated quarterly. It has been distributed to each recipient of Program Announcement Letters and additional copies can be obtained.

DP Sales Publishing Services
IBM World Trade Corporation
1 North Broadway
White Plains, New York 10601
U.S.A.

John Fahey
Director of DP Marketing

Release Date: January 15, 1970
Distribution: All Areas

P70-1A

OS/360 SUPPORT FOR 1287/1288 OPTICAL READERS INCLUDES UPPER MODELS

The OS/360 support for the IBM 1287/1288 Optical Readers announced in P69-101 has been expanded to include their attachment to System/360 Models 65, 67 (65 mode), and 75.

When supported under MVT for the Model 65 Multiprocessor System the 1287/1288 is supported as an asymmetric (attached to only one channel) device.

Availability will be with the initial release of the 1285/1287/1288 support under OS/360 ... September 30, 1970.

For further details on the program support refer to P69-101.

Publications ... IBM System/360 Operating System: Planning for the IBM 1285/1287/1288 Optical Reader Data Management Macros and Services, GC21-5004.

Classification ... Type I program with Programming Service Classification of A.

John Fahey
Director of DP Marketing

Note to World Trade Readers

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[10] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

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P70-1 P70-2 P70-3 P70-4 NOT USED

Release Date: January 15, 1970
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IBM World Trade Data Processing

PROGRAM ANNOUNCEMENT

I/O RECOVERY MANAGEMENT SUPPORT (I/O RMS) PROVIDED FOR OS/360 - MFT, MVT

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The Input/Output error recovery capability is extended to improve the availability and reliability for all S/360 Models using OS/360 MFT and MVT as a SYSGEN option. The support solves a wide range of I/O problems encountered due to channel, control unit, device and media failures. It enhances system throughput by reducing the chances that an I/O failure situation would require a rerun.

This support, to be provided by June 30, 1970, consists of two functional parts which can be optionally selected for MFT and MVT. They are Alternate Path Retry (APR), and Dynamic Device Reconfiguration (DDR).

Alternate Path Retry allows an I/O operation that has developed an error on one channel to be retried on another if there is another channel assigned to the device performing the I/O operation.

Dynamic Device Reconfiguration allows a demountable volume to be moved from one device to another, and repositioned if necessary, without terminating the system or the job.

Classification ... Type 1 with programming service classification of A.

See the reverse side for details, performance and minimum system requirements.

John Fahey
Director of DP Marketing

This letter revises the Input/Output Recovery Management Support announced in P69-12.

A change to the text is indicated by a bracket. The major changes are:

- *Deletion of the NO SWAP command.*
- *Changes to the external storage requirements.*
- *Changes in resident requirements.*
- *Clarification of Shared DASD support and SYSGEN requirements.*

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P70-6 AND P 70-7 NOT USED

Cancels: P69-12
Release Date: January 27, 1970
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Alternate Path Retry -- Allows an I/O operation that has developed an error on one channel to be retried on another if there is another channel assigned to the device performing the I/O operation. A maximum of four paths are supported to any one device. APR ensures that a different channel will be tried on retry of channel-detected errors. APR also provides the capability for the operator to vary a path to a device on-line or off-line by his use of the VARY PATH command.

In order for APR to handle channel control checks and interface control checks, Channel Check Handler (CCH) must be included in the system. Without CCH, only channel data checks are handled by APR. CCH is a part of the Recovery Management Support announced in P68-2 for Model 65, and P68-44 for Model 85, P69-104 for Model 195 and P69-28 for Model 75/91.

Dynamic Device Reconfiguration -- Allows a demountable volume to be moved from one device to another and repositioned if necessary without terminating the system or the job. A DDR for these devices can be requested by the system, or by the operator, when a permanent error condition exists while a job is using a demountable device. Also, a volume can be demounted for cleaning and then remounted on the same device. A DDR for readers, printers, and punches can be requested by the operator during "INTERVENTION REQ" conditions. The operator may cause an "INTERVENTION REQ" condition by making the unit not-ready. A new command, SWAP, allows the operator to use the facilities of DDR. Dynamic Device Reconfiguration, also optionally, includes support of the SYSRES device and of user written non-standard label routines for use in tape repositioning.

The permanent errors that are eligible for DDR include bus-out and chaining checks, channel data checks, channel control checks, overrun and interface control checks, equipment checks, seek checks and data checks. When the permanent error is caused by a channel program error, such as a command reject, DDR will not be requested. Other conditions that may set a permanent error status but are not eligible for DDR include wrong length record, no record found, and back spacing beyond the load point on tape.

SYSGEN Requirements -- To make use of the functions of I/O RMS, the user must indicate the functions that he desires during SYSGEN. The options available are:

APR-to include Alternate Path Retry
DDR-to include Dynamic Device Reconfiguration APR and DDR are optional for MFT and MVT. Both options are included for Model 65 Multiprocessing
DDRSYS-to include DDR SYSRES support
DDRNSL-to include DDR Non-Standard Label Support

DDRSYS should be chosen only if the user has a demountable SYSRES device because additional resident code will be required. The user must write his own non-standard label routine for DDRNSL. DDR will provide the necessary interface. Specification of "NO DAVV" as a SYSGEN option will not be honored if DDR is included.

Operator Responsibilities -- For APR, the operator may use the VARY PATH command to vary a path to a device on-line or off-line.

For DDR, the operator responds to a system initiated message, 'SWAP XXX to YYY' with one of three responses. If he desires the SWAP to YYY to occur he replies 'YES'; if he does not want a SWAP to take place, he replies 'NO'; if he wishes to SWAP to a device other than YYY, he replies with a new three digit address (i.e., 'ZZZ'). The operator may request DDR on any or the same device at any time by the use of the SWAP command. This will permit a device to be serviced while the job continues.

Performance -- Alternate Path Retry enhances the performance of OS/360 by reducing the chances of a permanent error being caused by a single faulty path.

Dynamic Device Reconfiguration enhances the performance of OS/360 by reducing the number of permanent I/O errors that, in most cases, cause the problem program to ABEND, and by possibly preventing system termination caused when a critical supervisor function encounters a permanent I/O error. Thus, total throughput per day can be increased by the decrease of rerun time.

Minimum Systems Requirement -- I/O RMS is designed to function as a part of MFT or MVT. The devices DDR support are: 2400 series, 2311, 2314, 2321, and readers, punches, and printers. DDR will be invoked on Shared DASD only when the "To" and "From" device addresses are the same. For 2311 and 2321, this action would allow cleaning of drive and volume. For 2314, the operator may also move both the volume and address plug to another physical drive on the same 2314 bank of drives.

The external storage requirements currently estimated are:

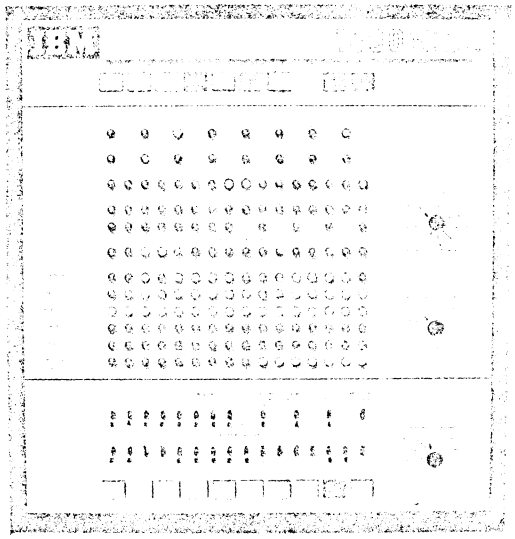
APR	1000 bytes (MFT/MVT)	1200 bytes (M65 MP)
DDR	6500 bytes (MFT/MVT and M65 MP)	

Resident Core Requirements by Option:

	MFT	MVT	M65 MP
APR	420	420	570
DDR	2450	1950	1950
DDR with DDR SYSRES*	3950	3450	3450
Maximum**	4370	3870	4020

* 1500 bytes are optionally included when the DDR SYSRES option is selected.
** Inclusion of MCS will cause additional resident core (120 bytes) to be included for the DDR SYSRES option.

Publications -- The primary documentation will consist of changes and additions to the I/O Supervisor PLM (Y28-6616). Additional information is contained in the Operator's Guide SRL (XC28-6540) and System Generation SRL (XC28-6554).



Availability ... 1800 MPX Version II will be available in June 1970 ... the 2770 support - July 1970.

Publications ... Availability of two SRL publications, MPX System Introduction and MPX Communications Adapter, supporting this feature, will be announced in a future Publication Release Letter.

Classification ... Type I with programming service classification of A.

Details of the 2770 Data Communication System announcement are in DP letter 269-48.

John Fahey
Director of DP Marketing

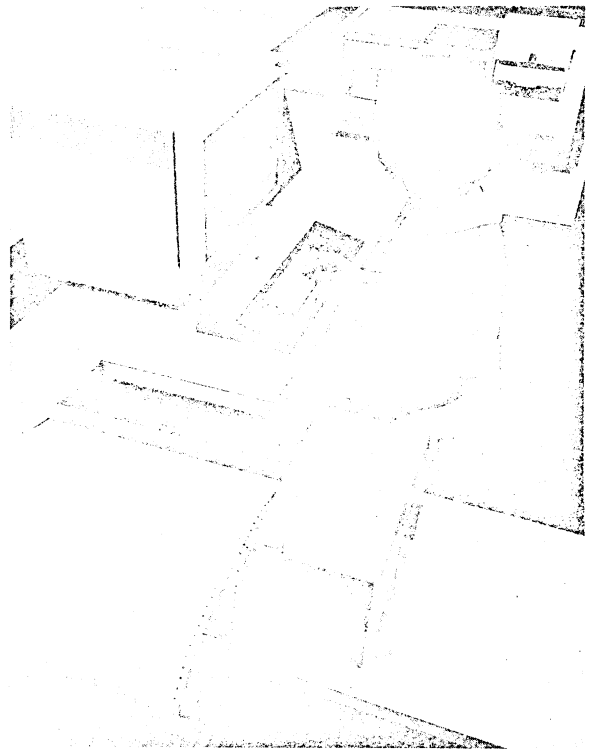
IBM 1800 DATA ACQUISITION AND CONTROL SYSTEM EXPANDED COMMUNICATIONS CAPABILITIES SUPPORT THE 2770 SYSTEM

IBM's newest and most versatile terminal, the 2770 Data Communication System, is now supported as a binary synchronous communication device on the 1800 Data Acquisition and Control System.

Highlights...

- 1200, 2000, 2400 BPS Transmission
- Communicates to 1800 via Communications Adapter (Feature 7550)
- May be multi-dropped on the same line facility with other BSC devices (2780, 1800, 1130, 360/20)
- New 2770 input/output devices
  2213 Matrix Printer
  2502 Card Reader
  545 Card Punch
  2265 Model 2 Display Station
  1255 Magnetic Character Reader (see 269-51)

Programming ... 1800 Multiprogramming Executive Operating System (MPX) will support the 2770 under Version II.



SEE REVERSE SIDE FOR "NOTE TO WORLD TRADE READERS"

Release Date: January 27, 1970
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P70-10

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● AN IMPROVED DISTRIBUTION METHOD FOR MODIFICATION 7 OF 1130 DISK MONITOR SYSTEM VERSION 2

Modification Level 7 of the 1130 Disk Monitor System, Version 2 (DM2), is now available from PID. It completely replaces the existing card version of 1130 DM2 (1130-OS-005). Current users who are now retaining previous modification levels will be able to reduce the size of their program library card deck by replacing it with the new, consolidated Modification Level 7.

Features

Contains the modification update procedure. This procedure permits updating of the system cartridge, or cartridges, without disturbing the user's own programs or data files.

1130 RPG is now totally incorporated into the card input version of DM2. RPG (1130-RG-007) is no longer available as a separately orderable program.

The performance of FORTRAN object-time disk operations, especially disk reads, has been improved.

Action Required ... Current users of the card input version of the system should take advantage of the improved Disk Monitor System Version 2 by submitting a disk cartridge to PID as soon as possible.

For programming service purposes, Modification Level 6 will be considered "current" until May 18, 1970.

Current users will receive a letter announcing the availability of Modification Level 7. Included with this letter will be a prepunched program order card that the customer should use to order the new modification through the IBM branch office.

Users who do not reorder will be removed from PID's files for future maintenance.

Basic Program Package

Documentation -- Program Material List, Attachment to Users, SRL Publications GC26-3717-5, GC26-5929-5 and GC21-5002-1

Machine Readable -- Object code and Sample Programs

Optional Program Package

Documentation -- Material List; Attachment to Users

Machine Readable -- Symbolic Source codes

Ordering Information: Program Number 1130OS005

	Prog. No. Extension	Distribution Medium Type	Code	User Volume Requirement
Basic	none	2315	58	01
Optional	none	MT 9/800	28	01
		MT 9/1600	29	01

Classification ... Type I with programming service classification of A.

● WITHDRAWAL OF 1130 DISK MONITOR SYSTEM VERSION 1

1130 Disk Monitor System Version 1 (1130-OS-001 Card and 1130-OS-002 Paper Tape), now available with programming service classification C, will be withdrawn from PID August 18, 1970.

● WITHDRAWAL OF 1130 COMMUNICATIONS SUBROUTINES

In conjunction with the withdrawal of the 1130 Disk Monitor System Version 1, the 1130 Synchronous Communications Adapter Subroutines (1130-LM-003 and 1130-LM-004) will also be withdrawn August 18, 1970. Their capabilities are included in the 1130 Disk Monitor System Version 2.

After August 18, 1970 these programs and their associated documentation may be ordered from Archival Storage through PID for a base charge of $100 each plus reproduction and distribution costs.

John Fahey

Jonn Fahey
Director of DP Marketing

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MODIFICATION LEVEL 1 OF PROBLEM LANGUAGE ANALYZER (PLAN) FOR OS/360 IS AVAILABLE (TYPE II)

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Modification Level 1 of the Problem Language ANalyzer (PLAN) for OS (360A-CX-27X) may be ordered through the regular procedures outlined in the DP Sales Activity section of the Branch Office Manual.

Modification Level 1 removes the OS/360 Release 15/16 MVT restriction announced in P69-99 and corrects miscellaneous program errors.

PLAN is a submonitor and application development system that is especially valuable for use with applications that are highly variable in nature and for problem solving and design. It is a prerequisite for certain Type II programs and program products.

Modification Level 1 will be mailed automatically to current users.

The Service Classification is B.

For maintenance purposes, Modification Level 0 will remain current for three months following the date of this letter.

The Sales Manual write-up (P 360A.38) will be updated shortly.

John Fahey
Director of DP Marketing

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OS/360 RELEASE 18 UPDATED BY PTFs AND VERSION 5 OF PL/I F

The OS/360 Release 18 update, designated as 18.6, can now be ordered; shipments will begin the week ending March 6. Its distribution libraries have been updated by PTFs and Version 5 of PL/I F.

The improved reliability of this Release 18 update enables OS/360 users who have deferred installing Release 18 to now install Release 18 at a higher maintenance level than was previously available. Users who installed Release 18 initially have the following options:

- Continuing with Release 18
- Applying PTFs to bring their system up to Release 18.6 level
- Installing Release 18.6

Highlights ...

- Approximately 40 PTFs have been centrally applied to Release 18 providing corrections for more than 80 APARs.
- Version 5 of PL/I F has been integrated into the system replacing Version 4.
- The 7090 Series Integrated Emulator for the System/360 Model 85 to be available June 30, 1970 (P69-17) will be distributed as a separately released component of OS/360, and will be supported on the Release 18.6 system. Those users who will be installing the integrated emulator on Release 18.6 may include the interface code in their Release 18.6 system by specifying the necessary SYSGEN option. Details are provided in the TNL to the Release 18 Guide.
- PTFs that have been centrally applied to this Release will continue to be available through normal FE channels for the initial Release 18 system.
- All orders for OS/360 received at PID will be filled with Release 18.6. The initial Release 18 system is no longer available.
- Version 5 of PL/I will continue to be orderable as a separate component release until the next release of OS/360 is available.

Releases 18 and 18.6 will be considered current for nine months after the availability of the next OS/360 release. OS/360 components distributed as part of Release 18.6 are Type I with programming service classification A, except for the Assembler E, FORTRAN E and Linkage Editor E components which became programming service classification C January 1, 1970.

TNLs to the Release 18 consolidated document and the Release 18 Guide will be sent to OS/360 users of record. These TNLs will include a Memo to Users, a list of the PTFs centrally applied, EC requirements and other information pertinent to Release 18.6.

See the inside pages for program material and ordering information.

John Fahey
Director of DP Marketing

SEE REVERSE SIDE FOR "NOTE TO WORLD TRADE READERS"

P70-19 P70-20 P70-22
P70-23 NOT USED

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BASIC PROGRAM MATERIAL - Available from PID.

The following SRL publications appropriate to the components ordered are shipped by PID with each initial order. Machine readable material is distributed as indicated below.

ALGOL Programmer's Guide	GC33-4000-1
Assembler E Programmer's Guide	GC28-6595-2
Assembler F Programmer's Guide	GC26-3756-4
COBOL F Programmer's Guide	GC28-6380-3
Concepts and Facilities TNL GN28-0250	GC28-6535-5
Job Control Language	GC28-6539-9
Operator's Guide TNL GN28-2413	GC28-6540-9
System Programmer's Guide	GC28-6550-6
Storage Estimates TNL GN28-2411**	GC28-6551-8
System Generation TNLs GN28-2410, GN28-2414**	GC28-6554-6
System Control Blocks	GC28-6628-4
Messages and Completion Codes TNLs GN28-2416, GN28-2412**	GC28-6631-7
Programmer's Guide to Debugging	GC28-6670-2
Advanced Check Point Restart	GC28-6708-2
COBOL E Programmer's Guide TNL GN28-0248	GC24-5029-3
Basic Telecommunications Access Method	GC30-2004-3
QTAM Message Control Programs TNL GN30-2526	GC30-2005-2
QTAM Message Control Processing Program TNL GN30-2532	GC30-2003-3
On-Line Test Executive Program	GC28-6650-2
Supervisor and Data Management Services TNL GN26-0600	GC28-6646-2
Supervisor and Data Management Macro-Instructions TNLs GN26-0596,0601	GC28-6647-3
Linkage Editor and Loader	*GC28-6538-8
FORTRAN E Programmer's Guide	GC28-6603-3
FORTRAN G and H Programmer's Guide	GC28-6817-1
Graphic Programming Services for 2250 Display Unit	GC27-6909-5
Graphic Programming Services for 2260 Sub-Programs	GC27-6912-7
1130 System Introduction	GC26-3709-4
FORTRAN Library Sub-Programs	GC28-6818-0
PL/I F Comp Subroutines TNL GN33-6004	*GC28-6590-2
1130 Programmer's and Operator's Guide TNLs GN33-8057	GC26-3717-4
1130 Subroutine Library TNLs GN33-8022,8014,8046,8056	GC26-5929-4
Graphic Programming Services for FORTRAN IV TNL GN27-1313	GC27-6932-3
Data Transmission for FORTRAN TNL GN27-1316	GC27-6937-1
PL/I F Programmer's Guide TNL GN33-6015**	*GC28-6594-5
TESTRAN	GC28-6648-1
Remote Job Entry TNL GN30-2522,2530,2521	GC30-2006-2
User's Guide for Job Control From the 2250 Display Unit	*GC27-6933-2
SGJP User's Guide TNL GN27-1315	GC27-6938-1
Sort/Merge TNL GN33-8054	GC28-6543-5
Maintenance	*GC27-6918-2
Utility Programs	GC28-6586-10
Consolidated Document TNL GN28-2421** ①	GY28-6681-2
Release 18 Guide TNL GN28-2415** ①	GC28-6718-0
ANS COBOL Programmer's Guide TNL GN28-0254	GC28-6399-0

* Change from prior release.
** New with this release.
① Provided with announcement material to OS/360 users of record.

If only the form numbered manuals or additional manuals are required, order them from the IBM Distribution Center, Mechanicsburg -- not PID.

Machine Readable: The complete OS/360 is distributed as follows:

For the 2311 User - on two 2400 foot reels of magnetic tape, either 9-track (800 bpi), or two 7-track magnetic tapes (800 cpi Data Conversion Feature required), or one 9-track magnetic tape (1600 bpi), or four 1316 Disk Packs.

For the 2314 User - two 2400 foot reels of magnetic tape, either 9-track (800 bpi), or two 7-track magnetic tapes (800 cpi Data Conversion Feature required), or one 9-track magnetic tape (1600 bpi).

Program components may be selected from the following list. Each component for which program documentation and maintenance material is required must appear on the Program Order Form.

Component Name	Program Number
Primary Control Program (PCP and MFT).	* 360S-CI-505
Starter System (2311 SYSRES)	CI-514
Starter System (2314 SYSRES)	CI-534
MVT	* CI-535
ALGOL	AL-531
Assembler E	AS-036
Assembler F	AS-037
COBOL F	CB-524
ANS COBOL	CB-545
COBOL E	CO-503
Basic Telecommunications Access Method (BTAM)	CQ-513
Queued Telecommunications Access Method (QTAM)	* CQ-519
Primary Data Management	* DM-508
Basic Direct Access Method (BDAM)	DM-509
SER 0, SER 1, EREP Mod/40, 50, 65 and 75	* DN-527
On Line Test Executive Program (OLTEP)	DN-533
Recovery Management Mod/65	DN-539
Linkage Editor E	ED-510
Linkage Editor F	* ED-521
FORTRAN IV E	FO-092
FORTRAN IV H	* FO-500
FORTRAN IV G	FO-520
Graphic Programming Services	IO-523
Indexed Sequential Access Method (ISAM)	* IO-526
Loader	LD-547
FORTRAN Library	* LM-501
COBOL E Library	LM-504
PL/I F Subroutine Library	* LM-512
COBOL F Library	LM-525
ALGOL Library	LM-532
Graphic Subroutine Program	LM-537
1130/360 Data Transmission	LM-542
ANS COBOL Library	LM-546
PL/I F	* NL-511
TESTRAN	PT-516
Remote Job Entry (RJE)	* RC-536
Graphic Job Processor	RC-541
Satellite Graphic Job Processor (SGJP)	RC-543
Report Program Generator (RPG)	RG-038
Sort/Merge	* SM-023
OS/360 Utilities	* UT-506
Independent Utilities	UT-507

* Denotes change with this release.

Ordering Instructions

For new users the branch office must have the Program Order Form (120-1957-0). Current users of OS/360 will receive a letter announcing availability of the Release 18.6. Included with this letter will be a preprinted program order form that the customer should use to order the updated release through the IBM branch office.

The preprinted order form must contain the program number of each OS/360 component if being ordered for the first time) that requires program documentation and maintenance material.

Special Note for 2314 Direct Access Storage Facility Users

Tapes will be in the dump/restore format. A 2314 user having two or more 2311 Disk Drives but not tape may order the 2311-resident system using the 1316 Disk Pack as the distribution medium. System configurations which do not include either 2311s or tape must make local arrangements for a system with both 2314 and Tape to perform the tape-to-2316 Disk Pack restore operation.

OPTIONAL PROGRAM MATERIAL

The Optional program material is distributed with a condensed Symbolic Library. It is available from PID on 9-track magnetic tape (800 or 1600 bpi) or 7-track magnetic tape (800 cpi, Data Conversion Feature required). Magnetic tape is the only distribution media.

The requester may forward or order magnetic tapes following the current ordering procedures in the Branch Office Manual, DP Sales Activity section. The external tape label must show the distribution volume number as well as the information required under the current procedures.

See GI 14.2 for complete information before ordering additional program material.

Program Number Extension	Program Component Name	Program Number
VOL1	PL/I F	360S-NL-511
		360S-NL-511
VOL2	PL/I F	360S-NL-511
		360S-NL-511
VOL3	PL/I F	360S-NL-511
VOL4	1130/360 Data Transmission	360S-LM-542
	FORTRAN E	360S-FO-092
	FORTRAN G	360S-FO-520
	FORTRAN H	360S-FO-500
	FORTRAN Library	360S-LM-501
VOL5	ANS COBOL	360S-CB-545
		360S-CB-545
	ANS COBOL Library	360S-LM-546
VOL6	COBOL E	360S-CO-503
	COBOL F	360S-CB-524
		360S-CB-524
	COBOL F Library	360S-LM-525
	COBOL E Library	360S-LM-504
	ALGOL	360S-AL-531
	ALGOL Library	360S-LM-532
VOL7	SORT/MERGE	360S-SM-023
		360S-SM-023
		360S-SM-023
VOL8	Assembler E	360S-AS-036
	Assembler F	360S-AS-037
	Linkage Editor E	360S-ED-510
	Linkage Editor F	360S-ED-521
	LOADER	360S-LD-547
VOL9	TESTRAN	360S-PT-516
	Basic Telecommunication Access Method	360S-CQ-513
	Queued Telecommunication Access Method	360S-CQ-519
	Basic Direct Access Method	360S-DM-509
	Indexed Sequential Access Method	360S-IO-526
	Graphic Program Services	360S-IO-523
	Graphic Subroutine Program	360S-LM-537
VOL10	Primary Data Management	360S-DM-508
		360S-DM-508
	DNSERX	360S-DN-527
	On-Line Text Executive Program	360S-DN-533
	Recovery Management-Model 65	360S-DN-539
VOL11	Primary Control Program	360S-CI-505
		360S-CI-505
		360S-CI-505
VOL12	MVT	360S-CI-535
		MACRO
	OS/360 Utilities	360S-UT-506
		360S-UT-506
VOL13	Independent Utilities	360S-UT-507
	Remote Job Entry	360S-RC-536
	Graphic Job Processor	360S-RC-541
	SGJP	360S-RC-543
	Report Program Generator	360S-RG-038
VOL 14	PL/I F Subroutine Library	360S-LM-512
		360S-LM-512
		360S-LM-512
VOL 15	Private Macros	360S-LM-512
		360S-NL-511

Note: For PL/I Version 5 tapes XT01, XT02, and XT03 have been replaced and tapes XT14 and XT15 have been added to those SYMLIBs supplied with Release 18.

ORDERING INFORMATION: System Number 360S

Note: Basic Machine readable material for this system is ordered by specifying a "System Line" (Columns 1-7, 15-24) and "Component Lines" (Columns 8-12) of the Program Order Form. Enter a separate Component Line for each component desired. Respecify the System Line for each different Program Number Extension.

Current users who have not ordered Release 18 or do not order Release 18.6 will be removed from PID's address files for future maintenance.

	Program Number Extension	Distribution Type	Medium Code	User Volume Requirement
Basic	2311	MT 7DC/800	26	02
		MT 9/800	28	02
		MT 9/1600	29	01
		1316	52	04
	2314	MT 7DC/800	26	02
		MT 9/800	28	02
		MT 9/1600	29	01
Optional †	VOL 1	MT 7DC/800	26	01
	thru	MT 9/800	28	01
	VOL15	MT 9/1600	29	01

†For each program number extension (VOL1 to VOL15) that is specified, a separate reel of magnetic tape is required.

ADDITIONAL PROGRAM MATERIAL

Program Logic Manuals (available from the IBM Distribution Center, Mechanicsburg)

COBOL E	GY24-5009-1, TNLs GY28-6385, GY28-6398, GY28-6393
ALGOL F Compiler	GY33-8000-0, TNLs GY33-8001, GY33-8003
Assembler E	GY26-3598-0
Assembler F	GY26-3700-1
RPG	GY26-3704-0, TNLs GY21-0006, GY21-0011
Graphic Problem Oriented Routines	GY27-7110-1
Graphic Access Method	GY27-7113-4
MFT Control Program	GY27-7128-4
Graphic Programming Services for FORTRAN	GY27-7152-1
Graphic Job Processor	GY27-7159-0, TNLs GY27-7178, GY27-7186
System/360-1130 Data Transmission for FORTRAN	GY27-7161-0, TNL GY27-7194
System/360 Job Processing for a Remote 1130/22 Subsystem	GY27-7166-0, TNL GY27-7192
Machine Check Handler Model 85	GY27-7184-0
Model 65 Recovery Management	GY27-7155-2
COBOL F	GY28-6382-2
Sort/Merge	GY28-6597-3
FORTRAN E	GY28-6601-2, TNLs GY28-6383, GY28-6819, GY28-6827, GY28-6828
Sequential Access Method	GY28-6604-2
Introduction to Control Program Logic	GY28-6605-4, TNL GY28-2392
Catalog Management	GY28-6606-1
Direct Access Device Space Management	GY28-6607-5
Input/Output Support (OPEN/CLOSE/EOV)	GY28-6609-3
Linkage Editor E	GY28-6610-2, TNLs GY28-2301, GY28-2356, GY28-6400
Linkage Editor F	GY28-6667-0, TNLs GY28-2357, GY28-6401
TESTRAN	GY28-6611-0, TNL GY28-2371
Fixed Task Supervisor	GY28-6612-4, TNLs GY27-7188, GY27-7189
P C P Job Management	GY28-6613-4
Utilities	GY28-6614-5
Input/Output Supervisor	GY28-6616-5
Basic Direct Access Method	GY28-6617-3, TNL GY26-8019
Indexed Sequential Access Method	GY28-6618-3
FORTRAN G	GY28-6638-1, TNLs GY28-6826, GY28-6829,
FORTRAN H	GY28-6642-3, TNL GY28-6830
On-Line Test Executive	GY28-6651-2
MVT Logic Summary	GY28-6658-3
MVT Supervisor	GY28-6659-4
MVT Job Management	GY28-6660-4
Initial Program Loader and Nucleus Initialization Program	GY28-6661-2
PL/I (F)	GY28-6800-4
PL/I (F) Subroutine Library	GY28-6801-5
Update Analysis	GY28-7106-0
Basic Telecommunications Access Method	GY30-2001-3
QTAM	GY30-2002-2, TNL GY30-2527
Remote Job Entry	GY30-2005-2, TNLs GY30-2523, GY30-2535
OS/360 Release 17	GY28-6681-2

Master Index	GY28-6717-0
ALGOL to PL/I LCP	GY33-7006-0
COBOL to PL/I LCP	GY33-7007-0
FORTRAN to PL/I LCP	GY33-7000-0
USA Standard COBOL	GY28-6395-0
Loader	GY28-6714-0, TNL GY28-2401
COBOL to ANS COBOL LCP	GY28-6397-0

Program Listings: Operating System/360 program listings are available on microfiche from IBM Corporation, Department 906, Highway 52 and Northwest 37th Street, Rochester, Minnesota 55901, in the following groups:

Program Listing	Group Code
S/360 OS Primary Control Program	1010
Primary Data Management	1010
Basic Direct Access Method	1010
Indexed Sequential Access Method	1010
OS/360 Utilities	1010
Independent Utilities	1010
BTAM	1016
QTAM	1017
MVT	1012 *
On-Line Test Executive Program	1010
Remote Job Entry	1015
ALGOL Compiler and Library	1025
Assembler E	1030
Assembler F	1035
COBOL E	1040
USAS COBOL	1042
COBOL E Library	1048
COBOL F and Library	1045
FORTRAN E	1050
FORTRAN G	1052
FORTRAN H	1055
FORTRAN Library	1058
PL/I F	1060
PL/I Library	1068
Linkage Editor E	1070
Link Editor Loader	1072
Linkage Editor F	1075
SER0, SER1 and EREP for Models 40, 50, 65 & 75	1076
Recovery Management	1077 *
Sort/Merge	1080
TESTRAN	1085
Graphic Programming Services	1090
Graphic Job Processor	1090
Graphic Subroutine Program	1090
SGJP	1092
RPG	1095
OS 1130/360 Data Transmission	1094

* Change from prior release.

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[10] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

CS/30 AND CS/40 IMPROVEMENTS GIVE NEW FLEXIBILITY TO DOS

Today, IBM announces improvements to CS/30 and CS/40 which will enable users to move into multiprogramming more easily than before. CS/30 or CS/40 can be run in any of the three DOS partitions. 1401/1440/1460 programs can be run concurrently with other programs which have the abil- to run in the background partition.

With the added functions, DOS gains new programming, operating, and scheduling flexibility. It gives our customers who utilize the new functions greater productive potential from their systems.

- **CS/30:**

  Foreground/Background Operation
  The CS/30 Emulator program can be executed on either the S/360 Model 25 or 30 in any partition of DOS/360 that is initiated in batch job mode. CS/30 Emulator programs cannot be executed concurrently.

  Main Storage Reduction
  Certain generated optional operator communication routines and most messages are now transient. This change allows most users of the DOS/360 Emulator to realize a significant reduction in the amount of main storage required by the CS/30 Emulator program as compared to main storage required in previous releases. The actual main storage savings varies up to approximately 3500 bytes depending upon the options selected by the user at Emulator generation time.

- **CS/40:**

  Foreground/Background/Concurrent Operation
  With the 1401/1440/1460 Relocatable DOS Compatibility Feature (4462) installed on the Model 40, the CS/40 Emulator program can be executed in any partition of DOS/360 that is initiated in batch job mode. CS/40 Emulator programs can also be executed concurrently in up to and including three partitions of DOS/360.

  More Room For DOS Supervisor
  DOS supervisors of greater than 16K size can now be accommodated while running CS/40 since emulated 1400 core can be relocated upward.

  Storage Allocation Considerations
  The 1400 Relocatable DOS Compatibility Feature allows simulated 1400 storage to begin at multiples of 16,384 (16K) bytes. The first location that simulated 1400 storage can begin at is 16,384 (16K); the last location possible is 114,688 (112K). These locations must be considered when allocating space for the foreground partitions. The DOS Supervisor increases approximately 1600 bytes in size when the relocation of simulated 1400 storage is specified at DOS/360 system generation time.

Availability ... June 30, 1970 as Type I with programming service classification A.

Prerequisite ... The 1401/1440/1460 Relocatable DOS Compatibility Feature (4462) must be installed on the 2040 to provide relocation and/or concurrent execution of CS/40 Emulator Programs. For details of Feature 4462 see DP letter 270-24. Other minimum system requirements remain unchanged.

Publications ... System/360 Disk Operating System - 1401/1440/1460 Emulator Programs for System/360 Models 30 and 40, GC27-6940. This manual will be updated ... availability will be announced by a Publications Release Letter.

No RPQs will be accepted at this time.

John Fahey
Director of DP Marketing

SEE REVERSE SIDE FOR "NOTE TO WORLD TRADE READERS".

Published by DP Sales Publishing Services, WTHQ

FOR IBM INTERNAL USE ONLY

Release Date: March 10, 1970
Distribution: All Areas

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IBM World Trade Data Processing

PROGRAM ANNOUNCEMENT

MODIFICATION LEVEL 4 OF S/360 ATTACHED SUPPORT PROCESSOR (ASP) IS AVAILABLE

Version 2 Modification Level 4 of ASP (360A-CX-15X) is now available. This new release is a maintenance release; therefore, it incorporates all corrections to ASP Version 2 Modification Level 3 contained in SECOM (ASP 2.03) as of January 28, 1970.

Version 2 Modification Level 4 operates with both Releases 17 and 18 of OS/360. Version 2 Modification Level 3 will remain "current" for programming service purposes until OS/360 Release 17 is no longer "current."

Present users will automatically receive this modification.

The Programming Service Classification is A.

No RPQs will be accepted at this time.

John Fahey
Director of DP Marketing

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Published by DP Sales Publishing Services, WTHQ

FOR IBM INTERNAL USE ONLY

Release Date: March 11, 1970
Distribution: All Areas

IBM World Trade Data Processing

PROGRAM ANNOUNCEMENT

TSS

Time Sharing System/360

VERSION 6 OF TSS/360 PROVIDES SIGNIFICANT SYSTEM ADVANCEMENT

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FOR IBM INTERNAL USE ONLY

Version 6 of Time Sharing System/360 is now available -- as Type I with programming service classification A. It provides significant incremental improvements in these areas:

Performance

Introduction of a multi-terminal per task facility in addition to the current single terminal per task and multiprogrammed batch facilities ... increased efficiency in accessing large data sets ... conversational improvements with RTAM, a Resident Terminal Access Method ... reduction of paging overhead.

Reliability and Serviceability

Addition of a VAM data management error processing procedure ... optimization of public storage with a revised space allocation algorithm ... ability to reconfigure hardware devices without re-IPLing ... new commands to ease system maintenance.

Human Factors

More options available in device management procedure ... language processor listings may be routed directly to SYSOUT ... improved LOGON procedure ... improved ERASE/DELETE commands.

Action Required

Current users will receive a letter announcing the availability of Version 6. Included with this letter will be a preprinted program order form that the customer should use to order the new version through the branch office. Users who do not reorder will remain on PID's files for future maintenance.

Details of the above, including engineering changes, basic program material, ordering information, reference material, and additional program material are on the inside pages.

John Fahey
Director of DP Marketing

Release Date: March 31, 1970
Distribution: All Areas

Performance

A multi-terminal task (MTT) facility has been incorporated into the system. It is designed to permit a large number of users at different terminals to share the same task. Some features of the MTT mode are:

- task overhead is shared equally among the users
- it is especially appropriate for applications which can be used simultaneously by many users
- a new set of macro instructions is provided for the preparation of user applications for the MTT environment.
- multiple MTT tasks may be in operation concurrently with regular TSS single terminal tasks and batch operations.

VISAM has been modified to support large data base applications by providing two-level indexing for effective page referencing when large data sets are processed. A Super Index Sequential Directory is created in virtual memory when the Index Sequential Directory exceeds two pages.

RTAM, a Resident Terminal Access Method, has improved conversational efficiency. This new access method:

- requires less paging per terminal I/O operation
- adds 2741 correspondence terminal support.
- supports both multi-terminal and single terminal tasks
- improves terminal error recognition.

TSS supports up to four 2301 drums. Multiple drums significantly increase the system's efficiency.

Many improvements have been made to reduce paging overhead.

- A shared page migration procedure controls the number of shared pages which are migrated from drum to disk.
- A blocked paging scheme is instituted.
- Excessive pages of a task will be purged dynamically without impacting the task's execution.
- QSAM has been reorganized to place the most frequently used routines in the same physical page.
- Bulk I/O has been modified to decrease the amount of paging.
- Changes to 34 FORTRAN mathematical library functions exploit the improved floating point hardware change.
- An unnecessary scan of the Batch Work Queue by the Batch Monitor has been eliminated.
- A call to the VMA PSECT to obtain the location of the SVMA PSECT has been eliminated.

The Batch Monitor utilizes CLOSE TYPE=T for all bulk input/output requests, cancellations, completions of requests and shutdowns. This mechanism ensures data set integrity without the overhead caused by successively opening and closing.

Reliability and Serviceability

VDMEP, a VAM Data Management Error Processing procedure, has been added to TSS. This procedure handles and informs the user of data set oriented errors; it then attempts to return control to the user after the error has been processed.

The Data Definition command has been modified to search the user's catalog for all data set organizations to provide a complete JFCB at DDEF time. This command also mounts volumes for VAM data sets and provides error checking routines for new data set names.

Public storage space has been optimized by a revised primary and secondary space allocation algorithm. This new algorithm provides for:

- assignment of device space according to the amount of available space on the volume
- reclaiming of space at STARTUP if the space defined in the PAT is not reflected in the data set's DSCB.

TSS hardware devices may be reconfigured without re-IPLing the system. This procedure allows IBM field engineering personnel to replace certain hardware devices on the system without going through STARTUP.

Four new time shared commands ease maintenance of the time sharing system.

- PATCLEAR - initializes VAM2 disk packs by clearing the page assignment table.
- DMPRST - dumps or restores VAM2 formatted disks.
- CPS - "Cleanup Public Storage" removes certain unwanted data sets from public storage.
- LPDS - "List Public Data Sets" lists the names and status of data sets in public storage.

The Error Control System has been modified to distinguish between shared and nonshared pages that exist in a malfunctioning 2365 core storage unit. This distinction may protect a page owner from unnecessary termination.

A new change tape facility allows users to update existing software systems without regenerating the

system. This facility utilizes the VAM Tape command as well as an extended Copy Data Set command.

The Resource Control and Accounting routines have been expanded to provide user-written accounting routines with accounting data for temporary pages and device seconds on a per task basis.

Human Factors

Improvements in device management allow the user to:

- specify scratch volumes or volume serial numbers for the expansion of multivolume data sets
- specify a symbolic device address of a nonstandard device
- specify a volume serial number for a public device
- inform the system operator that a released volume is to be scratched or retained for reassignment by the user.

User-requested listings from the language processors may be routed to a list data set or directly to SYSOUT. The three languages processors (FORTRAN, Assembler, and Linkage Editor) accept an additional parameter which determines the destination of language processor listings.

Nonprivileged users are prevented from using TSSS (Time Sharing Support System) SVCs.

The LOGON command has been modified to:

- make it an explicit command
- permit rearrangement of operands within the command structure
- inform a user if he attempts to log on with a user identification that already has a conversational task in the system.

SYSLOG messages have been reformatted to identify the module of origin and type code for program interrupt abends.

The ERASE and DELETE commands are modified to erase or delete all data sets under a given qualification level name with prompting, when the keyword "DEPROMPT" has a value of "YES." To prevent the erasing of all data sets in a user's catalog, DEPROMPT is assumed to equal YES regardless of user value when ERASE is used without a data set name.

STARTUP no longer requires the system operator to provide the address of a Syserror dump tape drive.

The A053 message is bypassed when no errors have been detected by the language processors.

When a STOW-type NA detects a duplicate EXTERN name it will provide the user with the option of obtaining the duplicate EXTERN name or defining a new JOBLIB for the module.

Maintenance

This version includes solutions to 220 APARs.

Minimum System Configuration

The minimum system configuration is: One 2067 mdl 1; two 2365 mdl 2s; one 2860 mdl 2 or two 2860 mdl 1s; one 2870 mdl 1; one 2821 mdl 1 or 5; one 1403 mdl 2 or mdl 3 or N1 with one 1416 mdl 1; one 2540 mdl 1; one 2820 mdl 1; one 2301 mdl 1; one 2314 DASF with at least five drives; one 2803 mdl 1 and two 2401 mdl 1, 2 or 3s or one 2402 mdl 1, 2 or 3 or one 2403 mdl 1, 2 or 3 and one 2401 mdl 1, 2 or 3; one 2702 mdl 1 or one 2703 mdl 1; one 1052 mdl 7; one 2741 mdl 1 or one 1051 mdl 1 or 2 and one 1052 mdl 1 or 2; five 2316s.

See "P 360/67 Programming Pages" in the sales manual for additional hardware features and RPQs required.

Minimum Supported Engineering Change Levels

The following engineering change levels are a requisite for correct operation of the Time Sharing System.

Unit	ECA Level
2067-1,2	69
2365A-12	14
2365-12	85
2365A-2	19
2365-2	65
2846	5
2860	71
2870	41
2870A	27 (except 26)
2167	N/A

Basic Program Material (Available from PID)

Documentation -- Program material list ... Methods of printing the TSS System Prose. The following SRLs will be shipped: System Generation and Maintenance, GC28-2010-4 with TNL GN28-3051** ... Managers and Administrators Guide,* GC28-2024-3 ... Operators Guide,* GC28-2033-6 ... System Messages,* GC28-2037-5 ... Independent Utilities, GC28-2038-1 with TNL GN28-3056** ... Addendum,* GC28-2043-9.

If only the order numbered publications are required, order from Mechanicsburg - not from PID.

Machine Readable -- TSS Utilities - Restorable IPL Control VOL data - Restorable Auxiliary Control VOL data - TSS System Prose.

**Denotes change with this version*
***New Item*

Optional Program Material

Documentation -- Program material list ... Source Volume Utilization.

Machine Readable -- Source Code delivered in the following volumes: Volume 1 contains: CEA - Supervisor, CEI - Auxiliary programs, CGC - Service Routines, CHB - System Tables, and CEH - Time Sharing Support Systems, and is specified by using Program Number Extension VOL1.

Volume 2 contains: CEC - Access Methods, CEY - Linkage Editor, and CFA - Command System, and is specified by using Program Number Extension VOL2.

Volume 3 contains: CEB - Independent Utilities, CEK - FORTRAN Compiler, CEV - Assembler, CHC - FORTRAN Library Subroutines, and CMA - Diagnostics, and is specified by using Program Number Extension VOL3.

Ordering Information: Program Number 360GCL627

	Prg. Nbr. Ext.	Distribution Medium Type	Code	User Volume Requirement
Basic	none	MT 9/800	28	02
Optional	VOL1	MT 9/800	28	01
	VOL2	MT 9/800	28	01
	VOL3	MT 9/800	28	01

Programming Service

TSS/360 Version 5, Modification Level 0 and maintenance Version 5, Modification Level 1 will remain "current" until June 30, 1970 (three months). Releases prior to Version 5, Modification Level 0 are now considered "Back-Level."

Reference Material

Assembler Language, GC28-2000-3* ... Command System Users Guide, GC28-2001-5* ... Concepts and Facilities, GC28-2003-4* ... Assembler User Macro Instructions, GC28-2004-4* ... Linkage Editor, GC28-2005-3* ... Time Sharing Support System, GC28-2006-0 with TNLs GN28-3043, GN28-3062** ... FORTRAN IV, GC28-2007-2 with TNLs GN28-3060, GN28-3061** ... System Programmers Guide, GC28-2008-2* ... Terminal Users Guide, GC28-2017-3 with TNL GN28-3059** ... Master Index, GC28-2023-1 ... FORTRAN Programmers Guide, GC28-2025-3* ... FORTRAN IV Supplied Subprograms, GC28-2026-2* ... Assembler Programmer's Guide, GC28-2032-3* ... MTT Programming and Operation, GC28-2034-0** ... Planning for Remote Job Entry, GC28-2044-0*** ... PL/I Reference Manual, GC28-2045-0*** ... PL/I Library Computational Subroutines, GC28-2046-0*** ... Introducing TSS/360, GC28-2048-2* ... TSS/Quick Guide, GX28-6400-1* ... Quick Guide for System Programmers, GX28-6401-0.**

*Denotes change with this version
**New Item
***Functions described by these publications are not included in this release.

Program Logic Manuals

Available from IBM Distribution Center, Mechanicsburg.

System Logic Summary, GY28-2009-1 with TNLs GY28-3094, GY28-3102, GY28-3111**, GY28-3112** ... System Control Blocks, GY28-2011-4 with TNL GY28-3109** ... Resident Supervisor, GY28-2012-4* ... Command System, GY28-2013-4* ... Program Control System (PCS), GY28-2014-1 with TNLs GY28-3099, GY28-3114** ... System Generation and Maintenance (SYSGEN), GY28-2015-5* ... Access Methods, GY28-2016-3* ... System Service Routines, GY28-2018-2* ... FORTRAN IV, GY28-2019-1* ... FORTRAN Library GY28-2020-0, with TNL GY28-3101** ... Assembler, GY28-2021-1, with TNL GY28-3100** ... Linkage Editor, GY28-2030-1 with TNLs GY28-3083, GY28-3098, GY28-3103** ... Dynamic Loader, GY28-2031-2* ... Independent Utilities, GY28-2039-3* ... Task Monitor, GY28-2041-2 with TNL GY28-3113** ... On-Line Test Control Program, GY28-2042-2* ... Time Sharing Support System, GY28-2022-1* ... Operator Task and Bulk I/O, GY28-2047-2.*

*Denotes change with this version
**New Item

Program Listings

Time Sharing System/360 program listings are available on microfiche from IBM Corporation, E. Simpson Ferry Road, Mechanicsburg, Pennsylvania 17055, Attention: Microfiche Distribution.

Group Code 9030 is used to order all Time Sharing listings. There are no separately orderable groups.

Microfiche update service will be provided. This service may be discontinued by submitting an order to do so. The listings are the equivalent of output listings produced by assembling the symbolic modules.

Dependency Programs

There are no Dependency Programs for the operation of the Time Sharing System/360.

A tape to card utility, (ex. - BOS, OS, independent) is necessary for the retrieval of the TSS independent utilities. These utilities are packaged as the first file of the System Volume Restore tapes. All of the utilities can be loaded and executed directly from the tapes with exception of the Core Dump Programs. To use the Core Dump it must be punched from the tape. IBM BPS Utility Program - tape to card (program number 360P-UT-053) may be used for this purpose.

A tape to printer utility (ex. - BOS, OS, TSS, independent) is necessary for new users to retrieve the TSS System Prose. The Prose resides on the 4th file of the system restore tapes. IBM BPS Utility Program, tape to printer (program number 360P-UT-052) may be used for this purpose.

S/360 MORTGAGE LOAN PROGRAM IS WITHDRAWN FROM TYPE II LIBRARY

Effective immediately, the System/360 Mortgage Loan Program (360A-FB-19X) is withdrawn from the Type II library, and its documentation is no longer available from Mechanicsburg.

Central Programming Service will be discontinued on October 1, 1970.

Notify affected customers immediately.

John Fahey
Director of DP Marketing

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[10] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

CORRECTION NOTICE FOR P70-8: **Under "Publications" heading on reverse side of letter change "Operator's Guide SRL (XC28-6540) and System Generation SRL (XC28-6554)" to read as follows: "Operator's Guide SRL (GC28-6540) and System Generation SRL (GC28-6554)."**

Published by DP Sales Publishing Services, WTHQ

Release Date: April 1, 1970
Distribution: **All Areas**

PROGRAM ANNOUNCEMENT

●NEW PLAN FOR DOS/360 RELEASES

Future Disk Operating System/360 system releases are planned to be issued at a rate of not more than two per year. This schedule, along with the three-month maintenance overlap of releases, is intended to enable the user to generate and run at the same system level for a period averaging at least six to nine months.

Some of the benefits to the customer under this revised release plan are:

- He will be able to plan for receipt and installation of a new DOS/360 release on a more orderly basis.
- After converting to a new release, the new release will be operational and receive support for a longer period than before.

Detailed information for programming services is contained in the General Information section of the sales manual.

●1800 FEATURES ANNOUNCEMENT CLARIFIED

DP Letter 269-52 announced new IBM 1800 Features and expanded programming capabilities. Contained within the announcements is the following statement:

> "MPX enables programs to be compiled within a minimum partition for any system partition."

The plan was to provide this capability by FORTRAN source statement overflow to disk. This function will now be provided by the subroutine capability within the FORTRAN compiler and coreload builder.

Users desiring to compile a program whose source statements cannot be contained in the partition (VCORE) in which the compiler resides, may segment the source program into subroutines that can be contained. A mainline program can be written that calls the subroutines. In this way, by segmenting the source program into subroutines, the program can be compiled.

Clarification of the Communications Adapter programming support is included on the reverse side.

John Fahey
Director of DP Marketing

Published by DP Publications Services, WTHQ
1 North Broadway
White Plains, New York 10601

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P70-34 P 70-35 P70-36
NOT USED

Release Date: April 16, 1970
Distribution: All Areas

Multiprogramming Executive System Version 2

The Communications Adapter will be supported with the following subroutines:

BSCIO - Communications Adapter Input/Output Control Subroutine - Provides the ability to transmit and receive messages over telecommunication lines.

BSCTN - Attention Subroutine - Provides the ability to respond to requests to receive or transmit data without having BSCIO in main storage at the time of the request.

BSCTR - Trace Subroutine - Provides the ability to record all operations performed by BSCIO on a single line.

BSCCK - I/O Area Check Subroutine - Provides the ability to check the validity of a calling sequence and the transmit and receive tables before issuing a call to BSCIO.

BSCRT - On-Line Test Subroutine - Provides the ability to exercise a communications line to aid in isolating and correcting malfunctions.

Conversion Subroutines - Five subroutines are provided for code conversion to assist in processing the data.

No other programming support will be provided for the Communications Adapter.

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IBM World Trade Data Processing

PROGRAM ANNOUNCEMENT

CALL/360-OS

MVT, LCS, and PAPER TAPE SUPPORT ADDED TO CALL/360-OS ... THE HIGH PERFORMANCE TIME SHARING SYSTEM FOR OS/360

CALL/360-OS capability will be expanded to include the following features:

- OS/360 MVT in addition to the MFT control program support previously announced (P69-86)

- Main storage hierarchy support to provide segmented operation in processor storage or the large capacity IBM 2361 Core Storage

- Paper tape facility to accept source program code as input from TELETYPE* 33/35**

CALL/360-OS can handle a large number of terminals and provides the fast response required in a problem solving environment. This personal computing system meets the requirements of both the experienced professional programmer and the individual with no programming experience.

CALL/360-OS boasts a comprehensive terminal command language and three programming languages:

- CALL/360-OS BASIC ... for the new or occasional user who needs improved techniques to solve his daily problems which may have been previously solved by non-computer methods.

- CALL/360-OS PL/I ... to solve the more complex problems.

- CALL/360-OS FORTRAN ... one of the most widely known engineering and scientific programming languages.

CALL/360-OS operates as a task under either the OS/360 MFT or MVT. It occupies one partition/region of the system. Since there is no direct communication between CALL/360-OS language processors and the System/360 Operating System, system resources not assigned to CALL/360-OS are available for allocation by OS/360.

It is not practical to predict for all cases the extent of the demands placed upon the system by terminal users. Therefore, general statements concerning performance of CALL/360-OS, or its effects on other tasks in the system, cannot be made.

Specific performance data will be made available at your SD&I Center.

Availability ... To be included in the initial release of CALL/360-OS scheduled for May 29, 1970 as Type I with programming service classification A. An updated sales manual entry and ordering instructions will be published at that time.

Sales Information ... You can demonstrate CALL/360-OS now. Contact your SD&I representative today to arrange a demonstration for your customer.

Programming RPQs will not be accepted at this time.

For machine configuration information, promotional material, publications, and education announcement references, see the reverse side.

John Fahey
Director of DP Marketing

*Trademark of TELETYPE Corporation

**Terminals which are equivalent to those explicitly supported may also function satisfactorily. The customer is responsible for establishing equivalency. IBM assumes no responsibility for the impact that any changes to the IBM supplied products or programs may have on such terminals.

Published by DP Publications Services, WTHQ
1 North Broadway
White Plains, New York 10601

*Announced by ITPS Memorandum to DP Branch Managers B70-93.

FOR IBM INTERNAL USE ONLY

SEE PAGE 3 FOR "NOTE TO WORLD TRADE READERS"

Release Date: April 24, 1970*
Distribution: **All Areas**

Configurations

Representative machine configurations are described in announcement letter P69-86. The large capacity IBM 2361 Core Storage may now be added to these configurations where appropriate. The 2702 and 2703 configurations shown below have been updated to include RPQs for Immediate End-Paper Tape. Start/Stop Base I (Feature 7505) for TTY has also been included under the 2703.

Support of the Multiprocessor Model 65 is not included in this announcement.

2702 Configuration	Model or Feature	Description
2702	1	Transmission Control Unit
2741 Related Features	4615	IBM Terminal Control Type I
	9684	Selective Speed
	8055	2741 Break Feature
	3233	Data Set Line Adapter - 1 per line
		The above 2702 configuration can be expanded to handle up to 15 2741 lines by adding one 3233 per line.
TTY 33/35 Features	7912	Telegraph Terminal Control - Type II
	E62920	CR cause interrupt on TTY - RPQ)
	3233	To go to 15 TTY on 2702, add 1 3233 per TTY line
	E54838	Immediate End (for paper tape) (RPQ)
To go beyond 15 lines	7955	31 line expansion - to allow expansion from 15 to 31 lines
	3853	Expansion Base
Allow mix of 2741 and TTY	7935	Terminal Control Expansion

2703 Configuration	Model or Feature	Description
2703	1	Transmission Control Unit
2741 Related Features up to eight lines	7505	Start Stop Base 1
	4619	IBM Terminal Control Basc
	4696	IBM Terminal Control Type I
	8055	2741 Break Feature
	4878	Line speed option (134 5)
	3205	Data Line Set
TTY Related Features up to 8 lines	7905	Telegraph Terminal Control Base
	7505	Start/Stop Base 1
	7912	Telegraph Terminal Control Type II
	4877	Line Speed Option '110'
	3205	Data Line Set
	E62376	CR Interrupt on TTY - (RPQ)
	Z16087	Immediate End (for paper tape) (RPQ)
To expand from 8 to 88 lines	3206	Data Line Set Expander
	3205	Data Line Set. For each set of 8 lines beyond first 8, add for first 8 additional lines a 3206, for next 8 (lines 17-24) a 3205. This alternation (3206, then 3205) continues to 88 lines.
To expand beyond 88 lines	1440	Basic expansion
	7505	Start Stop Base Type I additional Alternate 3205 - 3206 as above.
		To mix Teletype and 2741, combine the features specified above.

Promotional Material

CALL/360-OS Slide Set	GV20-0245
(Additional copies available from Audio Visual Services, DPD HQ)	
CALL/360-OS Brochure	G520-2220
CALL/360-OS 2741 Key Top Decals	GX20-1806

Publications

Currently Available from Mechanicsburg

Systems Description Manual	GH20-0673*
CALL/360-OS BASIC Language Reference Manual	GH20-0699*
CALL/360-OS PL/I Language Reference Manual	GH20-0700*
CALL/360-OS FORTRAN Language Reference Manual	GH20-0710*

*An updated version will be announced by a Publications Release Letter

To be announced by a Publications Release Letter

CALL/360-OS Executive and Utilities Program Description Manual

CALL/360-OS Operator's Manual

CALL/360-OS Terminal Operators Manual

CALL/360-OS Language Reference Cards

BASIC
FORTRAN
PL/I

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IBM World Trade Data Processing

PROGRAM ANNOUNCEMENT

THE 7094 INTEGRATED EMULATOR FOR THE SYSTEM/360 MODEL 85 UNDER OS/360 AVAILABLE

The 7094 Integrated Emulator for the System/360 Model 85 under OS/360, 360C-EU-734, is now available ... as Type I with programming service classification A.

Highlights ... The integrated emulator:

- Executes under the control of OS/360, thus taking advantage of the multiprogramming facilities of the operating system, including better utilization of system resources.
- Allows the user to initiate or increase graphic processing and telecommunications applications (in 360 mode) which may have been unjustified or marginal in installations using stand-alone emulation techniques.
- Allows other problem programs (such as compilers, utility programs, user jobs, real-time applications, or other copies of this 7094 integrated emulator) to be executed concurrently in main storage.
- Allows the user to overlap setup time for the operating system and the emulator programs.
- Enables the user to concentrate on the development of new applications.
- Allows simulation of 7094 devices on direct access data sets.
- Makes it possible for conversion to be put on a schedule that allows old programs to be incorporated into new applications and system approaches.

RPQs are not accepted at this time.

See the reverse side for more supporting information, program material, and ordering instructions.

John Fahey
Director of DP Marketing

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[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] World Trade now identifies certain current programs with a programming Service Classification of A, B, or C. Programming services to WT customers remain unchanged for programs classified A or B and for programs available only in World Trade. After January 1, 1970, Programming services for programs classified C will not include centralized Authorized Program Analysis Report (APAR) programming service or automatic distribution of corrections.

[10] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

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The integrated emulator executes as a problem program under the System/360 Operating System, MFT or MVT version, in conjunction with the 7094 Compatibility Feature (7119). This combination of programming support and machine feature enables the System/360 Model 85 to execute programs written for the 709, 7090, 7094 and 7094 II Data Processing Systems.

Job initiation, scheduling, and resource allocation are accomplished by OS/360 services. Input/output activity is controlled through the operating system I/O Supervisor. The operating system job control language is used for entering control information relative to devices and data sets. Additional emulator control commands provide direct communication with the emulator program.

The integrated emulator is available independently of OS/360 and is applied to an existing operating system which has been SYSGENed with appropriate space and facilities as detailed in the SRL for the emulator program.

(The Emulator requirements are available in Operating System/360 Release 18.6.)

Equipment Configuration ... The 7094 devices are emulated on a one-for-one basis by corresponding System/360 input/output devices or direct access data sets. Minimum partition/region size for emulation is approximately 374K bytes of storage.

See the programming section of the sales manual for device support.

2085 CPU must be at EC level 712249.

Speed ... Internal speed (performance of CPU instructions only, weighted by frequency of use) of the integrated emulator is approximately two times the speed of the 7094 II.

Basic Program Material:

Documentation: Basic Program Material List with attachment; IBM System/360 Operating System Emulator Program to Emulate the IBM 709, 7090, 7094, 7094 II on the System/360 Model 85, (GC27-6944-1).

Machine Readable: Load modules, emulator generation macro definition and sample program.

Optional Program Material:

Documentation: Optional Program Material List

Machine Readable: Source statements and macros

Ordering Information: Program Number 360CEU734

	Prg. Nbr. Extension	Distribution Medium Type	Code	User Volume Requirement
Basic	2311	MT 9/800	28	01
		MT 9/1600	29	01
	2314	MT 9/800	28	01
		MT 9/1600	29	01
Optional	None	MT 9/800	28	01
		MT 9/1600	29	01

Additional copies of the form numbered manual should be ordered from Mechanicsburg -- not from PID.

Additional Program Support Material:

Program Listings: Available on microfiche from IBM Corporation, Microfiche Distribution, Mechanicsburg. When ordering use Group Code 1420.

Publication: IBM System/360 Operating System Emulator Program to Emulate the IBM 709, 7090, 7094 and 7094II on the System/360 Model 85, Program Logic Manual (GY27-7187). (Available only from Mechanicsburg.)

IBM World Trade Data Processing

PROGRAM ANNOUNCEMENT

DEVICE INDEPENDENT DISPLAY OPERATOR CONSOLE SUPPORT

Device Independent Display Operator Console Support (DIDOCS) is an option of OS/360 MFT and MVT that will provide uniform display operator console support. DIDOCS support will be available for the Model 195 under MVT only. When using DIDOCS, Multiple Console Support (MCS) must be included in the system. MCS will provide the hard copy log required when using a display console. This log can be on a console with a printing deyice, or can be written in the system log data set.

DIDOCS is consistent with the currently announced Model 85 Operator Console Support and will take advantage of device dependent features of each display (such as the use of the light pen on the 2250 for message deletion). Devices to be supported include the:

- Model 195 Display Console (under MVT only)
- Model 91 Display Console (under MVT only)
- 2250 Model 1 and 3 with Light Pen (optional), Alphameric Keyboard, Character Generator and 4,096 and 8,192 byte buffer
- Model 85 Operator Console Feature 5450
- 2260 Model 1 connected to a 2848-Model 3 (Direct S/360 Channel Attachment only) with Alphameric Keyboard, and Line Addressing

This new 2250 support (DIDOCS) offers the following advantages over the current 2250 support:

- Human factors improvements have been added
- Automatic message deletion is supported
- Special indicators are used to focus attention on message status
- Action messages will require special action to be deleted, therefore, these messages will normally remain displayed until the required action is taken

The current 2250 support (with and without MCS) will be withdrawn when DIDOCS is released. This means that MCS will be mandatory for use of 2250 console support. The Display Command List and Display Unit Status commands which are unique to the current 2250 support will no longer be available.

Support of the 2260 as an operator console provides small display consoles that may be placed as needed in the machine room. Using MCS, the appropriate messages may be routed to each of these consoles. In addition, all the hard copy type consoles announced under MCS are also supported. This provides greater flexibility for each customer to configure his installation to meet his needs.

DIDOCS will be available September 30, 1970, as Type I with Class A Programming Service Classification.

Resident main storage requirements will vary depending on the number of CRT devices used as consoles and the type of devices used. With DIDOCS, 200 bytes will be required for use by all CRT consoles plus the following main storage requirements necessary for each device in the total configuration.

2250 or Model91/195 Display Console	5K requirement
Model 85 Operator Console	4K requirement
2260 Display Console	2K requirement

The Multiple Console Support storage requirements must be added to these figures to determine the total amount of main storage required.

SYSTEM/360 MODEL 195

The Model 195 is supported under OS/360 MVT. Programming support will be available with first customer shipment as Type I support with Class A Programming Service Classification. Languages and new System Generation Options are:

Language Compilers and Libraries

ALGOL
Assembler F
COBOL F
USA Standard COBOL
FORTRAN IV G
FORTRAN IV H
PL/I F
Report Program Generator

(Assembler E, COBOL E and FORTRAN IV E are excluded.)

New Function with Assembler F

Extended Precision Floating Point instructions are provided; these are the same as those provided for the Model 85. Extended precision floating point arithmetic instructions allow extended precision floating point operands to be added, subtracted, or multiplied together to produce extended precision results. Also, two long precision operands can be multiplied together to produce an extended precision result. There are two rounding instructions provided. One takes an extended precision operand from a floating point register pair and produces a rounded long precision result in a Floating Point Register. The other round instruction takes a long precision operand and rounds to a short precision operand, in a similar way. Assembler F furnishes support for these instructions. No additional machine requirements are needed beyond that of OS/360.

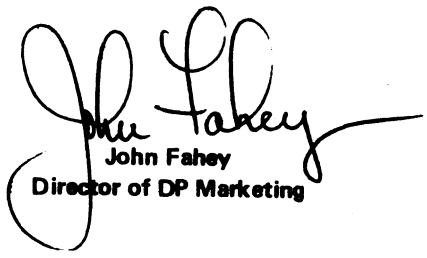
System Environment Programs

System Environment Recording (SER1)
Environment Recording Edit and Print (EREP)
Channel Check Handler (CCH)

The SER1 and CCH support increases the availability of the Model 195 by minimizing the impact of machine and channel malfunctions upon the jobs in process. The Channel Check Handler performs an extensive analysis of the failing channel operation and passes control to the appropriate IBM supplied error routine (ERP). The ERP uses the analysis data gathered by CCH to set up a retry of the failing operation by means of the I/O Supervisor. The I/O Supervisor performs the actual retry of the failing operation. Successful retry renders the entire incident transparent to the user. If the error is non-retryable, the I/O supervisor posts the task with a permanent I/O error and an exit is made to the channel error recorder where a record is placed on the SYS1. LOGREC.

Operator Console Support

The programming support for the Model 195 Operator Console will be provided by the Device Independent Display Operator Console Support (DIDOCS) under MVT only.



John Fahey
Director of DP Marketing

OS/360 TCAM SUPPORT EXPANDED

Telecommunications Access Method (TCAM) capabilities are significantly expanded to provide support for the following:

- 2715 Transmission Control Unit for the 2790 Data Communications System
- 2741 Data Communications Terminal
- 2741 Receive Interrupt (4708) and Transmit Interrupt (7900) Optional Features
- 1050 Receive Interrupt (6100) and Transmit Interrupt (7900) Optional Features on 1051
- General Poll for 2260/2848 - Remote
- Concentrated Message Handling
- User exits for modifying channel programs and servicing line interrupts

Availability ... TCAM support for the 2741, without the optional interrupt features, will be available 1Q 1971 ... all other support announced in this letter will be available 4Q 1971.

Minimum Systems Configuration ... Device requirements for MFT or MVT apply. TCAM operates under either control program option on System/360 Models** that have 128K or more of main storage. Normally, space on one or more 2311 or 2314 DASD units is needed for intermediate storage of message queues.

Classification ... Type I with programming service classification A.

Publications ... The IBM System/360 Operating System Planning for the Telecommunications Access Method (TCAM) manual (GC30-2020) will be updated by a Technical Newsletter ... availability will be announced in a future PRL.

See the reverse side for more details.

John Fahey
Director of DP Marketing

** Models 40, 50, 65, 67 (in 65 mode), 75, 85, 91 and 195.
NOTE: The 2715 is not supported on Model 91.

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

[3] When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

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P70-41 P70-42 P70-43
NOT USED

2715 Transmission Control Unit for 2790 Data Communications System

Tables stored in the 2715 define control, editing and routing procedures for transfers of data between the 2790 Terminals and 2715. TCAM provides:

- Table translation macros for 2715 table and transaction definitions.
- Ability to write 2715 operator messages on the System/360 console.
- Log of 2715 and 2790 terminal error statistics.
- On line test (2715 Remote only) facilities.
- Ability to route individual transactions contained within a blocked message to multiple processing destinations.
- Facilities for handling and creating special 2715 message formats.

The following 2715 configurations are supported:

- Local attachment of the 2715 Model 1 to the multiplexer channel of System/360.**
- Remote attachment of the 2715 Model 2 operating point-to-point on switched or non-switched communications networks or multi-point on non-switched networks. Binary Synchronous Communications is used via 2701 equipped with an SDA II or 2703 with a synchronous adapter attached to the System/360** Multiplexer channel. EBCDIC transparency capability is required.

2741 Data Communications Terminal

The 2741 terminal support is similar to that for the IBM 2740 terminal without Station Control or Record Checking. Attachment is via a 2701, 2702, or 2703 equipped with an IBM Terminal Control Type I over switched or non-switched communication facilites.

2741s and 1050s may share the same switched line or line group. This means that either terminal type may call the computer using the same phone number.

2741 and 1050 Interrupt Features

With the optional interrupt features, only the 2702 or 2703 may be used to attach 2741s and 1050s to System/360. Refer to the sales manual for line adapter and control unit feature requirements.

General Poll for 2260/2848 - Remote

This capability may be used to reduce polling overhead in situations where selective invitation of individual display stations is not required. When general poll is used, if source identification is important to the application, TCAM provides the ability to identify the source station in the same manner as when general poll is not used.

Concentrated Message Handling

In certain applications, messages from remote locations are blocked into one message by a remote System/360, a 2715 Transmission Control unit or other device supported by TCAM. Such a device may in turn have terminals attached to it. A single concentrated message may contain control information and text segments from several logically distinct sources and destinations. TCAM will contain additional facilities for use in such system designs by providing:

- The ability to deal with a wide variety of concentrated message formats.
- A means of defining terminals attached to the remote processor or control unit.
- The ability to deblock a concentrated message and handle terminal segments individually.
- The ability to block individual terminal messages into a concentrated format.
- User control of line and operation scheduling.
- Queue control to avoid loss of rejected messages.
- Operator control via terminals attached to a remote processor.
- Error handling capabilities.

**Models 40, 50, 65, 67 (in 65 mode), 75, 85, and 195.

IBM World Trade Data Processing

PROGRAM ANNOUNCEMENT

PL/I COMPILER AND RPG EXPANDED FUNCTIONS ARE NOW AVAILABLE WITH MODEL 20 DPS

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

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[3] When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.

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[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

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Two significant enhancements to System/360 Model 20 Disk Programming System (DPS) are available and can be ordered with DPS Release 9. Shipments will begin the week of May 4. The enhancements are:

- *An additional program* ... PL/I: A powerful language designed to satisfy the varied computing requirements of the Model 20 user.
- *An expanded program* ... Version 4 of the Model 20 DPS RPG compiler which increases the functional capability of the RPG language.

In addition, DPS Release 9 contains modifications to various existing programs.

PL/I 360W-PL-207

Complementing the Model 20's broad range of processors is today's announcement of the availability of the Model 20 PL/I Compiler. PL/I offers the Model 20 users a new compiler previously available only on larger systems. PL/I has the capability of handling scientific/engineering as well as commercial applications.

The PL/I Compiler operates under the control of the Model 20 Disk Programming System Monitor.

Additional information is on the inside pages.

Report Program Generator (RPG) 360W-RG-180

Version 4 adds five increased functions to the existing RPG program. They are:

CHAIN Function, EXCPT Function, Closed Subroutines, User Date Fields, and Edit Codes - See P69-84 for details.

Classification

All programs available within DPS Release 9 are Type I with programming service classification A.

John Fahey
Director of DP Marketing

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PL/I - Language Compatability

The Model 20 PL/I language is a subset of the OS/360 PL/I language. It is upward compatible to this PL/I language with the exception of those input/output devices not supported by other models of the System/360. The Model 20 PL/I language is also a subset of the PL/I-D level language under DOS/360 except for one language feature. This feature, "Arrays of Structures," which is present in the Model 20 PL/I language, is not present in DOS/360 PL/I-D.

PL/I - Program Features

Language capabilities to satisfy commercial and scientific/engineering applications.
User flexibility of free-form input thus eliminating prespecified card columns.
Complete support of sequential and indexed sequential data organization.
Optional data formats to permit selection of most efficient use of magnetic tape or disk files.
File security provided by System/360 standard magnetic tape and disk file labels.
Accessibility to files through the inquiry capabilities of the 2152 Printer-keyboard.
Simplified coding techniques provided by character handling capabilities and built-in functions such as SQRT, DATE, SIN, COS.
Capability to optimize core storage utilization by static or automatic storage allocation.
Optimization of programming resources through comprehensive compiler diagnostics and extended debugging aids.

PL/I - Additional Information

In the final programming specifications, two items have been changed as follows:

1. Because SYSLOG and SYSLIST are the same devices in DPS, the PL/I option ONSYSLOG will be deleted from this subset.

2. STREAM-OUTPUT with PRINT attribute can only be listed directly. Output on tape and disk is restricted.

The following headings appeared in the original announcement of PL/I (P69-4). The accompanying text represents a change to these paragraphs.

Detail Program Features -

Under the sub-heading Interrupt handling, add SIZE to the list of ON-conditions provided.

Data Management -

Replace the second paragraph with the following:

> Disk records may be fixed length, blocked or unblocked. Block size may range from 1 to 27,000 bytes for sequential files and to 4,095 for indexed sequential files.

Diagnostic Capability -

Add the following to the list of examples:

> A facility to trace the dynamic flow of the program which prints the name of any label or procedure encountered at execution time.

PL/I - Performance and Core Storage Utilization

For performance data refer to the SRL publication IBM System/360 Model 20 DPS Performance Estimates, GC33-6003-3.

A deviation exists between the preliminary performance figures, as stated in P69-4, and the measured figures. The difference is in the number of bytes used for the three different programs. The table of number of bytes is below.

Three environments are considered:

(a) 16K, two disks (one indexed sequential file, one sequential file), 2560 card input, 2560 card punching, 2203 printer. Commercial application. Random retrieval and update of the indexed sequential file.

(b) 16K, four tapes (two input files, two output files), 2501 card input, 1442 card output, 1403 printer. (Note: One disk drive is used for the PL/I object-time library but not for data files.) Commercial application.

(c) 16K, one disk (one sequential file), 2520 card input, 2203 printer. Scientific application.

	(a)	(b)	(c)
Mod 20 DPS Monitor	2900	3600	2900
Transient Area	836	836	836
Resident Control Pgm.	800	800	950
Input/Output Library	5070	2970	1960
Input/Output Buffer	780	1840	400
Conversion Library	850	850	1500
Routines for Stream I/O	-	-	1800
Other Library Routines	-	-	1000
Floating Point Routines	-	-	770
Available for the user (16K less above amounts)	5100	5500	4200
Total Storage used	16000	16000	16000
Approx. number of source Statements (lines)	130	140	75

According to above figures the table of approximate program size given on page four of P69-4 should read:

	(a)	(b)	(c)
No. of Statements in 16K	130	140	75
No. of Statements in 24K	330	340	210
No. of Statements in 32K	530	540	350

For Program Material and Ordering Information see the sales manual text on the reverse side.

DPS

BASIC PROGRAM PACKAGE

Documentation -- Basic Program Material List -- The following SRL Publications appropriate to the components ordered are shipped by PID with each initial DPS order.

SRL Publications -- DPS System Generation and Maintenance, GC33-6006-3, DPS Operating Procedures, GC33-6004-4; DPS Control and Service Programs, GC24-9006-5; DPS Disk Utility Programs, GC26-3810-3; DPS and TPS Report Program Generator, GC24-9001-6; DPS and TPS Assembler Language, GC24-9002-5; DPS Disk Sort/Merge Program, GC26-3806-5; DPS Input/Output Control System, GC24-9007-5 and TNL GN33-9079.

Note: GC24-9007 was reference material and is now basic.

Form numbers which have changed since previous release are underlined. If only the publications or if additional copies are required, order them from the IBM Distribution Center, Mechanicsburg -- not from PID.

Machine Readable -- The different systems are available on disk packs* or magnetic tapes**.

System A contains object code of all the following components:
To order specify program extension number OPTA.

System B contains object code of all the following components except IOCS BSCA, RJE (IO-192, IO-193, IO-202- CQ-201, CQ-203):
To order specify program extension number OPTB.

System C contains object code of all the following components except PL/I (PL-207):
To order specify program extension number OPTC.

Program Name	Program Number	V M
Disk Resident Control Programs	360W-CL-171	3/1
Load System Disk Program	SL-172	3/1
Library Allocation Organization Program	SL-173	4/0
Physical and Logical Unit Tables Service Program	SL-174	3/1
Core Image Maintenance Program	SL-175	6/0
Macro Maintenance Program	SL-176	3/2
Directory and Core Image Library Service Programs	SL-177	4/1
Disk Backup and Restore Program	SL-178	3/2
Linkage Editor Program	SL-179	3/1
Report Program Generator	RG-180	4/0
Assembler Program	AS-181	3/2
Disk Sort/Merge Program	SM-182	5/0
Initialize Disk Utility Program	UT-183	3/2
Alternate Track Assignment Utility Program	UT-184	3/0
Clear Disk Utility Program	UT-185	3/1
Disk-to-Disk Utility Program	UT-186	3/1
Disk-to-Tape Utility Program	UT-187	3/1
Tape-to-Disk Utility Program	UT-188	3/2
Disk-to-Card Utility Program	UT-189	3/1
Card-to-Disk Utility Program	UT-190	3/1
Disk-to-Printer Utility Program	UT-191	3/1
Input/Output and Monitor Macro Definitions	IO-192	3/2
Input/Output and Monitor Macro Definitions	IO-193	4/2
Tape Sort/Merge Program	SM-194	3/1
Tape-to-Tape Utility Program	UT-195	3/1
Tape-to-Card Utility Program	UT-196	3/1
Card-to-Tape Utility Program	UT-197	3/1
Tape-to-Printer Utility Program	UT-198	3/1
Initialize-Tape Utility Program	UT-199	3/1
Monitor Generator Macro Definitions	IO-200	2/2
Binary Synchronous Communications Adapter Macro Definitions	CQ-201	3/1
2152 Printer-Keyboard Macro Definitions	IO-202	2/0
I/O Macro Definitions for Remote Job Entry Work Station Program	CQ-203	1/1
Disk Dump Program	UT-204	1/1
Copy System Program	SL-205	1/1
Macro Library Service Program	SL-206	1/2
360 Model 20 DPS PL/I Compiler Program	PL-207†	1/0

†New with this release.

* - The 1316 Disk Pack returned from the program library contains a running system as well as sample decks in card-image format to be punched. It is accompanied by three disk IPL cards to be used for initializing the loading of the running system, which is referred to as the DPS disk pack.

** - Users with 2415 Magnetic Tape Units attached should request the programs on tape. The tape contains the Backup and Restore Program (360W-SL-178) to be activated by one bootstrap card distributed with the tape. The Restore Program initializes the 1316 Disk Pack ... copies a running System as well as sample programs in card image format on 1316 Disk Pack ... punches the cards for initializing the loading of the Disk Programming System as described in the DPS-SRL Operating Procedures, GC33-6004.

OPTIONAL PROGRAM PACKAGE

Documentation -- Optional Program Material list and Attachment I.

Machine Readable -- Source code for all disk programming system components (360W, except macros which can be obtained by using MSERV program with option SOURCE) is contained on two (2) functional volumes.

Option 1 - 360W-CL-171 to 360W-SM-182 and is specified by using program number extension OPT1.

Option 2 - 360W-UT-183 to 360W-UT-191 ... 360W-SM-194 to 360W-UT-199 ... 360W-UT-204 to 360W-PL-207 and is specified by using program number extension OPT2.

Optional program material is not available for the following: 360W-IO-192, IO-193, IO-200, CQ-201, IO-202, CQ-203.

ORDERING INFORMATION

System number 360W

Note: Both basic and optional machine readable material for this system is ordered by specifying a "System Line" (columns 1-7, 15-24) and "Component Lines" (columns 8-12) of the Program Order Form. Enter a separate Component Line for each component desired. Re-specify the System Line for each different Program Number Extension.

	Program Number Extension	Distribution Medium Type	Code	User Volume Requirement
Basic	OPTA	MT 7DC/800	26	01
		MT 9/800	28	01
		MT 9/1600	29	01
		1316	52	01
	OPTB & OPTC	MT 7DC/800	26	01
		MT 9/800	28	01
		DTR 9/1600	29	none
		1316	52	01
Optional	OPT1	MT 9/800	28	01
		MT 9/1600	29	01
	OPT2	MT 9/800	28	01
		MT 9/1600	29	01

CURRENT USERS:

Current users will receive a preprinted Program Order Form and a letter announcing the availability of the new release. The letter instructs them to order the new release through the branch office using the preprinted form.

Each user of record may order either a total replacement for his current DPS, or a maintenance package which is applied to his existing DPS. The detailed ordering instructions supplied to each user of record describe how one package or the other is explicitly requested.

User volume requirement for a total replacement for either tape or disk is 01. The maintenance package is available on a 1316 Disk Pack or a magnetic tape for 7 DC/800 or 9/800 or a Distribution tape reel (DTR) for 9/1600. User volume requirement for the maintenance package on disk or magnetic tape is 01. If 9/1600 is ordered no user volume is required -- a DTR is provided. The user should specify one of the Mediums Codes on the preprinted Program Order Form. The maintenance package will be available for 60 days from the date of this announcement.

For additional information see Branch Office Manual, DP Sales Activity section.

REFERENCE MATERIAL:

IBM S/360 Model 20 Guide to DPS, GC33-6000-3 ... IBM S/360 Model 20 PL/I User's Guide, GC33-6007-2 ... IBM S/360 Model 20 DPS Master Index, GC33-6008-1 ... TNL GN33-9082 to IBM S/360 Model 20 IOCS for the BSCA, GC33-4001-4.

PLMs -- TNL GN33-9080 to IBM S/360 Model 20 Control and Service, GY33-9008-2 ... TNL GN33-9083 to IBM S/360 Model 20 DPS Disk Sort/Merge, GY33-9016-1 ... TNL GN33-9084 to IBM S/360 Model 20 DPS Disk Utilities, GY33-9017 ... IBM S/360 Model 20 DPS RPG, GY33-9015-2 ... IBM S/360 Model 20 DPS PL/I Volume I, GY33-9060.

IBM World Trade Data Processing

PROGRAM ANNOUNCEMENT

FUTURE SUPPORT OF OS/360 BURST MODE DEVICES REMOVED

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

[3] When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

[7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.

[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

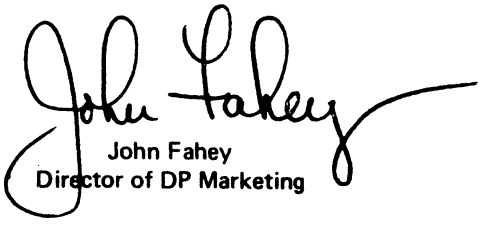
[9] World Trade now identifies certain current programs with a programming Service Classification of A, B, or C. Programming services to WT customers remain unchanged for programs classified A or B and for programs available only in World Trade. After January 1, 1970, Programming services for programs classified C will not include centralized Authorized Program Analysis Report (APAR) programming service or automatic distribution of corrections.

[10] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

The OS/360 support for burst mode devices (including byte devices with burst mode options operating in burst mode) attached to the multiplexer channel on the System/360 Models 30, 40, 50 will not be included in subsequent releases of OS/360. (The multiplexer channel is standard on Models 30, 40, 50 and a special feature (5248) on Model 44.)

Usage does not warrant continued support. Burst mode devices are supported on the selector channels of the System/360 Models 30, 40, 50 and the high speed multiplexer channels (4598 or 4599) on the System/360 Model 44.

All affected customers should be notified.



John Fahey
Director of DP Marketing

Published by DP Publications Services, WTHQ
1 North Broadway
White Plains, New York 10601

FOR IBM INTERNAL USE ONLY

Release Date May 13, 1970
Distribution: **All Areas**

VERSION 2 OF OS GPSS/360 PROGRAM PRODUCT (5734-XS1) MAY BE ORDERED

Version 2 of OS GPSS/360 (5734-XS1) may now be ordered.

Version 2 provides significant advantages over GPSS/360 Version 1 (Type II Program). The major functions and capabilities of GPSS/360 Version 2 are:

- Complete compatibility with GPSS/360 Version 1..
- A real-time TIMER for model interruption and continuation.
- An easy-to-use interface between GPSS/360 and independently compiled FORTRAN routines.
- An execution time core resident PRINT/TRACE/HELP feature.

Version 2 of GPSS/360 also provides a number of user convenience and model enhancement features. Among these are additional SNAs for the absolute clock and terminations-to-go, an optional procedure for bypassing the often redundant second (absolute) input listing, and improved diagnostic capabilities.

Version 2 under OS GPSS/360 Program Product (5734-XS1) will also provide for blocking of all data sets associated with GPSS/360 for more efficient operation.

The Program Product specification sheet on page 3 may be reproduced and given to customers.

Basic Program Product Offering ...

Unlicensed Documentation: One copy of the Introductory User's Manual (H20-0693) ... User's Manual (H20-0694) ... Operator's Manual (H20-0692).

Licensed Machine Readable Material: One copy of object program load modules and sample problem.

Specify Number	Track/Density	Description
9025	7DC/800	DTR
9027	9/800	DTR
9030	9/1600	DTR

Price ...

Type	Program No.	DPMO	Monthly Charge	Prog. Service Classification
5734	XS1	XS1	$20.00	B

Optional Support Packaget ...

Licensed Documentation: One copy of Systems Manual (feature no. 8101).

Licensed Machine Readable Material: One copy machine readable material consisting of GPSS/360 Version 2 source decks.

Feature No.	Track/Density	Description	Quantity
Customer Supplied			
7026	7DC/800	2400' MT	1 reel
7028	9/800	2400' MT	1 reel
7029	9/1600	2400' MT	1 reel
Order from IBM			
7126	7DC/800	2400' MT	1 reel
7128	9/800	2400' MT	1 reel
7129	9/1600	2400' MT	1 reel

Prices for Additional Copies of Documentation ...

Licensed Documentation:

Feature Number	Use Key	Single Charge/Copy
8101 (Y20-0475)*	L	$34.00

Unlicensed Documentation: (order from Mechanicsburg, bill customer)

Feature Number	Use Key	Price/Copy
H20-0693	S	$2.90
H20-0694	S	8.40
H20-0692	S	2.10

Related Documentation (No charge) ... Application Description Manual (H20-0691) Use Key G.

Publication Support: Initial supplies of the unlicensed Basic Program Product form numbered publications will be distributed through DAPS. Order additional copies from the IBM Distribution Center, Mechanicsburg, Pennsylvania when availability is announced in the Weekly Publications Release Letter.

(Continued on next page)

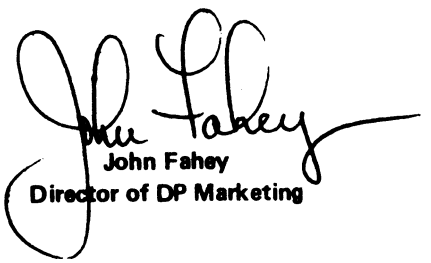
† No Charge

* For customer, order by feature number from PID and bill customer; for IBM internal use, order by form number

Release Date: May 15, 1970
Distribution: Selected European Countries Only

SES: SE Services, identified with and related to the installation and use of the IBM Version 2 of OS GPSS/360 (5734-XS1) Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing: This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.



John Fahey
Director of DP Marketing

Note to World Trade Readers

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[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

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[3] When a new version of a program is announced, current users will be advised by the WT Area Program Library of Procedures for ordering the new release.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

[7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.

[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

PROGRAM PRODUCT SPECIFICATION

General Purpose Simulation System/360 (OS) Version 2 (5734-XS1)

GPSS/360 Version 2 is an easy-to-use and easy-to-understand tool for modeling and examing 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.

GPSS/360 Version 2 provides significant advantages over GPSS/360 Version 1. Major functions and capabilities of GPSS/360 Version 2 are:

- Complete compatibility with GPSS/360 Version 1.
- A real-time TIMER for model interruption and continuation.
- An easy-to-use interface between GPSS/360 and independently compiled FORTRAN routines.
- An execution time core resident PRINT/TRACE/HELP feature.

Version 2 of GPSS/360 also provides a number of user convenience and model enhancement features. Among these are additional SNA's for the absolute clock and terminations-to-go, an optional procedure for bypassing the often redundant second (absolute) input listing, and improved diagnostic capabilities. GPSS/360 Version 2 will also provide for blocking of all data sets associated with GPSS/360 for more efficient operation.

Programming Systems: The GPSS/360 Version 2 program is written completely in Assembler Language and operates under control of OS/360. GPSS/360/OS will operate with the OS/360 Primary Control Program (PCP), the OS/360 Multiprogramming with a Fixed Number of Tasks (MFT), or the OS/360 Multiprogramming with a Variable number of Tasks (MVT). GPSS/360 has three standard entity allocations built into the program; however, any or all entities may be tailored to particular model needs by use of the GPSS/360 Reallocate feature. The following table shows the approximate minimum storage requirement for each of the three standard entity allocations (A, B, and C):

	A	B	C
Minimum Storage Requirement	52K	96K	170K

These figures include the main storage required for the GPSS/360 program, tables, control words, entities, and COMMON. The ability of the user to specify the required number of each entity type and required amount of COMMON through use of the Reallocate feature provides great flexibility in adapting the core requirements of GPSS/360 to regions and/or partitions which are smaller, between, or larger than the figures mentioned above. Understandably, the use of GPSS/360 optional features such as Jobtapes, SAVE/READ, HELP routines, and core resident PRINT/TRACE/HELP feature during execution will increase the main storage required.

Minimum System Configuration: The minimum system requirements for OS GPSS/360 Version 2 are similar to those necessary to support the OS/360. No additional devices should be required. The minimum machine configuration includes a 2040 Processing Unit Model G with the Universal Instruction Set and appropriate I/O units to satisfy the OS/360 requirements for system console, system input, system output, system residence, and system data sets. The only additional requirement is direct access and/or sequential storage space for the GPSS/360 data sets. The GPSS/360 program will be distributed on magnetic tape only. A 2400 Series Tape Unit (9- or 7-track with Data Conversion feature) must be available for program distribution and maintenance.

System/360 General Purpose Simulation System Version 2 (OS-5734-XS1 and DOS-5736-XS1): GPSS Version 2 provides an easy-to-use and easy-to-understand tool for modeling and examining the behavior of systems in the engineering and management science areas. This system will accommodate varying model sizes in a modular fashion for System/360 configurations with storage capacities ranging from 64K bytes upward for DOS program product 5736-XS1, and from 128K bytes upward for OS program product 5734-XS1.

Description: GPSS/360 Version 2 is a broad range general purpose tool for modeling and examining the behavior of systems in the management and engineering 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 are simply introduced, and the user can identify optimal conditions, isolate bottlenecks, and determine the effects of delays caused by capacity limitations. Both the particular environment and the activity processes are permitted to have statistical fluctuations as a function of time. 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 useful and profitable are many and varied -- general 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, economic studies, capital investment and risk studies, analysis of alternative military strategies, analysis of plans for corporate growth and merger, among others.

Features: GPSS/360 Version 2 provides significant advantages over GPSS/360 Version 1. Major functions and capabilities of GPSS/360 Version 2 are:

- Complete compatability with GPSS/360 Version 1.
- A real-time TIMER for model interruption and continuation.
- An easy-to-use interface between GPSS/360 and independently compiled FORTRAN routines.
- An execution time core resident PRINT/TRACE/HELP feature.

Version 2 of GPSS/360 also provides a number of user convenience and model enhancement features. Among these are additional SNA's for the absolute clock and terminations-to-go, an optional procedure for bypassing the often redundant second (absolute) input listing, and improved diagnostic capabilities.

Version 2 of OS GPSS/360 (5734-XS1) will also provide for blocking of all data sets associated with GPSS/360 for more efficient operation.

The adaptability of GPSS/360 Version 2 of DOS (5736-XS1) will be enhanced by provision for GPSS/360 data sets on 2314 direct access storage devices.

Use: Programming experience is generally unnecessary for users of GPSS/360 Version 2. The user needs only to 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; diagnostics are executed automatically as required. The operating system used provides GPSS/360 Version 2 with input/output services.

Customer 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.

Special Sales Information: GPSS/360 has three standard entity allocations built into the program; however, any or all entities may be tailored to particular model needs by use of the GPSS/360 Reallocate feature. The following table shows the approximate minimum storage requirement for each of the three standard entity allocations (A, B, and C):

Minimum Storage Requirement:	A	B	C
	52K	96K	170K

These figures include the main storage required for the GPSS/360 program, tables, control words, entities, and COMMON. The ability of the user to specify the required number of each entity type and required amount of COMMON through use of the Reallocate feature provides great flexibility in adapting the core requirements of GPSS/360 to regions and/or partitions which are smaller, between, or larger than the figures mentioned above. Understandably, the use of GPSS/360 optional features such as Jobtapes, SAVE/READ, HELP routines, and core resident PRINT/TRACE/HELP feature during execution will increase the main storage required.

Version 2 of OS GPSS/360 will operate with OS/360 Primary Control Program (PCP), the OS/360 Multiprogramming with a Fixed Number of Tasks (MFT), or the OS/360 Multiprogramming with a Variable Number of Tasks (MVT).

Version 2 of DOS GPSS/360 will operate under control of DOS/360 in either non-partitioned or partitioned mode of operation.

Programming Systems: Both GPSS/360 program products are written entirely in Assembler Language.

OS GPSS/360 Machine Configuration: The Minimum machine requirements for OS GPSS/360 Version 2 are similar to those necessary to support the OS/360. No additional devices should be required. The minimum machine configuration includes a 2040 Processing Unit Model G with the Universal Instruction Set and appropriate I/O units to satisfy the OS/360 requirements for system console, system input, system output, system residence, and system data sets. The only additional requirement is direct access and/or sequential storage space for the GPSS/360 data sets. The GPSS/360 program will be distributed on magnetic tape only. A 2400 Series Tape Unit (9- or 7-track with Data Conversion feature) must be available for program distribution and maintenance.

DOS GPSS/360 Machine Configuration: The minimum system requirements for DOS GPSS/360 Version 2 are similar to those necessary to support DOS/360. No additional devices should be required. The minimum machine configuration includes a 2030 Processing Unit Model F with 64K bytes of main storage and the Universal Instruction Set. The system input unit may be a 1442, 2501, 2520, or 2540 Card Reader Punch, or 2400 Series Tape Unit; the system output unit may be a 1403, 1404, 1443, or 1445 Printer, or 2400 Series Tape Unit. GPSS/360 resides in the system core image library and may utilize the direct access (2311 or 2314) space allocated to system units for its primary data sets during execution. Series 2400 Tape Unit(s) will be required if optional GPSS/360 features are employed. The interval Timer Feature will be necessary if the GPSS/360 Run Length Feature is used. The GPSS/360 program will be distributed on magnetic tape only. A 2400 Series Tape Unit (9- or 7-track with Data Conversion feature) must be available for program distribution and maintenance.

Basic Program Product Offering:

Licensed Machine Readable Material: One copy of object program load modules and sample problem. (Either 5734-XS1 or 5736-XS1)

Unlicensed Documentation: One copy of each of the following:

Introductory User's Manual*
User's Manual*
GPSS OS/360 Operator's Manual* or
GPSS DOS/360 Operator's Manual*

Program Number	Specify Number	Track/Density	Description
5734-XS1	9025	7DC/800	DTR
	9027	9/800	DTR
	9030	9/1600	DTR
5736-XS1	9025	7DC/800	DTR
	9027	9/800	DTR
	9030	9/1600	DTR

Special Features (Modification Support Package):

Licensed Documentation: One copy of GPSS OS/360 Systems Manual or one copy GPSS DOS/360 Systems Manual.

Licensed Machine Readable Material: One copy machine readable material consisting of GPSS/360 Version 2 source decks, available on one 2400' MT reel.

	Specify Number	Track/Density	Description
5734-XS1			
Customer Supplied	7026	7DC/800	2400' Reel
	7028	9/800	2400' Reel
	7029	9/1600	2400' Reel
Order from IBM	7126	7DC/800	2400' Reel
	7128	9/800	2400' Reel
	7129	9/1600	2400' Reel
5736-XS1			
Customer Supplied	7026	7DC/800	2400' Reel
	7028	9/800	2400' Reel
	7029	9/1600	2400' Reel
Order from IBM	7126	7DC/800	2400' Reel
	7128	9/800	2400' Reel
	7129	9/1600	2400' Reel

Prices:

Type	Program No.	DPOW	Monthly Charge	Programming Service Classification
5734	XS1	XS1	$20.00	B
5736	XS1	XS1	20.00	B

Prices and form numbers (feature numbers) for copies of Licensed and Unlicensed Documentation will be announced when the programs are available.

Related Program Product Documentation (available only from Mechanicsburg ... no charge): Preliminary copies of the Application Description Manual are available from Department 835, Scientific Industry and Development Center, Des Plaines, Illinois, 60016.

*Manuals will be available when program is available.

FOR IBM INTERNAL USE ONLY

VERSION 2 OF DOS GPSS/360 PROGRAM PRODUCT (5736-XS1) MAY BE ORDERED

Version 2 of DOS GPSS/360 (program product 5736-XS1) may now be ordered.

The Program Product specification sheet on page 3 may be reproduced and given to customers.

No RPQs will be accepted at this time.

Basic Program Product Offering ...

Unlicensed Documentation: One copy of Introductory User's Manual (H20-0693) ... User's Manual (H20-0694) ... GPSS DOS/360 Operator's Manual (H20-0698).

Licensed Machine Readable Material: One copy of object program load modules and sample problem. To order, select one of the following specify numbers:

Specify Number	Track/Density	Description
9025	7DC/800	DTR
9027	9/800	DTR
9030	9/1600	DTR

Price ...

Type	Prog. Nbr.	DPMO	Prog. Service Classification	Monthly Charge
5736	XS1	XS1	B	$20.00

Optional Support Package ...

Licensed Documentation: One copy of GPSS DOS/360 System Manual (Feature 8181).

Licensed Machine Readable Material: One copy of machine readable material consisting of GPSS/360 Version 2 source decks. To order, select one of the following specify numbers:

	Specify Nbr.	Track/ Density	Description	Quantity
Customer Supplied	7026	7DC/800	2400' MT	1 reel
	7028	9/800	2400' MT	1 reel
	7029	9/1600	2400' MT	1 reel
Order from IBM	7126	7DC/800	2400' MT	1 reel
	7128	9/800	2400' MT	1 reel
	7129	9/1600	2400' MT	1 reel

There is no charge for the Optional Support Package.

FOR IBM INTERNAL USE ONLY

Prices for Additional Copies of Documentation ...

Licensed Documentation:

Feature Number	Use Key	Single Charge/Copy
8181 (Y20-0483)*	L	$34.00

*For customer, order by feature number and bill customer; for IBM internal use, order by form number.

Unlicensed Documentation (Order from Mechanicsburg; customer will be billed by Mechanicsburg through AOO).

Form Number	Use Key	Selling Price/Copy
H20-0693	S	$2.90
H20-0694	S	8.40
H20-0698	S	2.10

Related Documentation: (No charge) ... Application Description Manual (H20-0691), Use Key G.

Publication Support: Initial supplies of the unlicensed Basic Program Product form numbered publications will be distributed through DAPS. Order additional copies from the IBM Distribution Center, Mechanicsburg, Pennsylvania when availability is announced in the Weekly Publications Release Letter.

SES: SE Services, identified with and related to the installation and use of the IBM Version 2 of DOS GPSS/360 (5736-XS1) Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing: This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.

John Fahey
Director of DP Marketing

Note to World Trade Readers

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[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

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[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

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[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

General Purpose Simulation System/360 (DOS) Version 2 (5736-XS1)

GPSS/360 Version 2 is an easy-to-use and easy-to-understand 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.

GPSS/360 Version 2 provides significant advantages over GPSS/360 Version 1. Major functions and capabilities of GPSS/360 Version 2 are:

- Complete compatibility with GPSS/360 Version 1.
- A real-time TIMER for model interruption and continuation.
- An easy-to-use interface between GPSS/360 and independently compiled FORTRAN routines.
- An execution time core resident PRINT/TRACE/HELP feature.

Version 2 of GPSS/360 also provides a number of user convenience and model enhancement features. Among these are additional SNA's for the absolute clock and terminations-to-go, an optical procedure for bypassing the often redundant second (absolute) input listing, and improved diagnostic capabilities.

The adaptability of GPSS/360 Version 2 is enhanced by provision for GPSS/360 data sets on 2314 direct access storage devices.

Programming Systems: The GPSS/360 Version 2 program is written completely in Assembler language and operates under control of DOS/360. GPSS/360 has three standard entity allocations built into the program; however, any or all entities may be tailored to particular model needs by use of the GPSS/360 Reallocate feature. The following shows the approximate minimum storage requirement for each of the three standard entity allocations: A (52K), B (96K), and C (170K).

These figures include the main storage required for the GPSS/360 program, tables, control words, entities, and COMMON. The ability of the user to specify the required number of each entity type through use of the Reallocate feature provides great flexibility in adapting the core requirements of GPSS/360 to partitions which are smaller, between, or larger than the figures mentioned above. Understandably, the use of GPSS/360 optional features such as Jobtapes, SAVE/READ, HELP routines, and core resident PRINT/TRACE/HELP feature during execution will increase the main storage required.

The Programming Service Classification is B.

Minimum System Configuration: The minimum system requirements for DOS GPSS/360 Version 2 are similar to those necessary to support the DOS/360. No additional devices should be required. The minimum machine configuration includes a 2030 Processing Unit Model F with 64K bytes of main storage and the Universal Instruction Set. The system input unit may be a 1442, 2501, 2520, or 2540 Card Reader Punch, or 2400 Series Tape Unit; the system output unit may be a 1403, 1404, 1443, 1445 Printer, or 2400 Series Tape Unit. GPSS/360 resides in the system core image library and may utilize the direct access (2311 or 2314) space allocated to system units for its primary data sets during execution. Series 2400 Tape Unit(s) will be required if optional GPSS/360 features are employed. The Interval Timer Feature will be necessary if the GPSS/360 Run Length Feature is used. The GPSS/360 program will be distributed on magnetic tape only. A 2400 Series Tape Unit (9- or 7-track with Data Conversion feature) must be available for program distribution and maintenance.

System/360 General Purpose Simulation System Version 2 (OS-5734-XS1 and DOS-5736-XS1): GPSS Version 2 provides an easy-to-use and easy-to-understand tool for modeling and examining the behavior of systems in the engineering and management science areas. This system will accommodate varying model sizes in a modular fashion for System/360 configurations with storage capacities ranging from 64K bytes upward for DOS program product 5736-XS1, and from 128K bytes upward for OS program product 5734-XS1.

Description: GPSS/360 Version 2 is a broad range general purpose tool for modeling and examining the behavior of systems in the management and engineering 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 are simply introduced, and the user can identify optimal conditions, isolate bottlenecks, and determine the effects of delays caused by capacity limitations. Both the particular environment and the activity processes are permitted to have statistical fluctations as a function of time. 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 useful and profitable are many and varied -- general 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, economic studies, capital investment and risk studies, analysis of alternative military strategies, analysis of plans for corporate growth and merger, among others.

Features: GPSS/360 Version 2 provides significant advantages over GPSS/360 Version 1. Major functions and capabilities of GPSS/360 Version 2 are:

- Complete compatability with GPSS/360 Version 1.
- A real-time **TIMER** for model interruption and continuation.
- An easy-to-use interface between GPSS/360 and independently compiled **FORTRAN** routines.
- An execution time core resident **PRINT/TRACE/HELP** feature.

Version 2 of GPSS/360 also provides a number of user convenience and model enhancement features. Among these are additional SNA's for the absolute clock and terminations-to-go, an optional procedure for bypassing the often redundant second (absolute) input listing, and improved diagnostic capabilities.

Version 2 of OS GPSS/360 (5734-XS1) will also provide for blocking of all data sets associated with GPSS/360 for more efficient operation.

The adaptability of GPSS/360 Version 2 of DOS (5736-XS1) will be enhanced by provision for GPSS/360 data sets on 2314 direct access storage devices.

Use: Programming experience is generally unnecessary for users of GPSS/360 Version 2. The user needs only to know the rules by which system models are constructed. The logical structure and statistical parameters of the system are first moceled 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; diagnostics are executed automatically as required. The operating system used provides GPSS/360 Version 2 with input output services.

Customer 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.

Special Sales Information: GPSS/360 has three standard entity allocations built into the program; however, any or all entities may be tailored to particular model needs by use of the GPSS/360 Reallocate feature. The following table shows the approximate minimum storage requirement for each of the three standard entity allocations (A, B, and C):

Minimum Storage Requirement:	A	B	C
	52K	96K	170K

These figures include the main storage required for the GPSS/360 program, tables, control words, entities, and COMMON. The ability of the user to specify the required number of each entity type and required amount of COMMON through use of the Reallocate feature provides great flexibility in adapting the core requirements of GPSS/360 to regions and/or partitions which are smaller, between, or larger than the figures mentioned above. Understandably, the use of GPSS/360 optional features such as Jobtapes, SAVE/READ, HELP routines, and core resident **PRINT/TRACE/HELP** feature during execution will increase the main storage required.

Version 2 of OS GPSS/360 will operate with OS/360 Primary Control Program (PCP), the OS/360 Multiprogramming with a Fixed Number of Tasks (MFT), or the OS/360 Multiprogramming with a Variable Number of Tasks (MVT).

Version 2 of DOS GPSS/360 will operate under control of DOS/360 in either non-partitioned or partitioned mode of operation.

Programming Systems: Both GPSS/360 program products are written entirely in Assembler Language.

OS GPSS/360 Machine Configuration: The Minimum machine requirements for OS GPSS/360 Version 2 are similar to those necessary to support the OS/360. No additional devices should be required. The minimum machine configuration includes a 2040 Processing Unit Model G with the Universal Instruction Set and appropriate I/O units to satisfy the OS/360 requirements for system console, system input, system output, system residence, and system data sets. The only additional requirement is direct access and/or sequential storage space for the GPSS/360 data sets. The GPSS/360 program will be distributed on magnetic tape only. A 2400 Series Tape Unit (9- or 7-track with Data Conversion feature) must be available for program distribution and maintenance.

DOS GPSS/360 Machine Configuration: The minimum system requirements for DOS GPSS/360 Version 2 are similar to those necessary to support DOS/360. No additional devices should be required. The minimum machine configuration includes a 2030 Processing Unit Model F with 64K bytes of main storage and the Universal Instruction Set. The system input unit may be a 1442, 2501, 2520, or 2540 Card Reader Punch, or 2400 Series Tape Unit; the system output unit may be a 1403, 1404, 1443, or 1445 Printer, or 2400 Series Tape Unit. GPSS/360 resides in the system core image library and may utilize the direct access (2311 or 2314) space allocated to system units for its primary data sets during execution. Series 2400 Tape Unit(s) will be required if optional GPSS/360 features are employed. The interval Timer Feature will be necessary if the GPSS/360 Run Length Feature is used. The GPSS/360 program will be distributed on magnetic tape only. A 2400 Series Tape Unit (9- or 7-track with Data Conversion feature) must be available for program distribution and maintenance.

Basic Program Product Offering:

Licensed Machine Readable Material: One copy of object program load modules and sample problem. (Either 5734-XS1 or 5736-XS1)

Unlicensed Documentation: One copy of each of the following:

Introductory User's Manual*
User's Manual*
GPSS OS/360 Operator's Manual* or
GPSS DOS/360 Operator's Manual*

Program Number	Specify Number	Track/Density	Description
5734-XS1	9025	7DC/800	DTR
	9027	9/800	DTR
	9030	9/1600	DTR
5736-XS1	9025	7DC/800	DTR
	9027	9/800	DTR
	9030	9/1600	DTR

Special Features (Modification Support Package):

Licensed Documentation: One copy of GPSS OS/360 Systems Manual or one copy GPSS DOS/360 Systems Manual.

Licensed Machine Readable Material: One copy machine readable material consisting of GPSS/360 Version 2 source decks, available on one 2400' MT reel.

	Specify Number	Track/Density	Description
5734-XS1			
Customer Supplied	7026	7DC/800	2400' Reel
	7028	9/800	2400' Reel
	7029	9/1600	2400' Reel
Order from IBM	7126	7DC/800	2400' Reel
	7128	9/800	2400' Reel
	7129	9/1600	2400' Reel
5736-XS1			
Customer Supplied	7026	7DC/800	2400' Reel
	7028	9/800	2400' Reel
	7029	9/1600	2400' Reel
Order from IBM	7126	7DC/800	2400' Reel
	7128	9/800	2400' Reel
	7129	9/1600	2400' Reel

Prices:

Type	Program No.	DPOW	Monthly Charge	Programming Service Classification
5734	XS1	XS1	$20.00	B
5736	XS1	XS1	20.00	B

Prices and form numbers (feature numbers) for copies of Licensed and Unlicensed Documentation will be announced when the programs are available.

Related Program Product Documentation (available only from Mechanicsburg ... no charge): Preliminary copies of the Application Description Manual are available from Department 835, Scientific Industry and Development Center, Des Plaines, Illinois, 60016.

*Manuals will be available when program is available.

FOR IBM INTERNAL USE ONLY

IBM World Trade Data Processing

PROGRAM PRODUCT ANNOUNCEMENT

SHAS COMPATIBLE TELEPROCESSING (PROGRAM PRODUCT 5736-H13) IS READY FOR SHIPMENT

SHAS Compatible Teleprocessing Support for 2780, 2740, and 1050 Terminals under DOS/360 QTAM (program product 5736-H13) is ready for shipment.

Details will be in the program product section of the sales manual (PPA 360.17). Copies of the specification sheet (GH20-4001) are available from Mechanicsburg.

Basic Program Product Offering:

Licensed Documentation ... One copy of System Reference Manual (Program Description, Operations, Systems) (feature 8000).

Licensed Machine Readable Material ... One copy of machine readable material containing source program modules for SHAS Compatible Teleprocessing Support for 2780, 2740, and 1050 Terminals under DOS/360 QTAM. To order, select one of the following specify numbers:

Specify Number	Track/Density	Description	Quantity
9025	7 DC/800	DTR	1
9027	9/800	DTR	1
9030	9/1600	DTR	1

Charge:

Type	Program and DPMO Number	Prog. Service Classification	Monthly Charge
5736	H13	B	$275

Charges for Additional Copies of Documentation:

Licensed Documentation ...

Feature/Form Number	Single Charge/Copy
8000 (LY20-0480)*	$4.20

No RPQs will be accepted at this time.

Publication Support: The availability of the publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Penna.

SES ... SE Services, identified with and related to the installation and use of the IBM SHAS Compatible Teleprocessing (5736-H13) Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.

John Fahey
Director of DP Marketing

P70-47C

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

[3] When a new version of a program is announced, current users will be advised by the WT Area Program Library of Procedures for ordering the new release.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

[7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.

[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

*For customer, order by feature number from PID and bill customer; for IBM internal use, order by form number from Mechanicsburg.

Release Date: May 15, 1970
Distribution: Selected European Countries Only

IBM World Trade Data Processing

PROGRAM PRODUCT ANNOUNCEMENT

SHAS COMPATIBLE TELEPROCESSING SUPPORT FOR 2780, 2740, and 1050 TERMINALS UNDER DOS/360 QTAM (PROGRAM PRODUCT 5736-H13) IS ANNOUNCED

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

[3] When a new version of a program is announced, current users will be advised by the WT Area Program Library of Procedures for ordering the new release.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

[7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.

[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

SHAS Compatible Teleprocessing Support for 2780, 2740, and 1050 Terminals under DOS/360 QTAM (Program Product 5736-H13) is available.

This program product extends the range of devices supported by the SHAS [Shared Hospital Accounting System (Type II) 360A-UH-11X] teleprocessing executive to include the 2780, 2740, and 1050 terminals. The 2780 terminal provides a significant increase in input and output capabilities when compared with the 1050 terminal support available under SHAS. The 2740 terminal provides advantages for inquiry or direct keyed data entry.

These extensions of capability constitute significant advances over the SHAS teleprocessing executive. When used with the Shared Hospital Accounting System (Version 2 or higher is a prerequisite), this package offers support for a variety of terminal combinations in a shared hospital application environment.

SHAS Compatible Teleprocessing is released under Service Classification B. The monthly charge is $275.

No RPQs will be accepted at this time.

Details are on the reverse side. The program product design objectives page may be detached or reproduced and given to customers.

Publication Support: The availability of the publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Penna.

SES ... SE Services, identified with and related to the installation and use of the IBM SHAS Compatible Teleprocessing Support For 2780, 2740, and 1050 Terminals Under DOS/360 QTAM (5736-H13) Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.

John Fahey
Director of DP Marketing

Release Date: May 15, 1970
Distribution: Selected European Countries Only

SHAS Compatible Teleprocessing (5736-H13): This program provides support for the 2780, 2740, and 1050 terminals under DOS/360 QTAM.

It expands the range of devices supported by the SHAS (Shared Hospital Accounting System 360A-UH-11X) teleprocessing executive to include the IBM 2780 and 2740 terminals.

Description: This program product extends the terminal support available under SHAS. The 2780 terminal provides a significant increase in input and output capabilities when compared with 1050 terminal support available under SHAS (which at Version 2 or higher is a prerequisite). The 2740 terminal provides advantages for inquiry or direct keyed data entry.

Features: SHAS compatible ... shared medical environment oriented ... macro configured.

Customer Responsibilities: A thorough knowledge and understanding of DOS/360, QTAM, and SHAS ... proper communications line configuration ... understanding of the installed terminals' characteristics, limitations, and service requirements ... retention and maintenance of assembly listings which should be available for servicing ... understanding that documentation for this program is licensed and consists of a single manual containing description, operation, and systems information.

Use: In a shared hospital or medical application environment, this program supplies extended input and output abilities to remote sites. The user codes supplied macro instructions describing his terminal configuration. Compilation, which generates the expansion of these macros, creates a tailored teleprocessing message control program. Input received from terminals is stored on a data set for subsequent processing by SHAS. SHAS output directed for the terminal is queued on a data set for subsequent transmission. This program includes a complete message processing program providing the full teleprocessing support capability required.

The program also extends the capability of SHAS to include support for the 2780 terminal when used in a leased-line multipoint configuration, by inserting instructions in DOS/360 QTAM to communicate to the SHAS application.

Programming Systems: SHAS/2780 operates under DOS/360 and is written in DOS Assembler language. The package requires SHAS Version 2 and has that program's dependencies. DOS/360 QTAM (Release 21) is also required.

Minimum System Requirements: (CENTRAL SITE) 2030F Processing Unit (64K) [note that 2040G Processing Unit (128K) is required for concurrent operation of SHAS/2780 and SHAS background application programs] with all QTAM and SHAS requirements (see SHAS Application Description Manual H20-0302) plus IBM Terminal Adapter Type I Model II (#4640 with #9581) for IBM 1050 or 2740 terminals or Synchronous Data Adapter Type II (#7698 with #9060) for IBM 2780 terminal.

Central Processing Unit Network Configuration Capacities: In systems with 128K or larger central processing units, the usual limiting factor for network size is processing unit speed. To determine a balanced CPU and network configuration, the following load factors should be used:

Where a = potentially simultaneously active 1050 or 2740 lines
b = potentially simultaneously active 2780 lines then
Load factors = a + (15 x b).

The maximum recommended load factors (MAX 1 and MAX 2) are listed below. MAX 1 factors refer to dedicated T/P systems without the SHAS application programs running concurrently; MAX 2 factors take into account the additional CPU requirements for concurrent operations of the SHAS application programs. (CPU factors considered only.)

IBM S/360 Processing Unit	MAX 1	MAX 2
2030	20	Not applicable
2040	65	40
2050	125	90

Remote 2780 Terminal: Model 1, 2, 3, or 4 on a leased line with Multipoint Line Control (#5020) and EBCDIC code (#9762). Recommended features are 120 Character Print Line (#5820), 144 Character Print Line (#5821), and Extended Retry Transmission (#9150). If Multiple Record Transmission feature (#5010) is installed, it should be installed on all 2780 terminals on the system. EBCDIC Transparency (#8030), 6-Bit Transcode (#9760), and ASCII code (#9761) are not supported. Printed Horizontal Format Control (#5800), Auto Turnaround (#1350), and 144 Character Print Line (#5821) are not supported but are compatible. Appropriate data set attachments or IBM Line adapters are required.

Remote 1050 Terminal: The 1052, 1053, and 1056 components of the 1050 system are supported. A 1051 Model 1 or 2 is required with First Printer Attachment (#4408), First Reader Attachment (#4411), as indicated, as well as appropriate data sets, data set attachments, or IBM line adapters. Line Correction (#4795) and Line Correction Release (#4796) are also required. A 1052 Model 1 or 2, for the corresponding 1051 models, is supported as is the 1053 Model 1 and 1056 Model 1.

Remote 2740 Terminal: 2740 Model 1 with Station Control (#7479) and Record Checking (#6114) with appropriate data sets, data set attachments, or IBM Line adapter are required.

Basic Program Product Offering:

Licensed Documentation: One copy of System Reference Manual (Program Description, Operations, Systems).

Licensed Machine Readable Material: Tape 1 - SHAS Compatible Teleprocessing Support for 2780, 2740, and 1050 terminals under DOS/360 QTAM (Source). To order, select one of the following specify numbers.

Specify Number	Track/Density	Description	Quantity
9027	9/800	DTR	1
9030	9/1600	DTR	1
9025	7 DC/800	DTR	1

Charge:

Type	Program and DPMO Number	Programming Service Classification	Monthly Charge
5736	H13	B	$275

For further information contact your Medical Industry Marketing Representative.

SHAS Compatible Teleprocessing Program Product (5736-H13)

SHAS Compatible Teleprocessing provides support for the IBM 2780, 2740, and 1050 terminals under DOS/360 QTAM. It is a teleprocessing application program product, representing significant extensions of terminal support previously available under the Shared Hospital Accounting System (Type II - 360A-UH-11X). (Version 2 or a higher level is a prerequisite.) The program also extends the capabilities of SHAS to support IBM 2780, 2740, and 1050 terminals in a shared hospital application environment.

The planned availability date is February 20, 1970.

Documentation for this program is licensed and consists of a single manual containing description, operation, and systems information. The customer should retain and maintain assembly listings which should be available for servicing.

SHAS Compatible Teleprocessing (in a shared medical environment) extends the capability of SHAS to include support for the IBM 2780 terminal when used in leased-line multipoint configuration by inserting instructions in DOS/360 QTAM to communicate to the SHAS application ... provides through macros, similar in function to those used to generate the SHAS teleprocessing executive, the ability to produce an appropriately configured software system to support appropriate hardware configurations of the IBM 1050, 2740, and 2780 terminals in a variety of combinations

The user codes supplied macro instructions describing his terminal configuration. Compilation, which generates the expansion of these macros, creates a tailored teleprocessing message control program. Input received from terminals is stored on a data set for subsequent processing by SHAS. SHAS output directed for the terminal is queued on a data set for subsequent transmission. This program includes a complete message processing program providing the full teleprocessing support capability required.

Programming Systems: SHAS/2780 operates under DOS/360 and is written in DOS Assembler language. The package requires SHAS Version 2 and has that program's dependencies. DOS/360 QTAM (Release 21) is also required.

Minimum System Requirements: (CENTRAL SITE) 2030F Processing Unit (64K) [note that 2040G Processing Unit (128K) is required for concurrent operation of SHAS/2780 and SHAS background application programs] with all QTAM and SHAS requirements (see SHAS Application Description Manual H20-0302) plus IBM Terminal Adapter Type I Model II (4640 with 9581) for IBM 1050 or IBM 2740 terminals or Synchronous Data Adapter Type II (7698 with 9060) for IBM 2780 terminal.

Central Processing Unit Network Configuration Capacities: In systems with 128K or larger central processing units, the usual limiting factor for network size is processing unit speed. To determine a balanced CPU and network configuration, the following load factors should be used:

Where a = potentially simultaneously active 1050 or 2740 lines
b = potentially simultaneously active 2780 lines then
load factors = a + (15 x b).

The maximum recommended load factors (MAX 1 and MAX 2) are listed below. MAX 1 factors refer to dedicated T/P systems without the SHAS application programs running concurrently; MAX 2 factors take into account the additional CPU requirements for concurrent operations of the SHAS application programs. (CPU factors considered only.)

IBM S/360 CPU	MAX 1	MAX 2
2030	20	Not applicable
2040	65	40
2050	125	90

Remote 2780 Terminal: Model 1, 2, 3, or 4 on a leased line with Multipoint Line Control (5020) and EBCDIC code (9762). Recommended features are 120 Character Print Line (5820), 144 Character Print Line (5821), and Extended Retry Transmission (9150). If Multiple Record Transmission feature (5010) is installed, it should be installed on all IBM 2780 terminals on the system. EBCDIC Transparency (8030), 6-Bit Transcode (9760), and ASCII code (7761) are not supported. Printed Horizontal Format Control (5800), Auto Turnaround (1350), and 144 Character Print Line (5821) are not supported but are compatible. Appropriate data set attachments or IBM line adapters are required.

Remote 1050 Terminal: The 1052, 1053, and 1056 components of the 1050 system are supported. A 1051 Model 1 or 2 is required with First Printer Attachment (4408), First Reader Attachment (4411), as indicated, as well as appropriate data sets, data set attachments, or IBM line adapters. Line Correction (4795) and Line Correction Release (4796) are also required. A 1052 Model 1 or 2, for the corresponding 1051 models, is supported as is the 1053 Model 1 and 1056 Model 1.

Remote 2740 Terminal: 2740 Model 1 with Station Control (7479) and Record Checking (6114) with appropriate data sets, data set attachments, or IBM Line adapters are required.

Programming Service Classification: The program service classification is B. The programming service classification assigned to any licensed program may be changed by IBM upon six months' notice. Some reclassifications may constitute a discontinuance of service.

Compatibility: The interfaces to background application programs are compatible with those supplied by the teleprocessing executive of SHAS.

As stated in the License Agreement for IBM Program Products, IBM does not represent or warrant that this design objective or planned availability dates will be met.

CLINICAL LABORATORY DATA ACQUISITION SYSTEM IS READY FOR SHIPMENT

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

[3] When a new version of a program is announced, current users will be advised by the WT Area Program Library of Procedures for ordering the new release.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

[7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.

[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

The Clinical Laboratory Data Acquisition System (CLDAS) program product 5718 H11 is ready for shipment. It is designed to provide a basic framework for satisfying the data acquisition and processing requirements of clinical laboratories in modern hospitals. CLDAS operates under the IBM 1800 Time Sharing Executive System (see C26-3703) on the IBM 1800 Data Acquisition and Control System.

Highlights:

- Automatically acquires data from continuous flow type single or multiple channel automatic analyzers. Many pen recorders may be serviced simultaneously.
- Continuously monitors instrument operation and provides operator messages for detected instrument malfunctions.
- Performs the data reduction and analysis required to convert raw instrument readings into final determinations.
- Provides a report for each instrument run which lists the final determinations for each channel active during that run.

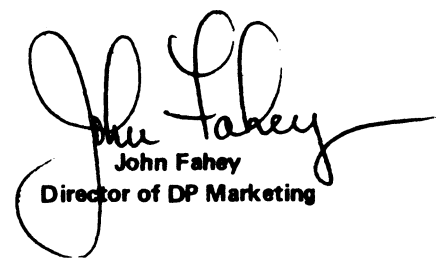
Detailed information is on the reverse side. The functional description sheet on page 3 may be reproduced and given to customers.

The monthly charge is $100; programming service classification is C.

No RPQs will be accepted at this time.

SES ... SE Services, identified with and related to the installation and use of the IBM Clinical Laboratory Data Acquisition System Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.



John Fahey
Director of DP Marketing

Clinical Laboratory Data Acquisition System (5718-H11): The Clinical Laboratory Data Acquisition System (CLDAS) provides a basic framework for satisfying the data acquisition and processing requirements which exist in clinical laboratories of modern hospitals. It is designed to help alleviate some of the more pressing problems being created by an ever increasing demand for more and better laboratory services. CLDAS is directed towards increasing the productivity of the laboratory technologist, reducing the likelihood of errors in the testing process, and improving the overall responsiveness of the laboratory.

Description: CLDAS is an on-line data acquisition and analysis program designed for the IBM 1800 Data Acquisition and Control System. It provides for the monitoring and automatic acquisition of data from the continuous flow type single or multiple channel automatic analyzer commonly found in laboratories today. Data reduction and analysis are then performed to convert the raw instrument readings into final determinations which are listed for verification and reporting.

Features: Many instruments and channels can be monitored simultaneously. Regrouping of laboratory instruments into new batteries is facilitated by a Procedure File concept. Direct monitoring of instruments provides feedback on errors as they occur. All data reduction and analysis are automatic. Modular design of the program simplifies addition of instruments and procedures.

Use: CLDAS utilizes two data files for this function. The first, a Procedure File, containing parameters uniquely describing each laboratory procedure to be automated, is loaded by the user when the system is initially installed. CLDAS then references the Procedure File and creates the second file, a Worklist File, whenever work requiring a specific procedure enters the laboratory.

The technologist loads the automatic analyzer tray with the available samples and activates the Clinical Laboratory Data Acquisition System. The program provides for monitoring the instrument output and placing the instrument readings into the newly generated Worklist File. Potential problems such as washouts, off scale readings, shoulders, noise spikes, etc. are reported via messages to the technologist as the run progresses. At the completion of the run, the results in the Worklist File are calibrated and printed for verification and final reporting.

Customer Responsibilities: CLDAS is an on-line data acquisition and analysis program which may be tailored to fit a user's environment. A good understanding of this program and the TSX system is required for successful installation.

The user is responsible for the direct attachment of laboratory instruments to the IBM 1800 Data Acquisition and Control System. Acceptable voltage levels must be provided to the IBM 1800 from the instruments. Device support programs must be written if devices other than continuous flow automatic analyzers are to be attached.†

The user must provide the data required to build the Procedure File and to establish program parameters which define the laboratory to CLDAS.

The user should generate and maintain a compilation listing, which should be available for all personnel servicing the program.

Special Sales Information: The approximate number of instruments which may operate under CLDAS can be calculated as follows:

1. Determine the amount of core storage required by the TSX system. To this number, add the 6,000 words required for variable core and the 2,950 words required for the basic skeleton programs and COMMON.
2. Subtract the above total from the total core storage of the customer's 1800. The remaining core storage is available for the following support:
   - A. The first single channel (peak) device requires 521 words of core storage. Each additional device requires another 41 words.
   - B. The first multiple channel (plateau) device requires 348 words of core storage. Each additional device requires another 60 words. (Note: Attachment of more than four plateau devices requires CLDAS program modification.)

If the capacity attained above is not sufficient, it is possible, by very careful analysis and modification, to reduce the variable core requirements to below 6,000 words and make this additional core storage available for device support.

Programming Service Classification: It is expected that CLDAS will be significantly modified by users as they write additional device support programs and customize CLDAS to their specific clinical environments. As a result, CLDAS is being distributed on an "as is" basis as a program product with service classification C. Therefore, IBM will not provide Central Programming Service and does not expressly warrant that CLDAS will conform to the functional description.

Programming Systems: Both IBM 1800 FORTRAN Language and IBM 1800 Assembler Language are used in CLDAS. Programming additions may be written in either language as appropriate.

CLDAS operates under Version 3 Modification Level 6 of the IBM 1800 Time Sharing Executive System (TSX).

Minimum Machine Requirements: The TSX system has minimum system requirements for System Generation as outlined in "IBM 1800 Time Sharing Executive System Concepts and Techniques" (C26-3703). CLDAS has several additional requirements. The 1801 Processor-Controller must have at least 16K core storage (a minimum of 6K of variable core is required in the TSX system). A 1443 Printer is required in addition to the 1816 Console Typewriter. IBM 1800 Process I/O features appropriate for the user's laboratory instruments are required (at least one word of process interrupt must be included if plateau type devices are monitored).

Basic Program Product Offering:

Licensed Documentation: One copy of Program Reference Manual (a combined Operations and Systems Manual) (Feature #8001).

Licensed Machine Readable Material: One copy of a card deck consisting of source instructions, job control, and sample problem.

Specify Number	Description
9015	Cards

Charge:

Type	Program and DPMO No.	Programming Service Classification	Monthly Charge
5718	H11	C	$100.00

Charges for Additional Copies of Documentation:

Licensed Documentation:	Selling Price/Copy
Feature #8001 (LH20-0731)*	$2.40

* For customer, order by feature number from PID and bill customer; for IBM internal use, order by form number from Mechanicsburg.

Related Documentation (available from Mechanicsburg -- no charge): Application Description Manual (GH20-0715).

For additional information, contact your Medical Industry Marketing Representative.

† A knowledge of the 1800 and its programming languages is required to write these additional device support programs.

Publication Support: The availability of the publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Pennsylvania.

Clinical Laboratory Data Acquisition System (CLDAS) Program Product (5718-H11)

CLDAS is an on-line data acquisition and analysis program designed for the IBM 1800 Data Acquisition and Control System. It provides for the monitoring and automatic acquisition of data from continuous flow type single or multiple channel automatic analyzers commonly found in laboratories today. Data reduction and analysis are then performed to convert the raw instrument readings into final determinations, which are listed for verification and reporting.

Many instruments and channels may be monitored simultaneously. For example, a typical 16K system, could service two 12-channel analyzers and 18 single-channel analyzers.

CLDAS facilitates regrouping of laboratory instruments into new batteries with its Procedure File concept ... permits the user to specify the sampling rate for each instrument ... continuously monitors and provides operator messages for detected instrument malfunctions ... performs the data reduction and analysis required to convert raw instrument readings into final determinations.

The modular design of CLDAS simplifies the addition of new instruments and procedures.

When CLDAS is initially installed, a Procedure File is created by loading parameters uniquely describing each laboratory procedure to be automated. CLDAS then references the Procedure File and creates a second file, called the Worklist File, whenever work requiring a specific procedure is scheduled. Instruments are automatically monitored and their readings entered into the Worklist File. Potential problems such as washouts, off scale readings, shoulders or noise spikes are reported via messages to the technologist as the run progresses. At the completion of the run, the results in the Worklist File are calibrated and printed for verification and final reporting.

CLDAS is a complex, on-line data acquisition and analysis program which may be tailored to fit a user's environment. A good understanding of the CLDAS program and the TSX system is required for successful installation.

The user is responsible for the direct attachment of laboratory instruments to his IBM 1800 Data Acquisition and Control System. Acceptable voltage levels must be provided to the IBM 1800 from the instruments. Device support programs must be written if devices other than continuous flow automatic analyzers are to be attached. A knowledge of the 1800 and its programming languages is required to write these additional device support programs.

The user must provide the data required to build the Procedure File and establish program parameters which define the laboratory to CLDAS.

Programming Service Classification: It is expected that CLDAS will be significantly modified by users as they write additional device support programs and customize CLDAS to their specific clinical environments. As a result, CLDAS is being distributed on an "as is" basis as a program product with service classification C. Therefore, IBM will not provide Central Programming Service and does not expressly warrant that CLDAS will conform to the functional description.

Programming Systems: Both IBM 1800 FORTRAN Language and IBM 1800 Assembler Language are used in CLDAS. Programming additions may be written in either language as appropriate.

CLDAS operates under Version 3 Modification Level 6 of the IBM 1800 Time Sharing Executive System (TSX).

Minimum Machine Requirements: The TSX system has minimum system requirements for System Generation as outlined in "IBM 1800 Time Sharing Executive System Concepts and Techniques" (C26-3703). The Clinical Laboratory Data Acquisition System has several additional requirements. The 1801 Processor-Controller must have at least 16K core storage (a minimum of 6K of variable core is required in the TSX system). A 1443 Printer is required in addition to the 1816 Console Typewriter. IBM 1800 Process I/O features appropriate for the user's laboratory instruments are required (at least one word of process interrupt contact must be included if plateau type devices are monitored).

NEW PROGRAM PRODUCT IS ANNOUNCED FOR CLINICAL LABORATORIES

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

[3] When a new version of a program is announced, current users will be advised by the WT Area Program Library of Procedures for ordering the new release.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

[7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.

[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

The Clinical Laboratory Data Acquisition System (CLDAS) program product (5718-H11) is available. It is designed to provide a basic framework for satisfying the data acquisition and processing requirements of clinical laboratories in modern hospitals. CLDAS operates under the IBM 1800 Time Sharing Executive System (see C26-6990) on the IBM 1800 Data Acquisition and Control System.

Highlights:

- Automatically acquires data from continuous flow type single or multiple channel automatic analyzers. Many pen recorders may be serviced simultaneously.
- Continuously monitors instrument operation and provides operator messages for detected instrument malfunctions.
- Performs the data reduction and analysis required to convert raw instrument readings into final determinations.
- Provides a report for each instrument run which lists the final determinations for each channel active during that run.

On the reverse side are the program product design objectives which may be reproduced and given to customers.

No RPQs will be accepted at this time.

Detailed information is in the sales manual write-up on page 3 of this announcement.

Preliminary copies of the Application Description Manual are available from your Medical Industry Marketing Representative. Availability of the Application Description Manual will be announced in a Publications Release Letter.

SES ... SE Services, identified with and related to the installation and use of the IBM Clinical Laboratories Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.

John Fahey
Director of DP Marketing

PROGRAM PRODUCT DESIGN OBJECTIVES

Clinical Laboratory Data Acquisition System (CLDAS) Program Product (5718-H11)

CLDAS is an on-line data acquisition and analysis program designed for the IBM 1800 Data Acquisition and Control System. It provides for the monitoring and automatic acquisition of data from continuous flow type single or multiple channel automatic analyzers commonly found in laboratories today. Data reduction and analysis are then performed to convert the raw instrument readings into final determinations, which are listed for verification and reporting.

Many instruments and channels can be monitored simultaneously. Regrouping of laboratory instruments into new batteries is facilitated by a Procedure File concept. Direct monitoring of instruments provides feedback on errors as they occur. All data reduction and analysis are automatic. Modular design of CLDAS simplifies the addition of instruments and procedures.

When CLDAS is initially installed, a Procedure File is created by loading parameters uniquely describing each laboratory procedure to be automated. CLDAS then references the Procedure File and creates a second file, called the Worklist File, whenever work requiring a specific procedure is scheduled. Instruments are automatically monitored and their readings entered into the Worklist File. Potential problems such as washouts, off scale readings, shoulders or noise spikes are reported via messages to the technologist as the run progresses. At the completion of the run, the results in the Worklist File are calibrated and printed for verification and final reporting.

CLDAS is a complex on-line data acquisition and analysis program which may be tailored to fit a user's environment. A good understanding of the program by the user is required for successful installation.

The user is responsible for the direct attachment of laboratory instruments to his IBM 1800 Data Acquisition and Control System. Acceptable voltage levels must be provided to the IBM 1800 from the instruments. Device support programs must be written if devices other than continuous flow automatic analyzers are to be attached. A knowledge of the 1800 and its programming languages is required to write these additional device support programs.

The user must provide the data required to build the Procedure File and establish program parameters which define the laboratory to CLDAS. The user should also generate and maintain a compilation listing which should be available for all personnel servicing the program.

It is expected that CLDAS will be significantly modified by users as they write additional device support programs and customize CLDAS to their specific clinical environments. As a result, CLDAS is being distributed on an "as is" basis as a program product with service classification C. Therefore, IBM will not provide central maintenance and does not expressly warrant that CLDAS will conform to these design objectives.

Programming Systems: Both IBM 1800 FORTRAN Language and IBM 1800 Assembler Language are used in CLDAS. Programming additions may be written in either language as appropriate.

CLDAS operates under Version 3 Modification Level 6 of the IBM 1800 Time Sharing Executive System (TSX).

Minimum Machine Requirements: The TSX system has minimum system requirements for Systems Generation as outlined in "IBM 1800 Time Sharing Executive System Concepts and Techniques" (C26-3703). The Clinical Laboratory Data Acquisition System has several additional requirements. The 1801 Processor-Controller must have at least 16K core storage (a minimum of 6K of variable core is required in the TSX system). A 1443 Printer is required in addition to the 1816 Console Typewriter. IBM 1800 Process I/O features appropriate for the user's laboratory instruments are required (at least one word of process interrupt contact must be included if plateau type devices are monitored.)

Clinical Laboratory Data Acquisition System (5718-H11): The Clinical Laboratory Data Acquisition System (CLDAS) provides a basic framework for satisfying the data acquisition and processing requirements which exist in clinical laboratories of modern hospitals. It is designed to help alleviate some of the more pressing problems being created by an ever increasing demand for more and better laboratory services. CLDAS is directed towards increasing the productivity of the laboratory technologist, reducing the likelihood of errors in the testing process, and improving the overall responsiveness of the laboratory.

Description: CLDAS is an on-line data acquisition and analysis program designed for the IBM 1800 Data Acquisition and Control System. It provides for the monitoring and automatic acquisition of data from the continuous flow type single or multiple channel automatic analyzer commonly found in laboratories today. Data reduction and analysis are then performed to convert the raw instrument readings into final determinations which are listed for verification and reporting.

Features: Many instruments and channels can be monitored simultaneously. Regrouping of laboratory instruments into new batteries is facilitated by a Procedure File concept. Direct monitoring of instruments provides feedback on errors as they occur. All data reduction and analysis are automatic. Modular design of the program simplifies addition of instruments and procedures.

Use: CLDAS utilizes two data files for this function. The first, a Procedure File, containing parameters uniquely describing each laboratory procedure to be automated, is loaded by the user when the system is initially installed. CLDAS then references the Procedure File and creates the second file, a Worklist File, whenever work requiring a specific procedure enters the laboratory.

The technologist loads the automatic analyzer tray with the available samples and activates the Clinical Laboratory Data Acquisition System. The program provides for monitoring the instrument output and placing the instrument readings into the newly generated Worklist File. Potential problems such as washouts, off scale readings, shoulders, noise spikes, etc. are reported via messages to the technologist as the run progresses. At the completion of the run, the results in the Worklist File are calibrated and printed for verification and final reporting.

Customer Responsibilities: CLDAS is an on-line data acquisition and analysis program which may be tailored to fit a user's environment. A good understanding of the program is required for successful installation.

The user is responsible for the direct attachment of laboratory instruments to the IBM 1800 Data Acquisition and Control System. Acceptable voltage levels must be provided to the IBM 1800 from the instruments. Device support programs must be written if devices other than continuous flow automatic analyzers are to be attached.†

The user must provide the data required to build the Procedure File and to establish program parameters which define the laboratory to CLDAS.

The user should generate and maintain a compilation listing which should be available for all personnel servicing the program.

Programming Service Classification: It is expected that CLDAS will be significantly modified by users as they write additional device support programs and customize CLDAS to their specific clinical environments. As a result, CLDAS is being distributed on an "as is" basis as a program product with service classification C. Therefore, IBM will not provide central maintenance and does not expressly warrant that CLDAS will conform to the design objectives.

Programming Systems: Both IBM 1800 FORTRAN Language and IBM 1800 Assembler Language are used in CLDAS. Programming additions may be written in either language as appropriate.

CLDAS operates under Version 3 Modification Level 6 of the IBM 1800 Time Sharing Executive System (TSX).

Minimum Machine Requirements: The TSX system has minimum system requirements for System Generation as outlined in "IBM 1800 Time Sharing Executive System Concepts and Techniques" (C26-3703). CLDAS has several additional requirements. The 1801 Processor-Controller must have at least 16K core storage (a minimum of 6K of variable core is required in the TSX system). A 1443 Printer is required in addition to the 1816 Console Typewriter. IBM 1800 Process I/O features appropriate for the user's laboratory instruments are required (at least one word of process interrupt must be included if plateau type devices are monitored).

Basic Program Product Offering:

Licensed Documentation: One copy of Programmer Reference Manual (a combined Operations and Systems Manual).

Licensed Machine Readable Material: One copy of machine readable material consisting of source instructions, job control, and sample problem.

Specify Number	Description	Quantity
9015	Cards	6800 cards

Price:

Type	Program Number	DPMO	Programming Service Classification	Monthly Charge
5718	H11	H11	C	$100.00

Related Program Product Documentation: Application Description Manual (availability to be announced in a Publications Release Letter).

For additional information, contact your Medical Industry Marketing Representative.

† A knowledge of the 1800 and its programming languages is required to write these additional device support programs.

Publication Support: The availability of the publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Penna.

FOR IBM INTERNAL USE ONLY

PROSPRO II (TSX/1800) PROCESS SYSTEMS PROGRAM PRODUCT 5718-P81 IS READY FOR SHIPMENT

PROSPRO II is ready for shipment at PID. The sales manual will be updated shortly.

Copies of the program product specification sheet (GH20-4000) are available from Mechanicsburg.

Basic Program Product Offering:

Unlicensed Documentation ... One copy each of Program Description Manual (SH20-0734), Language Specifications Manual (SH20-0732), and Process Operators Console Manual (SH20-0733).

Licensed Machine Readable Material ... One copy of machine readable material containing object program modules, configuration-dependent source program modules, and sample problem.

Specify Number	Description
9015	Cards

Charges:

Type	Program & Number	DPMO	Programming Service Classification	Monthly Charge
5718	P81		B	$285.00

Optional Support Package (no additional charge):

Licensed Documentation ... One copy of Systems Manual (feature 8000).

Licensed Machine Readable Material ... One copy machine readable material consisting of source program decks.

	Specify Number	Track/ Density	Description	Quantity
Customer Supplied	7000	9/800	2400' MT	1 reel
Order from IBM	7001	9/800	2400' MT	1 reel

Charges for Additional Copies of Documentation:

Unlicensed Documentation ... (order from Mechanicsburg)

	Selling Price/Copy
Program Description and Operations Manual (SH20-0734)	*
Language Specifications Manual (SH20-0732)	*
Process Operator's Console Manual Operations Manual (SH20-0733)	$2.20

Licensed Documentation Availability, form number (to be used for IBM Internal Use) and charges for additional copies will be announced in a Publications Release Letter

Related Documentation (available from Mechanicsburg): Application Description Manual (GH20-0718).

No RPQs will be accepted at this time

*Prices will be announced in a Publications Release Letter

Publication Support: The availability of the publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Penna.

SES... SE Services, identified with and related to the installation and use of the IBM PROSPRO II (TSX/1800) Process Systems 5718-P81 Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.

John Fahey
Director of DP Marketing

Release Date: May 15, 1970
Distribution: Selected European Countries Only

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

[3] When a new version of a program is announced, current users will be advised by the WT Area Program Library of Procedures for ordering the new release.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

[7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.

[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

PROSPRO II (TSX/1800) PROCESS SYSTEMS PROGRAM PRODUCT ANNOUNCED

Note to World Trade Readers

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[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

PROSPRO II (TSX/1800) PROcess Systems PROgram, program product 5718-P81, is available.

PROSPRO II is a unique programming approach to industrial control computer applications which are mostly continuous operations. It offers simple, fill-in-the-blanks, tabular programming of the IBM 1800 Data Acquisition and Control System and enhances user access to the Time Sharing Executive (TSX) operating system. PROSPRO II substantially reduces the programming effort associated with the installation of these systems. User coding is only necessary for special instruments, special logs, and special messages to operators.

This new program contains the following additions and improvements over PROSPRO/1800 (PROcess Supervisory PROgram): a Direct Digital Control (DDC) processor with its own General Block language for advanced control ... extension of the supervisory General Action language ... operator communication through the IBM 1892 Model II Process Operators Console (RPQ) ... redesigned process I/O routines ... improved bumpless transfer and system restart procedures ... an enhanced preprocessor to accommodate additional data forms ... and modification of the TSX error recovery procedures to improve process support.

No RPQs will be accepted at this time.

On the reverse side are the Program Product Design Objectives which may be reproduced and given to customers. Detailed information in the sales manual write-up on pages 3 and 4 are for internal use.

Preliminary copies of the PROSPRO II Application Description Manual may be obtained from your Process Industry Marketing representative. Availability of the Application Description Manual from Mechanicsburg will be announced in a Publications Release Letter.

SES ... SE Services, identified with and related to the installation and use of the IBM PROSPRO II (TSX/1800) Process Systems Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.

John Fahey
Director of DP Marketing

Release Date: May 15, 1970
Distribution: Selected European Countries Only

PROSPRO II (TSX/1800) PROcess Systems PROgram 5718-PB1

The IBM Process Systems Program (PROSPRO) II is oriented toward industrial control computer applications which are mostly continuous operations. It offers fill-in-the-blanks tabular programming of the IBM 1800 Data Acquisition and Control System, enhancing without obstructing user access to the Time Sharing Executive (TSX) operating system. PROSPRO II can substantially reduce the programming complexity and effort associated with the installation of process control systems. Applications that involve DDC (Direct Digital Control), supervisory control, operation sequencing, or data acquisition are efficiently served by using the modular features of PROSPRO II. In addition, process data management is provided.

The user specifies the parameters of control strategy and/or data acquisition by filling in blanks on three to eleven special forms from which data cards are punched and then entered, on-line, into the 1800 and the PROSPRO Program. Groups of data that pass logic consistency tests are preprocessed into data files and tables of pointers which cause the system to perform the defined actions. Changes in these functions and the control strategy may be made by entering new or different data cards on-line. The completed PROSPRO II special data forms become the organized documentation of that installation.

PROSPRO II provides the capability to perform the following industrial control functions:

- Scan instrument analog signals and digital switches and transmit instrument command signals (pulse height and pulse train).
- Check selected analog signals for alarm limits on a second-by-second basis and call for additional computation when a limit is violated.
- Process at selected periods of seconds, measured and derived DDC variables for fast closed loop regulation and industrial operation sequencing.
- Process at selected periods of minutes, measured, derived, and DDC variables, check limits, take supervisory actions, and update files for current, average, and rate of change values of the variables.
- Perform supervisory actions to choose an alternate strategy, regulate cascaded closed loops, issue operator guide messages, and transfer objectives to the DDC control level or to instrument controllers.
- Execute control algorithm options as specified for DDC and supervisory regulation.
- Display operator requested information on a defined process constant, process variable, closed loop, process unit, or the status of the computer system.
- Accept (or reject with a displayed message) operator entered data and commands.
- Couple or uncouple a chain of cascaded DDC and supervisory control loops from the operator's console.
- Type operator changes made through the console.
- Type alarm messages for process variables.
- Type an alarm status summary log or a control status summary log requested for a process unit.

PROSPRO II consists of four major components:

Preprocessor – The preprocessor operates on-line, interprets and error checks the forms information, and generates compact records of data and pointers to direct the processors to perform the defined actions efficiently.

File Structure – The file structure provides files of information for efficient periodic processing, for random access from the operator's console, and for process data management.

Processors – The processors are mostly disk resident except for DDC, and periodically (or when called) execute the functions as directed by the preprocessed records. These records are either core resident or brought into multi-record core buffers that are prioritized according to their activity.

Operator Communication Facility – Operator communication with the system is provided by the IBM 1892 Model 11 Process Operator's Console through a set of programs that respond to console interrupts, drive the console lights and displays, and interface the data files and processors. With the maximum facility of two consoles, one console becomes the master.

Programming Systems: PROSPRO II operates under the IBM 1800 Time Sharing Executive operating system (1800-OS-001). The TSX Non-Reentrant Subroutines may be used (1800-LM-009). IBM 1800 FORTRAN and Assembler Language are the source languages for PROSPRO II. Programming Service Classification is B.

Minimum System Requirements: 1801 or 1802 Processor - Controller Model 1D or 2D, 1442 Adapter (4430), three additional Data Channels (3222), Analog Input Data Channel Adapter 1 (1233), Analog Input Data Channel Adapter 2 (1234), Analog-Digital Converter Model 1 (1231), Comparator (2185), Multiplexer/R Control (5256)...1442 Card Read Punch Model 6 or 7...1810 Disk Storage Model A2 or B2...2315 Disk Cartridges...1892 Model 11 Process Operators Console (RPQ C08400 and prerequisites).

If any of the following are required, the number depends on the application.

Digital Input Data Channel Adapter (3291)*, Digital and Analog Output Data Channel Adapter (3290)** (features 3290/1 may share a data channel), Process Interrupt Adapter (5710), Process Interrupt-Contact (5715), Digital Input Adapter (3262), Digital Input Contact (3285), Digital Output Control (3296), Digital Output Adapter (3295), Electronic "Contact" Operate (3612), Pulse Output (5863)**...1053 Printer...1828 Enclosure Model 2...1851 Multiplexer Terminal Model 1 or 2, Multiplexer/R (5252), Differential Amplifier (3246), Signal Conditioning Element...1856 Analog Output Terminal Model 1*, Digital to Analog Converter Model 1, 2, 3 or 4 (3251-3254)*, Analog Driver Amplifier (1227)*, Precision Voltage Reference (5527 or 5528)*.

PROSPRO II will not run with the following IBM 1800 devices installed.

Buffer Register (1507/8), Multiplexer Overlap (5259).

* Required for DDC
** Required for setpoint control

Consideration should be given to an 1810 Disk Storage Model B2 and an 1801 or 1802 Model 2D for best performance. The operation of this system is dependent upon proper interrupt level and data channel priority assignments.

PROSPRO II transmits pulse trains to setpoints of controllers (up-pulses and down-pulses), if any, and a gated analog drive to DDC stations or controllers, if any. For each output there must be a position feedback analog signal to the computer. The setpoint feedback must have the same signal range as the loop's measured input signal but may connect to any terminal address. The DDC feedback signal range must be 20-100 percent of the computer input range and must be connected to the next highest terminal number from the loop's measured input. For each DDC output, there must also be a digital input signal for the DDC/Local switch on the station or controller. The terminal number for this digital input and the terminal number for the analog drive signal gate (ECO or PO) must correspond.

PROSPRO II (TSX/1800) PROcess Systems PROgram 5718-P81. PROSPRO II is a unique programming approach to industrial control computer applications which are mostly continuous operations. It offers simple, fill-in-the-blanks, tabular programming of the IBM 1800 Data Acquisition and Control System, enhancing and in no way obstructing user access to the TSX operating system. PROSPRO II substantially reduces the programming effort associated with the installation of process control systems. User coding is only necessary for special instruments, special logs, and special messages to operators.

Applications that are dedicated DDC (Direct Digital Control), supervisory control, operation sequencing, data acquisition, or combinations of these are efficiently served by using features of PROSPRO II that are applicable. In addition, process data management is provided.

Description: This new program contains the following additions and improvements over PROSPRO/1800 (PROcess Supervisory PROgram): a Direct Digital Control (DDC) processor with its own General Block language for advanced control . . . extension of the supervisory General Action language . . . operator communication through the IBM 1892 Model 11 Process Operators Console (RPQ) . . . redesigned process I/O routines . . . improved bumpless transfer and system restart procedures . . . an enhanced preprocessor to accommodate additional data forms . . . and modification of the TSX error recovery procedures to better accommodate process control requirements.

The 1892 Model 11 Process Operators Console is an RPQ device attachable to the 1800. This console provides three rows of 10 character displays, 20 backlighted pushbuttons, and a total of 104 interrupt generating pushbuttons in 10 groups.

All of these features are used by PROSPRO II to provide extensive and highly interactive operator communication with the IBM 1800 for every defined process constant, process variable, closed loop and process unit.

PROSPRO II offers two levels of control. The upper supervisory control level provides minute-by-minute file updating and processing of variables against conditions that may call for actions, which are then executed, such as closed loop regulations, alternate procedures, messages, or transfer of objectives to the lower level. The lower control level provides second-by-second alarm scanning of measured variables and DDC. DDC processing provides fast closed loop regulation without the use of instrument controllers. PROSPRO II with DDC also offers rapid sequence control of industrial operations.

The user specifies the parameters of control strategy and/or data acquisition by filling in blanks on three to eleven special forms from which cards are punched and entered, on-line, into the 1800. Groups of data that pass logic consistency tests are preprocessed into data files and tables of pointers which cause the system to perform the defined actions. Minimal knowledge of computer programming is required to fill in the forms. Thus, PROSPRO II may be easily used by plant engineers. Initial functions and strategy can be created in a very short time. Changes in these functions and the strategy may be made quickly by entering new or different data cards on-line.

The completed PROSPRO II special data forms become the organized documentation of that installation.

PROSPRO II is designed for efficient execution with a complete file structure and prioritized file buffering. The design enables unique compiler preprocessing of the forms information to eliminate interpretive execution and in-line code generation. A simple fill-in-the-blanks approach oriented toward industrial control with greater execution efficiency than normal Assembler/FORTRAN approaches is a significant advance.

Features: Special forms for data acquisition and control definition . . . lower installation costs . . . shorter implementation time . . . improved process control, operator communication, and data management . . . quick and safe on-line changes to strategy . . . efficient execution due to unique program design . . . thorough system documentation by the manuals . . . organized application documentation by the forms.

Customer Responsibilities: Have a basic knowledge and understanding of the use of the system before implementation and a TSX trained representative to generate it . . . know the instrumentation required . . . know the processes to be controlled and the desired data acquisition and control strategy . . . describe that strategy on the standard forms . . . assist Field Engineers in APAR definition.

Branch Office Responsibilities: To notify Field Engineering that PROSPRO II is to be used on a designated CPU at least one month prior to system generation. This is to allow scheduling of the high precision calibration equipment used in calibrating the analog to digital converter and the digital to analog converter.

Use: PROSPRO II is extremely comprehensive. Data acquisition from standard instruments and essentially all process control and operator communication may be implemented by using only the system and filling in the forms. It may be used as an enhancement to the TSX operating system under which other associated functions are added as well as unassociated functions which may operate in the process or non-process mode. Buffered access to the files is provided by FORTRAN 'CALL' statements.

Special Sales Information: Sample Problem No. 4 is supplied as punched cards as well as filled in forms in order to verify proper system generation, demonstrate system features, and show how it may be used. No process I/O is required to run this sample problem. It consists of a simulated process with DDC and supervisory control.

The marketing representative should emphasize the value of this sample problem to prospective customers. It will get them to a demonstration point quickly and before any process wiring is in place.

When one controller is wired to the computer, an additionally supplied set of sample problem cards should be altered to match the terminal addresses wired to that controller. These cards should be entered into the computer to test all the process I/O features.

The marketing representative should recommend that users keep this sample problem in their systems as long as possible to verify proper system operation when there may be improper filling in of the forms or improper instrument wiring.

Programming Systems: PROSPRO II operates under the IBM 1800 TSX operating system (*1800-OS-001). The TSX Non-Reentrant Subroutines may be used (*1800-LM-009). IBM 1800 FORTRAN and Assembler Language are the source languages for PROSPRO II.

Minimum System Requirements: 1801 or 1802 Processor - Controller Model 1D or 2D, 1442 Adapter (*4430), three additional Data Channels (*3222), Analog Input Data Channel Adapter 1 (*1233), Analog Input Data Channel Adapter 2 (*1234), Analog-Digital Converter Model 1 (*1231), Comparator (*2185), Multiplexer/R Control (*5256) . . . 1442 Card Read Punch Model 6 or 7 . . . 1810 Disk Storage Models A2 or B2 . . . 2315 Disk Cartridges . . . 1892 Model 11 Process Operators Console (RPQ C08400 and prerequisites).

The number required, if any, of the following, depends on the application.

Digital Input Data Channel Adapter (*3291)*, Digital and Analog Output Data Channel Adapter (*3290)** (features 3290/1 may share a data channel), Process Interrupt Adapter (*5710), Process Interrupt-Contact (*5715), Digital Input Adapter (*3262), Digital Input Contact (*3285), Digital Output Control (*3296), Digital Output Adapter (*3295), Electronic 'Contact' Operate (*3612), Pulse Output (*5863)** . . . 1053 Printer . . . 1828 Enclosure Model 2 . . . 1851 Multiplexer Terminal Models 1 or 2, Multiplexer/R (*5252), Differential Amplifier (*3246), Signal Conditioning Element . . . 1856 Analog Output Terminal Model 1*, Digital to Analog Converter Model 1, 2, 3 or 4 (*3251-*3254)*, Analog Driver Amplifier (*1227)*, Precision Voltage Reference (*5527 or 5528)*.

The following devices must not be ordered.

Buffer Register (*1507/8), Multiplexer Overlap (*5259).

* Required for DDC
**Required for setpoint control

Consideration should be given to an 1810 Disk Storage Model B2 and an 1801 or 1802 Model 2D for best performance.

PROSPRO II transmits pulse trains to setpoints of controllers (up-pulses and down-pulses), if any, and a gated analog drive to DDC stations or controllers, if any. For each output there must be a position feedback analog signal to the computer. The setpoint feedback must have the same signal range as the loop's measured input signal but may connect to any terminal address. The DDC feedback signal range must be 20-100 percent of the computer input range and must be connected to the next highest terminal number from the loop's measured input. For each DDC output, there must also be a digital input signal for the DDC/Local switch on the station or controller. The terminal number for this digital input and the terminal number for the analog drive signal gate (EC0 or P0) must correspond.

Refer to the configuration section of the Application Description Manual and the Wiring Considerations section of the Program Description Manual for further installation assistance.

Prior to completing the Process Interrupt Status Word Assignment Form and the Data Channel "Specify" codes, refer to the sections on Interrupt Level Assignments and 1801/1892 Interface Description in the Operations Manual.

Basic Program Product Offering:

Unlicensed Documentation: One copy each of Program Description Manual*, Language Specifications Manual*, and Process Operators Console Manual*.

Licensed Machine Readable Material: One copy of Machine Readable Material containing object program modules, configuration-dependent source program modules, and sample problem.

Specify Number	Description
9015	Cards

Price:

Type	Program Number	DPMO	Programming Service Classification	Monthly Charge
5718	P81	P81	B	$285.00

Optional Program Product Offering: (no charge)

Licensed Documentation: One copy of Systems Manual

Licensed Machine Readable Material: One copy Machine Readable Material consisting of source program decks.

	Specify Number	Track/Density	Description	Quantity
Customer Supplied	9028	9/800	2400' MT	1 reel
Order from IBM	9128	9/800	2400' MT	1 reel

Related Program Product Documentation (order from Mechanicsburg):
Application Description Manual (availability to be announced in PRL).

For further information, contact Process Industry Marketing, 6900 Fannin Street, Houston, Texas.

Publication Support: The availability of the publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Penna.

NEW AND POWERFUL OS/360 ASSEMBLER H ANNOUNCED

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

[3] When a new version of a program is announced, current users will be advised by the WT Area Program Library of Procedures for ordering the new release.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

[7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.

[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

Assembler H, program product 5734-AS1, is IBM's newest, most powerful OS/360 macro-assembler. OS/360 assembler language users are prime candidates for Assembler H if they have several hours of assembly time per month and/or if they have need for a powerful macro language capability.

This new program product offers significant improvements in performance, functional characteristics and macro capabilities when compared to the other OS/360 assemblers. Programs written for Assembler E and F may be assembled on Assembler H which operates in a 200K partition or region.

Highlights include:

- Throughput on the Model 65 and up can be three and one-half times or more that of Assembler F.
- Five new options are available.
- Thirty-five functional extensions to Assembler F have been added, along with nine new assembler operations

Availability -- June 1970 ... with programming service classification of A.

Monthly Charge -- $225.

An initial supply of the Program Product Design Objectives for OS/360 Assembler H (GC26-3735) has been sent to each branch office librarian.

See the subsequent pages for pertinent information.

SES ... SE Services, identified with and related to the installation and use of the IBM New and Powerful OS/360 Assembler H Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product may be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.

John Fahey
Director of DP Marketing

Release Date: May 15, 1970
Distribution: Selected European Countries Only

Assembler H is the most powerful of the OS/360 macro-assemblers. It provides significant improvement in function and performance in an H or higher level core environment. The assembler can operate in a 200K region, but will make use of additional available core storage if provided. Assembler H supports all of the existing options available to Assembler F. Furthermore, as each installation installs Assembler H via a simplified SYSGEN-like process, it can specify default settings for these options, plus the new ones listed below.

The H Assembler Language has functional extensions to the other OS/360 Assembler Languages. Improved function is provided by means of additional operating options, extended language syntax, new assembler operations, and improved diagnostics. Assembler H makes two passes over the source deck, one for macro-generation and a second for final assembly. This not only contributes greatly to the performance improvement but allows one to define (or redefine) programmer macros at any point and create macro calls by substitution.

Highlights of the Additional Operating Options

- Allow multiple (batch) assemblies during a single job-step.
- Suppress all error messages below a specified level of severity.

Highlights of the Extended Language Syntax

- Four-byte values are allowed for self-defining and symbolic terms and expressions.
- Symbols may have a maximum length of 63 characters.
- Named COM is supported.
- Extended mnemonics are provided for the RR type branch instructions.
- Literals are cross-referenced.
- Previous definition requirements are removed for EQU, ORG, CNOP, DC and DS statements, and Q-type constants.
- COPY is allowed anywhere in the assembly. COPY'd code may include any statement type except ICTL. In particular, library macros may be COPY'd in and treated as programmer macros.
- Macro definitions may occur anywhere before first usage, and macros may be redefined at any point.
- Dictionary sizes are limited only insofar as core space is limited.
- OPSYN may be used anywhere in the source deck. Furthermore, it can be used with assembler operations and macro instructions as well as machine instructions.
- Macro instructions may be created by substitution.
- Up to nine continuation lines may be used for a statement.

Highlights of the New Assembler Operation

- System variable symbols &SYSTIME and &SYSDATE are available for accessing the time and date of the assembly. The value for the third new system variable symbol, &SYSPARM, is specified in the PARM field of the EXEC card. The resulting character string can then be used by the assembler as a read-only SETC variable.
- PUSH saves the current USING and/or PRINT conditions in push-down storage. POP restores the most recently saved USING and/or PRINT conditions.
- A new assembler opcode, AREAD, may be used inside macro definitions to process source cards following macro calls. Each time the macro generator encounters an AREAD statement, the next card in the input stream following the macro call is read and assigned as an 80-character string to the SETC variable appearing in the name field of the AREAD statements. The string value can then be interrogated and processed just as the value of any other SETC variable. Cards read by the AREAD opcode are not otherwise processed by the assembler itself.
- LOCTR permits multiple location-counters within a control section.

Highlights of the Improved Diagnostics

- Error messages will be printed at the point of occurrence.
- Error flagging of programmer and system macros will be improved. In general, more information will be provided, both at Edit and Generation time.

. As mentioned under Options, it is possible to suppress error flagging below a specified level of severity.

Systems Configuration *(Minimum Machine Configuration)*

For PCP control program option, Model 40 -- H processing unit (256K) -- at least one direct access device (2301, 2303, 2311, or 2314) and control.

For MFT or MVT program option, Model 50 -- HG processing unit (384K) -- at least one direct access device (2301, 2303, 2311, or 2314) and control. Minimum Region size of 200K is required.

Note: Distribution of Assembler H is on tape; therefore, access to at least one 2400 series Magnetic Tape Unit is required for installation.

Performance

Assembler H is a two-pass macro-assembler designed to hold intermediate (workfile) I/O to a minimum. As compared to Assembler F, the performance improvements on the Model 40 are modest, and on the Model 50, about 2 to 1. On the Model 65 and up, improvements of 3.5 to 1 and higher can be achieved.

[Sales manual text is on the reverse side]

OS/360 Assembler H, 5734-AS1: This two-pass assembler provides a significant improvement in performance on any OS/360 system having a region size of at least 200K. Default options, instruction set selection (Standard, Scientific, Commercial or Universal), and modifications to ddnames can be made at the time the assembler is added to an installation's OS/360 system. Assembler H has functional extensions to Assemblers E and F, supports all features of these two processors and is upward compatible.

Features:

- Ability to compile two or more assemblies in one job-step.
- Can specify default and lock-out options at SYSGEN time.
- Ability to suppress all error messages below a specified level of severity.
- Up to nine continuation lines may be used for a statement.
- Previous definition requirements are removed for EQU, ORG, CNOP, DC and DS statements.
- Literals are cross-referenced.
- Macro definitions may occur anywhere in the source stream, and macros may be redefined at any point.
- Dictionary sizes are not artificially limited and will expand to occupy all space available in a region.
- New system variable symbols &SYSTIME, &SYSDATE, and &SYSPARM are available for use. The latter is a read-only SETC variable whose character value is specified in the PARM field of the EXEC JCL card.
- New assembler operations LOCTR, PUSH, POP, and AREAD are provided. In addition, the use of OPSYN is much less restricted than in Assembler F.

Programming Systems: A simplified installation procedure for including Assembler H into an OS/360 system is provided. PARM field options, ddnames for required data sets, and the Instruction Set (Standard, Scientific, Commercial or Universal) may be specified or the standard default values may be used.

The OS/360 System requirements are:

Release 17 (or later) of OS/360 with PCP, MFT, or MVT control program option, OS/360 Utilities, Linkage Editor E or F, Assembler F (if modifications are desired), and the Sequential and Partitioned Access methods are required.

System Configuration (Minimum Machine Configuration): Assembler H uses the Standard Instruction Set. Object programs may use any instruction set -- the set to be used is specified at SYSGEN time. The minimal region size for Assembler H under MFT or MVT is 200K -- the minimal CPU size for Assembler H under PCP is 256K. In addition to the standard OS/360 requirements, Assembler H requires space in auxiliary storage for the following data sets: System input -- selectable through JCL ... Macro instruction library, either system or private or both ... One intermediate workfile, which must be Direct Access (2311, 2301 or 2303) ... Print output -- selectable through JCL ... Punch output -- selectable through JCL ... Object module -- selectable through JCL. Of these data sets, the system input and the single workfile are required. Any, or all, of the remainder may be omitted if the corresponding function is not used; e.g., no Punch output data set is needed if the NODECK option is specified.

Note: Distribution of Assembler H is via tape. Therefore, access to at least one 2400 Magnetic Tape Unit is required for installation.

Design Objectives: IBM System/360 Operating System Assembler H Design Objectives, GC26-3735, is available from Mechanicsburg.

Basic Program Product Offering:

Unlicensed Documentation: One copy each of OS/360 Assembler Language Manual, OS/360 Assembler H General Information Manual, Operating System Assembler H Program Product Specification, and five copies of OS/360 Assembler H Programmer's Guide.

Licensed Machine Readable Material: One copy of Machine Readable Material consisting of object modules, sample problem, and job stream to catalog the object modules and execute the sample program.

To order the Basic Package, select one of the following specify numbers:

Specify Number	Track/Density	Description	Quantity
9025	7 DC/800	DTR	1
9027	9/800	DTR	1
9030	9/1600	DTR	1

Charge:

Type	Program and DPMO Number	Programming Service Classification	Monthly Charge
5734	AS1	A	$225

Optional Support Package:

Licensed Documentation: One copy each of PLM - Assembler H - Feature 8015, Assembler H Listing (available on Microfiche) Feature 8023.

Licensed Machine Readable Material: One copy of Machine Readable Material containing Assembler H source modules and macros.

To order the Optional Package, select one of the following feature numbers:

	Feature No.	Track/Density	Description	Quantity
Customer Supplied	7026	7 DC/800	2400' MT	1 reel
	7028	9/800	2400' MT	1 reel
	7029	9/1600	2400' MT	1 reel
Order from IBM	7126	7 DC/800	2400' MT	1 reel
	7128	9/800	2400' MT	1 reel
	7129	9/1600	2400' MT	1 reel

There is no additional charge for the Optional Support Package.

Charges for Additional Copies of Documentation:

Licensed Documentation: Available to licensees from PID, order by feature number.

Feature Number	Single Charge/Copy
8015 (PLM)	*
8023 (Microfiche)	*

For customer, order by feature number from WT Area Program Libraries and bill customer; for IBM internal use, order by form number only from Mechanicsburg.

	Selling Price/Copy
OS/360 Assembler Language Manual (GC28-6514-6)	$1.40
OS/360 Assembler H General Information Manual	*
OS/360 Assembler H Programmer's Guide	*
Operating System Assembler H Program Product Specification	*

*Availability, form number and price will be announced in a future Publications Release Letter.

RPQs will not be accepted at this time.

SYSTEM/360 LAW ENFORCEMENT MANPOWER RESOURCE ALLOCATION SYSTEM (LEMRAS) PROGRAM PRODUCT (5736-G21)

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

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[3] When a new version of a program is announced, current users will be advised by the WT Area Program Library of Procedures for ordering the new release.

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[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

Program Product 5736-G21, LEMRAS, is available. It will help the law enforcement administrator in determining his manpower requirements to answer the public's calls for service.

LEMRAS uses dispatch-originated information on the types, location, occurrence times, and duration of events requiring the expenditure of police manpower resources. This information is maintained by the system in the form of averages, on a geographic and time oriented basis. The stored information is used to project future "calls for service" requirements both by geographic area and time period. An example is: the number of "calls for service" and associated workload by shift by district.

The system can be used to:

- make projections by geographic segment, from reporting area to district or precinct, where calls for service will occur.
- make projections by time segment, from hour of day to week of year, when the calls for service will occur.

The information enables the police administrator to:

- make timely evaluations of current patrol practices.
- detect potential manpower scheduling, assignment and control problems before their occurrence.
- evaluate and select the alternative patrol policies.

No RPQs will be accepted at this time.

Details are on the following pages.

SES ... SE Services, identified with and related to the installation and use of the IBM System/360 Law Enforcement Manpower Resource Allocation System (LEMRAS) (5736-G21) Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.

John Fahey
Director of DP Marketing

Release Date: May 15, 1970
Distribution: Selected European Countries Only

PROGRAM PRODUCT DESIGN OBJECTIVES

(LEMRAS) Law Enforcement Manpower Resource Allocation System (5736-G21)

The IBM Law Enforcement Manpower Resource Allocation System (LEMRAS) will assist the law enforcement administrator in determining his manpower requirements to answer the public's calls for police service. LEMRAS uses radio dispatcher-originated information on the types, location, occurrence times, and duration of events requiring the expenditure of police manpower resources. This information is maintained by the system in the form of averages, on a geographic and time oriented basis. The stored information is used to project future "calls for service" requirements both by geographic areas and time periods in a variety of statistical reports.

LEMRAS provides the capability to perform the following tasks:

1. Create Intermediate Geographic and Block Number Files.
2. Create Event, Geographic Index and Block Number Files.
3. Create Week-of-Year File and Hour-of-Week File.
4. Perform Updates to LEMRAS Files.
5. Loads all constants and control card parameter data used by the Report Generator.
6. Analyze user supplied control cards - process the event and time data bases to prepare statistical reports.

Modular programming techniques are employed by LEMRAS. The customer constructed tables and control constants are maintained. The user has a great deal of flexibility in generating reports to meet his particular needs.

Programming Systems: LEMRAS operates under DOS/360 and uses the following feature of DOS: Direct Access Method ... Consecutive Processing Macros ... Indexed Sequential File Management System ... Linkage Editor ... Sort/Merge ... FORTRAN IV ... DOS Assembler.

Minimum Machine Configuration: A 2030 Model F Processing Unit (65K) with Floating Point Arithmetic (#4427), Decimal Arithmetic (#3237), IBM 1051 Attachment (#7915) ... 1051 Control Unit Model N1, CPU Attachment (#3130), First Printer Attachment (#4409) ... 1052 Printer-Keyboard Model 8 ... 2841 Storage Control Model 1 ... two 2311 Disk Storage Drives* Model 1 ... 2821 Control Unit** Model 1 ... 1403 Printer** (132 print positions) Model 2 ... 2540 Card Read Punch Model 1.

* One disk unit not occupied by the Disk Operating System (DOS) is required for data, programs, and working storage for LEMRAS.

** Any control unit and printer (132 print positions) compatible with the System/360 and DOS may be substituted for these units.

The source languages used by LEMRAS are FORTRAN and the DOS Assembler Language.

THIS PAGE MAY BE REPRODUCED AND GIVEN TO CUSTOMERS

Law Enforcement Manpower Resource Allocation System (LEMRAS) 5736-G21

LEMRAS assists the law enforcement administrator to determine his manpower requirements in answering the public's calls for service. LEMRAS provides the police administrator with geographic and time oriented data that assists him in the allocation of his patrol manpower.

Description. LEMRAS is directed towards efficient use of manpower in the patrol division of a police department. The principal area addressed by LEMRAS is "Called for Services."

> Called for Services are activities undertaken in response to direct requests for police assistance. Included are reports of crime, complaints involving family disputes, and to the sick, assistance at fires, etc. The projection of manpower requirements to answer calls for service is the prime purpose of LEMRAS.

By using LEMRAS, the police administrator can project the manpower required to answer calls for service, thus identifying available manpower to be directed to preventative patrol and administrative assignments.

This system uses dispatch originated information on the types, location, occurrence times, and duration of events requiring the expenditure of police manpower resources. The information is stored in averaged form, and maintained by the system on a geographic and time-oriented basis. The stored information is used in prediction and analysis of future states of the environment in which the police are operating. The results of an analysis may be presented (in tabular form) for varying numbers of mobile units and time intervals, providing the basis for evaluating alternative patrol policies.

LEMRAS is divided into two major parts -- data collection and report generation. Data collection processes the dispatch data into geographic and time-oriented data bases, and handles automatic maintenance of the stored data. The report generator prepares reports from the LEMRAS data base.

Data Collection -- LEMRAS maintains event statistics for each area and intersection defined by the user. The event statistics records contain identifying information (area or intersection number) and the event and service rate for up to 20 event categories. Access to event records is via a geographic index, which relates the addresses on each edge of an area to the event record for the area. One record is present for each edge of an area in this index. Each index record contains the storage location of the event record for the area. The premise address and sector, obtained from dispatch cards, are used to retrieve a geographic index record. The event record is retrieved using the information contained in the index record.

Event records for intersections are accessed, via the geographic index, using the crossing street codes obtained from the dispatch cards.

Most user dispatch card formats are accepted by the system.

All dispatch cards are entered into the system; the appropriate event record is retrieved from the IBM 2311 Direct Access Storage Device and processed by the updating programs. The system is designed to accept either batch or random inputs.

As the dispatch data is being processed, a time-oriented data base is also updated.

Report Generator -- The Report Generator processes the event and time data bases in order to produce LEMRAS statistical reports.

The report generation capability of LEMRAS is designed to provide six basic series of analyses and to produce a variety of reports within each. The series are:

100 Series -- System Statistics ... reflects the current status of the event statistics, including the current average occurrence rate, workload, and service time of each event category for any geographic area.

200 Series -- Predictive Statistics ... reflects the occurrence rate, workload, and service time, by event category and geographic area, for future periods.

300 Series -- Events Serviced without Delay ... reflects the predicted number of events and the rate at which events are serviced without delay as changes are made in the number of men available; this series also considers the changes in the way events are serviced as the available manpower changes.

400 Series -- Delay Statistics ... reflects statistics on events that will experience delays as the available manpower varies.

500 Series -- Criterion ... provides a means for the system to weight the relative importance of servicing events without delay.

600 Series -- Distribution of Delay ... reflects the lengths of time the events reported in the 400 Series will be delayed.

The statistics produced by the 200 through 600 Series may be summarized on varying time intervals within a prediction period. The intervals are:

- By week within the period
- By day of week within the period
- By hour of day within the period
- By hour, for each hour of the interval (provided to permit a detailed evaluation of the prediction period)

A set of customer-prepared control cards specifies the area and time period to be considered, the type of reports to be prepared, and the parameters of the analyses. A flexible control definition has been provided to permit each department to tailor the reports to the department patrol policies and to immediate needs. Thus, reports may be requested that examine the smallest geographic area up to the entire jurisdiction, from a single event category to all 20, and from time period of one hour to that of many weeks. The time period may pertain to the current day or may start several months in the future.

Features. The LEMRAS system provides the following advantages to the police user:

- LEMRAS serves as a valuable tool to help police administrators optimize the use of patrol manpower.
- LEMRAS uses the same data normally used for other police reporting and review functions, that is, dispatch data.
- LEMRAS is adaptable to the physical characteristics of a jurisdiction. Each department defines the physical areas of his jurisdiction. The input dispatch data contributes to the event statistics of the block or intersection in which events occur.
- LEMRAS reporting capability is adaptable to the department operating characteristics. Forecasting and analyses are performed on the basis of user-specified controls, which are variable with each use of the system, and which may consider geographic area, number of patrol units, time interval (in terms of hours, days, weeks, and starting date), event categories, existence of priorities, and importance assigned to the various event categories.
- LEMRAS reduces the analysis time to minutes, thus making frequent analysis possible.
- The predictive capability compensates for the lag time inherent in the decision-making process.
- A flexible report control permits analysis of a wide variety of manpower assignment policies and special assignment needs, for example, determining areas from which personnel can be obtained with minimal effects on service.
- A multilevel geographic and time analysis capability makes the system appropriate for use at all decision-making levels of the police department. The use of modular programming concepts makes many parts of the system available for use in other police department applications.
- One problem encountered by all police departments is that of designing beat boundaries in order that the distribution of the workload meets some requirement; for example, a roughly equal distribution of total workload, consisting of the expected called-for-services and a predetermined number of hours free for preventive patrol. LEMRAS can aid the review of the workloads by preparing reports reflecting the expected workloads and number of events by reporting area.

Customer Responsibilities: The Law Enforcement Manpower Resource Allocation System maintains data and prepares statistics on a geographic and time basis by event category. Before implementing the resource allocation system programs, the user must prepare information that is used to tailor the system to the characteristics of each department.

Geographic Area Definition -- Each geographic area must be assigned a four digit number so that LEMRAS can store the dispatch data on a location basis. The areas selected by the user are arbitrary, but it is recommended that initially the user code his jurisdiction at the reporting area level. A summary of the reasons for coding at the reporting area level is as follows:

1. The LEMRAS user could make immediate use of dispatch data that he may be already processing for statistical purposes by geographic areas.
2. The user will not have to initiate a large geographic coding effort.
3. Many police agencies are presently using the reporting area concept, and the conversion to the LEMRAS system would be minute.
4. The user would realize the benefit of the LEMRAS system very quickly by making use of the reporting area concept.

Dispatch Data Requirements -- The resource allocation system can usually be adapted to a user's dispatch card format. The following information is required by LEMRAS:

- Location of event
- Date of occurrence
- Sector
- Time out of service (dispatch time)*
- Time in service*
- Event type (2 digits)
- Intersection indicator
- Card control code

*24-hour clock basis

One Year Event History -- To initialize the week-of-year file the user must provide the calls for service historical data for the year prior to start up. These data can be acquired through summarization or statistical sampling techniques.

Use:

Forecasting Using Exponential Smoothing -- The resource allocation system helps the law enforcement administrator to determine his manpower requirements to answer the public's calls for service. In assisting the law enforcement administrator, a forecasting method is used by LEMRAS. The forecasting method used by LEMRAS is exponential smoothing, a method of averaging data that gives more weight to most recent events. As the data that make up the average become older, their weighted effect on the average decreases.

Queuing techniques are also utilized by the system in analyzing manpower assignments.

Program Parameters --

- Manpower allocation analysis may be performed for any area defined by the user and may consider a work force of from 2 to 25 mobile units per area analysis. The area is defined by the user when the analysis is to be performed.
- The maximum range of units that may be considered on a single report is 13. Example: user may specify units to be considered as follows -- units 2 to 14, units 10 to 16, units 15 to 25, etc.
- Each block in the system may have a maximum of fifty sides.

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A maximum of 10,000 blocks may be defined
A maximum of 10,000 intersections may be defined
A maximum of ten districts or precincts may be defined
A maximum of 20 event categories may be defined
The service time for a single call for service may not exceed eight hours
Any combination of areas (blocks) and time (small as one hour) may be considered in a report
Multiple LEMRAS systems may be maintained when covering geographic areas that exceed these parameters

Special Sales Information: LEMRAS provides the capability to add and delete block and intersection records.

The event statistics record contains 85 bytes of storage space unused by the resource allocation system. This provides a department with the ability to implement other applications that depend on the geographically oriented data base. The LEMRAS programs are written in a modular form and are available for a user application to process this added space. To further facilitate the use of this space, the system provides for nongeographic access to the event statistics records via block and intersection index records.

Education: Education of customer personnel is necessary for the successful installation of this program product. An announcement of LEMRAS education availability will be made.

Programming Systems: DOS features used by LEMRAS are: Direct Access Method (360N-IO-454); Consecutive Processing Macros (360N-IO-455); Indexed Sequential File Management System (360N-IO-457); Linkage Editor; Sort Merge (360N-SM-450); ... Assembler (360N-AS-465); ... FORTRAN IV (Basic) (360N-FO-451); ... Utilities (360N-UT-461).

LEMRAS is programmed in the Basic Assembler Language and the DOS FORTRAN IV (Basic).

Minimum Machine Configuration: 2030 Processing Unit (65K) Model F with Floating-Point Arithmetic (#4427), Decimal Arithmetic (#3237), IBM 1051 Attachment (#7915); 1051 Control Unit Model N1, CPU Attachment (#3130), First Printer Attachment (#4409); 1052 Printer-Keyboard Model 8; 2841 Storage Control Model 1; two 2311 Disk Storage Drives Model 1*; 2821 Control Unit Model 1**; 1403 Printer (132 print positions) Model 2**; 2540 Card Read Punch Model 1.

*One disk unit not occupied by the Disk Operating System (DOS) is required for data programs, and working storage for LEMRAS.
**Any general unit and printer (132 print positional compatible with the System/360 and DOS may be substituted for these units.

Basic Program Product Offering:

Unlicensed Documentation: One copy each of Program Description Manual* and Operations Manual*.

Licensed Machine Readable Material: One copy of Machine Readable Material containing the LEMRAS Source Program Modules, Object Program Modules, and Sample Problem.

	Specify Number	Track/Density/Pack	Description	Quantity
Customer Supplied	9028	9/800	2400' MT	1 reel
	9029	9/1600	2400' MT	1 reel
	9052	1316	Disk Pack	1 disk
Order from IBM	9128	9/800	2400' MT	1 reel
	9129	9/1600	2400' MT	1 reel
	9152	1316	Disk Pack	1 disk

Price:

Type	Program Number	DPMO	Programming Service Classification	Monthly Charge
5736	G21	G21	8	$350.00

* Manuals will be available when program is available.

Special Features (Modification Support Package):

Licensed Documentation: One copy of Systems Manual.

Prices and form numbers (feature numbers) for copies of Licensed and Unlicensed Documentation will be announced when the program is available.

Related Program Product Documentation (order from Mechanicsburg): Application Description Manual (H20-0629) Use Key G ... Application Brief (K20-0230) Use Key G.

For further information contact your State and Local Government Industry Marketing Representative, GEM Region.

Publication Support: The availability of the publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Penna.

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IBM World Trade Data Processing

PROGRAM PRODUCT ANNOUNCEMENT

SYSTEM/360 LAW ENFORCEMENT MANPOWER RESOURCE ALLOCATION SYSTEM (LEMRAS) PROGRAM PRODUCT (5736-G21) IS READY FOR SHIPMENT

LEMRAS, program product 5736-G21, is ready for shipment at PID. Details will be in the program product section of the sales manual (PPA 360.22).

Copies of the program product specification sheet are available from Mechanicsburg (GH20-4002).

Education: Education of customer personnel is necessary for the successful installation of this program product. Announcements of LEMRAS education availability will be made through State and Local Government Industry Marketing.

Basic Program Product Offering:

Unlicensed Documentation ... One copy each of Program Description Manual (SH20-0695) and Operations Manual (SH20-0696).

Licensed Machine Readable Material ... One copy of machine readable material containing the LEMRAS source program modules, object program modules, and sample problem.

To order, select one of the following specify numbers:

Specify Nbr	Track Density Pack	Description	Quantity
Customer Supplied			
9028	9/800	2400'MT	1 reel
9029	9/1600	2400'MT	1 reel
9052	1316	Disk Pack	1 disk
Order from IBM			
9128	9/800	2400'MT	1 reel
9129	9/1600	2400'MT	1 reel
9152	1316	Disk Pack	1 disk

Charge:

Type	Program & DPMO Number	Programming Service Classification	Monthly Charge
5736	G21	B	$350.00

Optional Support Package (no additional charge):

Licensed Documentation ... One copy of Systems Manual (feature 7400), two volumes -- System Manual Vol. I (hard copy) and Vol. 2 (microfiche only).

Charges for Additional Copies of Documentation:

Licensed Documentation ...

	Feature/ Form No.	Single Charge/ Copy
System Manual Vol. I	8400 (LY20-0479)*	$12.00
System Manual Vol. II**	8401 (LY80-0480)*	21.00

Unlicensed Documentation ... (order from Mechanicsburg).

	Selling Price/Copy
Program Description Manual (SH20-0695)	$13.50
Operations Manual (SH20-0696)	3.20

Related Documentation (order from Mechanicsburg): Application Description Manual (GH20-0629) ... Application Brief (GK20-0230).

No RPQs will be accepted at this time.

*For customers use, order by feature number from PID; for IBM internal use, order by form number from Mechanicsburg.

**Microfiche

Publication Support ... The availability of the publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Pennsylvania.

SES ... SE Services, identified with and related to the installation and use of the IBM System/360 Law Enforcement Manpower Resource Allocation System (LEMRAS) (5736-G21) Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.

John Fahey
Director of DP Marketing

Release Date: May 15, 1970
Distribution: Selected European Countries Only

P70-47L

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017, Programming Section, WT DP Sales Manual.

[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

[3] When a new version of a program is announced, current users will be advised by the WT Area Program Library of Procedures for ordering the new release.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

[7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.

[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

TWO NEW PROGRAM PRODUCTS -- TRAFFIC PROFILE ANALYSIS SYSTEM AND TARIFF PUBLISHING SYSTEM -- ARE ANNOUNCED

Two significant new program products are announced to provide shippers, carriers, and other users of bound freight tariffs with a computerized technique to produce tariff data in magnetic tape form and to allow for the selection and analysis of rate items.

The planned availability of these program products, the Tariff Publishing System (5736-T21) and the Traffic Profile Analysis System (5736-T22), is July 17, 1970.

The Traffic Profile Analysis System for the System/360 uses the magnetic tape tariffs produced by the Tariff Publishing System to provide a computerized method for tariff users to select and analyze rate items based on a profile of user interests. The interest profile identifies the commodities a tariff user ships, the carriers via which freight may be transported, and the points which are of interest to the user. To create and maintain this interest profile, the facilities of the Tariff Publishing System are required.

The Traffic Profile Analysis System is designed to:

- Select rate items of interest to the user from the Tariff Publishing System magnetic tape tariffs distributed by the publishing agents.
- Provide customized tariffs as defined by the user's interest profile.
- Print the selected rate items in the same format as the original tariff issue.

A prerequisite for the use of the Traffic Profile Analysis System is the Tariff Publishing System. Both systems operate under DOS/360. The application programs are written in Assembler Language.

The Tariff Publishing System for the System/360 provides a computerized technique for the conversion, publication, and maintenance of bound freight tariffs. It offers a mechanized approach to satisfy the tariff publishing and maintenance requirements of the surface transportation industries (i.e., railroads, motor freight carriers, barge-lines, pipelines, and freight forwarders).

For the tariff publisher, the Tariff Publishing System offers composition efficiencies and economies and the capability to produce tariffs in machine-processable (magnetic tape) as well as printed form.

For shippers, carriers, and other tariff users, the Tariff Publishing System provides standardized machine-processable tariff tapes which can be of significant value in connection with their rate retrieval, analysis, and research efforts. The Tariff Publishing System is an independent program for the publication of bound freight tariffs and may be ordered separately.

The Tariff Publishing System is designed to:

- Produce camera-ready tariffs conforming to industry specifications relative to page size, type size, and the arrangement of characters and graphics.
- Record tariffs on magnetic tape (1600 bpi) in machine-processable format.
- Meet the standards adopted by the railroad industry for data representation in their tariffs, such as abbreviations, codes, and formats. A special 135-character print train (RPQ), which has been customized to satisfy the requirements of various regulatory agencies, is available.
- Process the wide range of data formats found in typical tariffs and convert them to magnetic tape.
- Create and maintain the interest profile used by the Traffic Profile Analysis System as well as print the selected rate items.

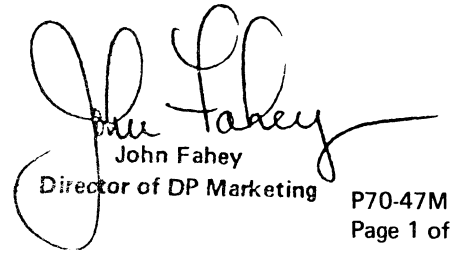
Programming Service Classification for both programs is B. The monthly charge for Program Product 5736-T21 is $200; the monthly charge for Program Product 5736-T22 is $300.

Details are on the following pages.

The program product design objectives are available from Mechanicsburg. The form number for the Tariff Publishing System (5736-T21) is GH20-0739; the form number for the Traffic Profile Analysis (5736-T22) is GH20-0740.

SES ... SE Services, identified with and related to the installation and use of the IBM Traffic Profile Analysis System and Tariff Publishing System Program Products, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product will not be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.



John Fahey
Director of DP Marketing

Tariff Publishing System (Bound Tariffs) (5736-T21): This application program for the IBM System/360 gives the publisher of bound freight tariffs a computerized technique for the conversion, publication, and maintenance of tariffs applicable to the surface transportation industry. In addition, the data base established by this program can be of significant value to shippers, carriers, and other tariff users in connection with their rate retrieval, analysis, and research efforts.

Description: For the tariff publisher, this system provides three major program functions -- Unit Process, Maintenance, and Pagination.

Within the Unit Process Program, tariff input data is translated from the input code structure of the 1050 Data Communication System to System/360 EBCDIC. This programmed translation allows the 135 characters required to publish tariffs to be keyed with ease. The input is processed under control of individual subroutines based on a designated code included in the tariff material.

The Maintanance Program processes the transaction input data against the previous issue of the tariff and all outstanding supplements. If re-issue is required, the maintenance program will produce a new issue tape which may be used to print the new issue of the tariff. If re-issue is not required, the maintenance program will produce an updated supplement tape which may be used to print the current tariff supplement. This routine is followed every time an amendment to a tariff is submitted. The issue tape and updated supplement tape are available for distribution to tariff users.

The pagination program processes either the cumulative supplement tape or the new issue tape to produce a printed tariff. It determines automatically the optimum data to be printed on each page within specified formats and consecutively numbers the pages.

Features: After conversion, only tariff changes are required as system input; all unchanged matter necessary for proper interpretation and use of a given rate or rule are brought forward automatically by the computer ... indexes to points and commodities are generated automatically ... outstanding supplements are consolidated automatically, conforming to the rules set down by various regulatory agencies ... all processing relative to the type of tariff matter being inputted is performed in one program function, allowing subroutines to be added for processing other types of tariff material not frequently used ... new tariff material is self-sequencing (i.e., its final sequence in the printed tariff is determined by program analysis of data visible within the tariff material) ... all output, both printed and machine-processable, is in a standard format so that multiple users may access data from multiple publishers and achieve consistent results ... adherence to railroad industry standards governing data representation in rail tariffs ... the standards adopted are applicable to station name, railroad abbreviation, route description, commodity description, commodity code, format of entry data, format of display data and the sequence of data within a tariff.

Customer Responsibility:

1. Program Requirements -- The Tariff Publishing System is a complete program system for the publication and maintenance of bound freight tariffs. The user may wish to add subroutines to process tariff material not covered in the general program as it is distributed. The tariff publisher is required to prepare programs for the reproduction of magnetic tape versions of the the tariffs he wishes to distribute.
2. Personnel -- Users of the Tariff Publishing System will need tariff typists (trained in the data entry method), tariff compilers (acquainted with the Tariff Publishing System and the format of tariff entry data), computer systems operation personnel, and sufficient programmers and systems analysts to install further applications and insure productive installation of this system.
3. Master File Requirements -- Each user of the Tariff Publishing System will need a properly formatted magnetic tape version of three master tariffs, a Commodity Classification, a Master Point List, and an Agent (Carrier) Master.

Use: Cards containing tariff data are prepared on the 1050 Data Communication System. These cards are then processed by the Tariff Publishing System which uses a Commodity Classification and a Master Point List master file on disk to edit and validate the tariff data. A series of tariff maintenance programs are then used to add new tariff units, delete obsolete or unwanted units, or change existing units of tariff matter. The pagination program then prepares tariff supplement or tariff re-issue copy for printing in camera-ready form. The paginated tariffs are then reproduced and distributed to tariff users. The magnetic tape versions of the tariffs are also available for distribution to tariff users for use in their rate analysis, rate retrieval, and research efforts.

Programming Systems: The Tariff Publishing System operates under DOS/360 and uses the following features of DOS -- Direct Access Method ... Consecutive Disk and Tape IOCS ... Indexed Sequential File Management System ... Group 1 and Group 2 Utilities-Unit Record/Disk and Tape ... MPS Utility Macros ... Disk Sort/Merge or Tape/Disk Sort/Merge ... The application programs are written in Assembler (F) Language.

Minimum System/360 Configuration Requirement: System/360 Model 25E (32K) with Decimal Arithmetic Feature ... 1052 System Console ... any valid DOS/360 SYSIPT device for input of tariff transactions ... three 2400 Series Magnetic Tape Units (1600 bpi) for storage of tariff master files ... one 2311 Disk Storage Drive in addition to DOS/360 requirements ... one 1403 Printer equipped with Universal Character Set Feature and Wide Hammer (RPQ W15658) ... one 1416 Interchangeable Train Cartridge with Special Tariff Character Set (RPQ M43828) ... necessary control units with these I/O devices.

Minimum 1050 Data Communication System Configuration: One 1051 Control Unit with the Automatic EOB feature ... one 1052 Printer-Keyboard with Automatic EOB, Accelerated Carrier Return and a Dual Case Print Element ... one 1058 Printing Card Punch with an Operator Panel. It is recommended that the first 1050 System in an installation be equipped with one 1056 Card Reader.

Basic Program Product Offering:

Unlicensed Documentation: One copy each of the Data Preparation Manual*, the Program Description/Operations Manual*, and the Tariff Format and Standard Codes Manual*.

Licensed Machine Readable Material: One copy of machine readable material containing Tariff Publishing Object Program Modules and Sample Problem.

To order, select one of the following specify numbers:

	Specify Number	Tract/Density	Description	Quantity
Customer Supplied	9028	9/800	2400'MT	1 reel
	9029	9/1600	2400'MT	1 reel
Order From IBM	9128	9/800	2400'MT	1 reel
	9129	9/1600	2400'MT	1 reel

Charge:

Type	Program & DPMO No.	Programming Service Classification	Monthly Charge
5736	T21	B	$200

Optional Support Package:

Licensed Documentation: One Copy of Systems Manual (feature #8003)*

Licensed Machine Readable Material: One copy of Tariff Publishing System Source Program Modules.

To order, select one of the following feature numbers:

Feature Number	Track/Density	Description	Quantity
7001	9/800	DTR	1
7002	9/1600	DTR	1

Related Documentation (order from Mechanicsburg): Application Description Manual (GH20-0730).

For further information contact your Transportation Industry Marketing Representative.

*Prices and form numbers for copies of Licensed and Unlicensed Documentation will be announced when the program is available.

Publication Support: The availability of the publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Pennsylvania.

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Traffic Profile Analysis System (Point-to-Point Tariff Item Selection) (5736-T22): For shippers, carriers, and other users of the magnetic tape tariffs supplied by the tariff publishing agents, the Traffic Profile Analysis system provides a computerized method to select and analyze rate items based on a profile of user interests.

Description: Tariff publishing agents distribute freight tariffs to users of tariffs in the form of standard magnetic tape records. The Traffic Profile Analysis System selects from these magnetic tape tariff rate items of interest for detailed analysis through the use of an interest profile. The interest profile identifies the commodities a tariff user ships, the carriers via which freight may be transported, and the points which are of interest to the user. The 1050 Data Communications System is used to prepare punched cards containing this profile information.

These profile data cards are then processed by the Tariff Publishing System (5736-T21), in much the same manner as tariff issue data, to create a user interest profile on tape. The Traffic Profile Analysis System matches this machine-readable profile against the indices of the issue and current supplement magnetic tapes of the tariff the user wishes to analyze. To be selected, a rate item must match on all specified profile parameters. The rate items that meet the user's search criteria are written onto a magnetic tape for further processing.

The Tariff Publishing System may now be used to print the selected rate items or these items may be used as input to further computer analysis of the user's own design.

Features: The Traffic Profile Analysis System enables shippers, carriers, and other users of magnetic tape tariffs to perform tariff rate analysis more rapidly and efficiently through the use of the computer ... uses the same level of editing for the profile parameters that is used in the Tariff Publishing System ... allows the user to select a rate item either (1) if it includes a given parameter or (2) if it does not include a given parameter ... produces the selected rate items on magnetic tape in a format acceptable to the Tariff Publishing System for printing in the same format as the original tariff issue ... provides the user with selected rate items in machine processable form for further analysis and rate retrieval operations.

Customer Responsibility:

1. Personnel - Users of the Traffic Profile Analysis System will need typists (trained in profile data entry method), profile data compilers (acquainted with the Tariff Publishing System and the format of tariff entry data), computer system operations personnel, and sufficient programmers and systems analysts to install and insure productive installation of this system.
2. Master File Requirements - Each user of the Traffic Profile Analysis System will need the same properly formatted magnetic tape versions of three master tariffs required by the Tariff Publishing System; that is, a Commodity Classification, a Master Point List, and an Agent (Carrier) Master.

Use: The Traffic Profile Analysis System is used in conjunction with the Tariff Publishing System to provide shippers, carriers, and other users of the magnetic tape tariffs supplied by tariff publishing agents with a computerized method to select and print rate items of interest to the user.

It allows a tariff user to prepare a "tariff" which describes his areas of interest. Each item within this tariff describes one area of interest by listing the commodities, the origin points, and the destination points whose combination are of interest to the user.

The complete definition of a tariff user's area of interest is called a profile.

The profile is created and maintained by the Tariff Publishing System. Once this profile tariff is built on magnetic tape, it is used by the Traffic Profile Analysis System to select the specified rate items. Point names are specified by the alphabetic name of the point as listed in the Master Point List (a master tariff). Commodities are specified by their standard numbers (STCC). Carriers are specified by their standard abbreviations (SACC).

Special Sales Information: A prerequisite for the use of the Traffic Profile Analysis System is the Tariff Publishing System (5736-T21).

Programming Systems: The Traffic Profile Analysis System operates under DOS/360 and uses the following features of DOS--Direct Access Method ... Consecutive Disk and Tape IOCS ... Indexed Sequential File Management System ... Group 1 and Group 2 Utilities-Unit Record/Disk and Tape ... MPS Utility Macros ... Disk Sort/Merge or Tape/Disk Sort/Merge ... The application programs are written in Assembler (F) Language.

Minimum System/360 Configuration Requirement: A System/360 Model 25E (32K) with Decimal Arithmetic feature ... 1052 System Console ... any valid DOS/360 SYSIPT device for input of profile transactions ... four 2400 Series Magnetic Tape Units (1600 bpi) ... one 2311 Disk Storage Drive in addition to DOS/360 requirements ... one 1403 Printer equipped with Universal Character Set Feature and Wide Hammer (RPQ W15658) ... one 1416 Interchangeable Train Cartridge with Special Tariff Character Set (RPQ M43828) ... necessary control units with these I/O devices.

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Basic Program Product Offering:

Unlicensed Documentation: One copy each of the Program Description/Operations Manual* and the Tariff Format and Standard Codes Manual*.

Licensed Machine Readable Material: One copy of Machine Readable Material containing Traffic Profile Analysis System Object Program Modules and sample problem.

To order, select one of the following specify numbers:

	Specify Number	Track/Density	Description	Quantity
	9030	9/1600	DTR	1
Customer Supplied	9028	9/800	2400' MT	1 reel
Order from IBM	9128	9/800	2400' MT	1 reel

Charge:

Type	Program & DPMO No.	Programming Service Classification	Monthly Charge
5736	T22	B	$300

Optional Program Support:

Licensed Documentation: One copy of Systems Manual (feature #8004)*

Licensed Machine Readable Material: One copy of the Traffic Profile Analysis System Source Program Modules.

To order, select one of the following feature numbers:

Feature Number	Track/Density	Description	Quantity
7003	9/800	DTR	1
7004	9/1600	DTR	1

Related Documentation (order from Mechanicsburg): Application Description Manual (GH20-0730).

For further information, contact your Transportation Industry Marketing Representative.

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[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

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IBM World Trade Data Processing

PROGRAM PRODUCT ANNOUNCEMENT

RPG AUGMENTS CAPABILITY OF 1800 SYSTEM

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[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

[6] Any references made to DPD Departments (or regions) as sources of information or for manuals, etc., should be understood to mean the comparable WT Department (or corresponding organizational level).

[7] Communications facilities or services may be required which are not offered in all WT countries. In case of any doubt as to the availability of suitable communications facilities, the country Teleprocessing Coordinator should be consulted.

[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY.

[9] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

* Announced by ITPS Memorandum to Branch Managers B69-267.

The 1800 Report Program Generator (RPG), Program Product 5718-RG1, significantly enhances the commercial capability of the 1800 Data Acquisition and Control System by providing an easy to learn language that is specifically oriented to commercial applications -- such as accounts receivable, payroll, inventory accounting, and sales analysis.

Availability ... Planned for May 1970.

The 1800 RPG operates under the 1800 Multiprogramming Executive System (MPX). The 1800 RPG uses the same coding forms as System/360 RPG and provides language specifications identical to 1130 RPG. In addition, a file conversion utility enables RPG to be used for generating operating reports from sensor-based disk data files created by FORTRAN-coded on-line programs.

Highlights ...

- Edit codes to reduce application coding required to edit numeric printed data.
- CHAIN operation codes to allow greater flexibility in random references to sequential and indexed sequential disk files.
- Subroutines to avoid repeated coding of similar calculation routines.
- EXCPT operation code to permit records to be output while calculations are in process.
- 1800 I/O subroutines to create and process sequential and indexed sequential files on the 1810 Disk Storage.
- DFCNV utility program to convert disk data files created by FORTRAN and commercial subroutines programming into disk data files acceptable to programs created through the use of RPG.

Publications ... The availability of the Introduction to 1800 RPG Manual will be announced in a Publication Release Letter. Until additional 1800 RPG publications become available, see IBM 1130 RPG Language (C21-5002) for language specifications.

The monthly charge is $60; the programming service classification is B.

No RPQs will be accepted now.

The program product design objectives sheet may be detached or reproduced and given to customers. The sales manual text on the reverse side provides you with prices and other detailed information.

SES: SE Services, identified with and related to the installation and use of the IBM RPG Augments Capability of 1800 System Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Program Product Use During Customer Pre-Installation Testing ... This Program Product may be provided in Test Centers free of charge for customer use during testing. A signed license agreement must be obtained prior to customer use of this Program Product.

John Fahey
Director of DP Marketing

Release Date: May 15, 1970
Distribution: Selected European Countries Only

1800 Report Program Generator (RPG): The 1800 Report Program Generator (RPG) significantly enhances the commercial data processing capability of the 1800 Data Acquisition and Control System. The 1800 RPG operates under the 1800 Multiprogramming Executive System (MPX), and provides a language which is easy to learn and specifically oriented to commercial applications such as accounts receivable, payroll, inventory accounting, and sales analysis. In addition, a file conversion utility (DFCNV) enables RPG to be used for generating operating reports from sensor-based disk data files created by FORTRAN-coded on-line programs.

Description: The 1800 RPG consists of a problem-oriented symbolic language, a compiler, and a library of subroutines. The user describes his problem by coding source statements, on RPG coding forms, that describe the input and output files, records and fields, and the data processing to be performed. The source statements are then punched into cards. The compiler converts the source statements to an object program with subroutine linkages, which in turn is executed to accomplish the problem solution.

The 1800 RPG uses the same coding forms as System/360 RPG and provides language specifications identical to 1130 RPG. Minor differences between the two systems exist in the job control language and input/output devices supported.

The 1800 RPG compiler can be executed in either the time-sharing mode under MPX or in the batch-processing mode under the MPX Basic Operating Monitor (BOM). At the user's option, an RPG object program can be executed as an area, main-line, or batch-process coreload, and can execute in any core partition except the Special Area (SPAR) or the System Executive.

The following operating restrictions apply:

- RPG can process disk files created only by an RPG program or the file conversion utility DFCNV.
- When processing an indexed sequential file, additions and updates to the file cannot both be made in the same program.
- A disk file must be contained in a contiguous area on one 2315 disk pack. Split extents and multi-volume files are not supported.
- The maximum key length in an indexed sequential file is 50 characters. The key must begin in the first position of the record.

Features: The 1800 RPG includes the following functions:

- Edit codes, to reduce the coding necessary to edit numeric printed data. With the use of a one-character edit code, the programmer can edit most numeric fields along with date fields. Where the edit codes are not sufficient, edit words are still supported.
- CHAIN operation code, to allow greater flexibility in random references to disk files. By using the CHAIN op code during calculations, the programmer may retrieve a record from an indexed sequential file and have it immediately ready for processing. With the use of CHAIN, the programmer can determine a record-not-found condition and provide a routine to handle this instead of going to a halt condition. Multiple records can be retrieved from one file. A chained file may CHAIN to itself as well as CHAIN to other files. Through the use of CHAIN and relative record number, records may be randomly retrieved from sequential disk files.
- Subroutines, to avoid repeated coding of similar calculation routines. An often-used calculation routine may be coded as an RPG subroutine. The RPG subroutine must be compiled with the program that uses it. The use of Assembler Language-coded subroutines is also supported.
- EXCPT operation code, to permit records to be output at other than fixed points in the RPG processing. With the use of the EXCPT op code the programmer can produce output at any time and as often as desired during both detail and total calculations.
- 1800 Input/Output Subroutines, to create and process sequential and indexed sequential files on the 1810 Disk Storage. These subroutines may also be used by 1800 Assembler Language programs to create and process files. The subroutines accomplish these functions.
  - Create an indexed sequential file
  - Add records to an existing indexed sequential file
  - Sequentially process indexed sequential files, either within limits or the entire file
  - Randomly process individual records of indexed sequential files
  - Sequentially process input or output records of a sequential file
  - Randomly process input or update records of a sequential file

In addition, the following features can provide other benefits depending on the user's application:

- Cylinder Index in Core - One sector of the cylinder index remains in core during the processing of an indexed sequential file. Consequently, when randomly processing an indexed sequential file, greater throughput will normally be realized if the input is sorted first.
- Sequential Files - A sequential disk file may be retrieved either sequentially or randomly (by use of relative record number). Random retrieval of a sequential file replaces the direct access concept and allows for fast retrieval of files which make use of the relative record number technique.
- The LOCAL function - It is possible to overlay subroutines called by RPG. This function may reduce throughput to save on core.
- S/360 Appearance - Through the use of RPG, the programmer no longer need be aware of the fact that the 1800 is a fixed-word binary machine. The 1800 with the use of RPG appears to be a character-oriented system. Like S/360, both zoned decimal and packed decimal may be used.
- Dual I/O Areas - Dual I/O areas are supported for all card and printer devices. This allows the programmer to call for execution time options which afford, in most cases, increased throughput at the expense of core.

Special Sales Information: 1800 RPG is a conversion of 1130 RPG. Language specifications are identical; minor differences between the two systems exist in the job control language and input/output devices supported.

Use: The RPG compiler is a series of batch-process coreloads that operate under the Multiprogramming Executive System. Execution is initiated by entering a job in the card reader with an XEQ control card containing the coreload name RPG18. RPG source statements are read from the card reader, processed, and generated into a relocatable object program stored temporarily in disk working storage. The relocatable program can then be executed immediately, stored into the relocatable program library, punched into cards, or built into a coreload for later execution, all under control of the MPX Disk Management Program (DMP). Disk file areas can be reserved for the use of RPG applications by the *DFILE or *STOREDATA functions of DMP.

Customer Responsibilities: The customer is responsible for:

1. Developing his application programs in the RPG language.
2. Generating the MPX operating system.
3. Loading the RPG compiler and subroutines to disk storage under MPX control.
4. Compiling RPG application programs and building them into core loads for execution.

Programming Systems: The 1800 RPG compiler is written in 1800 Assembler language and operates under the 1800 Multiprogramming Executive System (MPX). The Disk Management Program (DMP) of MPX provides utility functions to assist in RPG installation and operation, including loading programs to disk, creating of files, and building application program core loads.

The RPG compiler can execute under time-sharing within the 5140-word variable core area required by MPX. The RPG compiler uses the LOCAL feature to execute within the 5140-word area. The LOCAL feature is not necessary if the available variable core area exceeds 7140 words. Additional available variable core area will be used automatically by the RPG compiler to increase throughput.

Approximately 30 cylinders of disk storage are required for the compiler and the supporting subroutine library.

Disk working storage is required for the generated object program and for temporary storage of source statements when they exceed the number which can be contained in available core storage.

Minimum Machine Configurations:

A. Compiler execution - 1801/1802 Processor-Controller, Model 1C or 2C (16K) ... 1810 Disk Storage, Model A2 or B2 ... two 2315 Disk Cartridges ... 1816 Printer-Keyboard or 1053 Printer, Model 3 or 1443 Printer, Model 1 or 2 ... 1442 Card Read Punch, Model 6 or 7.

B. Object program execution - 1801/1802 Processor-Controller, Model 1C, or 2C (16K) ... 1810 Disk Storage, Model A2 or B2 ... 1442 Card Read Punch, Model 6 or 7 ... output devices as required by the application program.

C. Devices Supported - 1801/1802 Processor-Controller (up to 32K) ... two 1442 Card Read Punches, Model 6 or 7 ... one 1443 Printer, Model 1 or 2 ... 1810 Disk Storage, Model A3 or B3 ... two 1816 Printer-Keyboards and six 1053 Printers, Model 3.

Basic Program Product Offering:

Unlicensed Documentation: One copy each of Operations Manual,* and Language Specifications Manual.*

*Availability of unlicensed documentation from Mechanicsburg will be announced.

Licensed Machine Readable Material: One copy of Machine Readable Material containing the 1800 RPG Object Program Modules and Sample Problem.

Specify Number	Description	Quantity
9015	Cards	2000

Charge:

Type	Program & DPMO No.	Monthly Usage Charge
5718	RG1	$60

Optional Support Package:

Licensed Documentation: One copy of Systems Manual.

Machine Readable Material: Source Modules.

	Feature Number	Track/ Density	Package Description	Quantity
Customer Supplied	7026	7DC/800	MT & Systems Manual	1
	7028	9/800	MT & Systems Manual	1
	7029	9/1600	MT & Systems Manual	1
Order from IBM	7126	7DC/800	MT & Systems Manual	1
	7128	9/800	MT & Systems Manual	1
	7129	9/1600	MT & Systems Manual	1

There will be no additional charge for the Optional Support Package.

Related Documentation: Introduction to 1800 RPG Manual ... availability will be announced.

Prices and form numbers (feature numbers) for copies of licensed documentation will be announced when the program is available.

1800 Report Program Generator

The 1800 Report Program Generator (RPG) significantly enhances the commercial data processing capability of the IBM 1800 Data Acquisition and Control System. The 1800 RPG operates under the IBM 1800 Multiprogramming Executive System (MPX), and provides a language which is easy to learn and specifically oriented to commercial applications such as accounts receivable, payroll, inventory accounting, and sales analysis. In addition, a file conversion utility (DFCNV) enables RPG to be used for generating operating reports from sensor-based disk data files created by FORTRAN-coded on-line programs.

The planned availability is May 1970.

The 1800 RPG consists of a problem-oriented symbolic language, a compiler and a library of subroutines. The user describes his problem by coding, on RPG coding forms, source statements that describe the input and output files, records and fields, and the data processing to be performed. The source statements are then punched into cards. The compiler converts the source statements to an object program with subroutine linkages, which in turn is executed to accomplish the problem solution.

The 1800 RPG uses the same coding forms as System/360 RPG and provides the functional capabilities of 1130 RPG. 1800 RPG is a conversion of 1130 RPG. Language specifications are identical. Minor differences between the two systems exist in the job control language and input/output devices supported.

The 1800 RPG includes:

- Edit codes, to reduce the coding necessary to edit numeric printed data.
- CHAIN operating code, to allow greater flexibility in random references to disk files.
- Subroutines, to avoid repeated coding of similar calculation routines.
- EXCPT operation code, to permit records to be output at other than fixed points in the RPG processing.
- 1800 Input/Output Subroutines, to create and process sequential and indexed sequential files on the 1810 Disk Storage.

In addition, the following features are also supported:

- The LOCAL function - It is possible to overlay subroutines called by RPG. This function may reduce throughput to save on core.
- Dual I/O Areas - Dual I/O areas are supported for all card and printer devices.

The 1800 RPG compiler is written in 1800 Assembler Language and operates under the 1800 Multiprogramming Executive System (MPX). The Disk Management Program (DMP) of MPX provides utility functions to assist in RPG installation and operation, including loading programs to disk, creating of files, and building application program coreloads.

The RPG compiler is a series of batch-process coreloads. Execution is initiated by entering a job in the card reader with an XEQ control card containing the coreload name RPG18. RPG source statements are read from the card reader, processed, and generated into a relocatable object program stored temporarily in disk working storage. The relocatable program can then be executed immediately, stored into the relocatable program library, punched into cards, or built into a coreload for later execution, all under control of the MPX Disk Management Program (DMP). Disk file areas can be reserved for the use of RPG applications by the *DFILE or *STOREDATA functions of DMP.

The 1800 RPG compiler can be executed in either the time-sharing mode under the MPX System Executive or in the batch-processing mode under the MPX Basic Operating Monitor (BOM). At the user's option, an RPG object program can be executed as an area, main-line, or batch-process coreload, and can execute in any core partition except the Special Area (SPAR) or the System Executive.

The RPG compiler can execute within the 5140-word variable core area required by MPX. The RPG compiler uses the LOCAL feature to execute within the 5140-word area. The LOCAL feature is not necessary if the available variable core area exceeds 7140 words. Additional available variable core area will be used automatically by the RPG compiler to increase throughput.

Approximately 30 cylinders of disk storage are required for the compiler and the supporting subroutine library.

Disk working storage is required for the generated object program and for temporary storage of source statements when they exceed the number which can be contained in available core storage.

Minimum Machine Configurations ...

A. Compiler execution - 1801/1802 Processor-Controller, Model 1C or 2C (16K) --- 1810 Disk Storage, Model A2 or B2 ... two 2315 Disk Cartridges ... 1816 Printer-Keyboard or 1053 Printer, Model 3 or 1443 Printer, Model 1 or 2 ... 1442 Card Read Punch, Model 6 or 7.

B. Object program execution - 1801/1802 Processor-Controller, Model 1C or 2C (16K) ... 1810 Disk Storage, Model A2 or B2 ... 1442 Card Read Punch, Model 6 or 7 ... Output devices as required by the application program.

C. Devices Supported - 1801/1802 Processor-Controller (up to 32K) ... two 1442 Card Read Punches, Model 6 or 7 ... one 1443 Printer, Model 1 or 2 ... 1810 Disk Storage, Model A3 or B3 ... two 1816 Printer-Keyboards and six 1053 Printers, Model 3.

Special Notice ... As stated in the License Agreement for IBM Program Products, IBM does not represent or warrant that these objectives or planned availability dates will be met.

Publication Support: The availability of the publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Penna.

IBM World Trade Data Processing

IBM CONFIDENTIAL UNTIL JUNE 1, 1970

PROGRAM PRODUCT ANNOUNCEMENT

TSO

OS/360 Time Sharing Option
Program Products

A VARIETY OF PROGRAM PRODUCTS TO BE AVAILABLE FOR USE UNDER TIME SHARING OPTION (TSO)

Significant new functions are provided to the user through Program Products offered for OS/360 Time Sharing Option (See P70-44A). These programs, available 1Q 1971, are highlighted below and described individually on the inside pages.

TSO Assembler Prompter -- A means for calling the OS/360 Assembler (F) under the interactive facilities of TSO. It dynamically allocates work spaces and helps insure that the users' data sets are in order.

Code and Go FORTRAN -- Provides the problem solver with a rapid response processor for compiling, loading, and executing FORTRAN programs in the TSO environment.

FORTRAN IV (G1) Compiler -- An extended version of FORTRAN IV (G) adapted to run in the TSO foreground as well as in an OS (batch) mode.

TSO FORTRAN Prompter -- Provides the user with the capability of conversationally entering the required job parameters to compile programs in the TSO environment using the FORTRAN IV (G1) Compiler.

FORTRAN IV Library (Mod I) -- An extended version of the OS/360 FORTRAN IV Library which provides support for the new FORTRAN IV list-directed I/O statements and for FORTRAN object programs operating in the TSO environment.

Full ANS* COBOL Version 3 Compiler -- Contains enhancements which in conjunction with the Time Sharing Option of the System/360 Operating System and the TSO COBOL Prompter enable the terminal user to invoke and compile ANS COBOL programs in the TSO environment.

TSO COBOL Prompter -- Provides users with the ability to conversationally enter the required job parameters to compile ANS COBOL programs in the TSO environment using the Full ANS COBOL Compiler.

* Formerly known as USA Standard (USAS) COBOL

TSO Data Utilities: COPY, FORMAT, LIST, MERGE -- A collection of four Data Set Utilities to enhance TSO data set support.

TSO Interactive Terminal Facility (ITF) -- Provides problem solvers with PL/I and/or BASIC programming in the environment supported by TSO of OS/360.

System Engineering Services ... SE Services, identified with and related to the installation and use of the above IBM Program Products, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (See Sales Manual SE Section 2 for details).

Program Product Design Objectives are available for each program product from Mechanicsburg.

No RPQs will be accepted now.

Programming Service Classification -- A.

John Fahey
WTC Director of DP Marketing

FOR IBM INTERNAL USE ONLY

Release Date: June 1, 1970
Distribution: Selected European Countries Only

TSO ASSEMBLER PROMPTER (5734-CP2)

The TSO Assembler Prompter operates as a command processing program under the control of the Time Sharing Option of the IBM System/360 Operating System. The Prompter is a means for the programmer to invoke the Assembler (F) to process source data sets and to produce object modules. The prompter returns to the programmer any error and informational messages that are generated, allowing the programmer to correct his errors at the terminal.

Highlights ... The programmer creates, modifies, saves, and retrieves his source data set at his terminal, using the TSO command EDIT. He then uses the prompter command ASM to process the data set and obtain his object module. The ASM command invokes the assembler prompter, which in turn invokes the assembler. The prompter makes sure that the programmer has specified appropriate data set names. If he has not, the prompter requests him to do so. Through the ASM command, the programmer can specify the assembler options and request an assembly listing to be printed at the terminal.

Minimum System Configuration ... Requires the minimum System/360 TSO configuration.

Publications ... OS/360 Time Sharing Option, Planning for TSO, GC28-6698, is available from Mechanicsburg.

Program Product Design Objectives: S/360 Time Sharing Option: Assembler Prompter, GC26-3734, is available from Mechanicsburg.

Price ... The monthly charge is $30.

This program product cannot be ordered now. Ordering instructions will follow.

* * *

CODE AND GO FORTRAN (5734-FO1)

Code and Go FORTRAN operates under the Time Sharing Option (TSO) of the IBM System/360 Operating System. It provides the programmer with a rapid response processor for compiling, loading, and executing programs written in the FORTRAN IV language with extensions for list-directed input/output and free form source statements.

Code and Go FORTRAN opens the area of rapid response time sharing to many programmers who are already familiar with the FORTRAN language. Its simplicity and ease-of-use is particularly suited to the "problem-solver," who writes, debugs, and executes relatively short programs at the terminal; and to the "production programmer," who debugs sections of a large program on-line before running that program through a standard batch compiler.

Highlights

- Code and Go feature is a high speed facility which operates in the TSO foreground.
- Code and Go FORTRAN supports the FORTRAN IV Language and the DEBUG facility.
- List-directed input/output facilitates data entry and output by freeing the user from standard FORTRAN data format restrictions. With list-directed I/O in effect, no FORMAT statements are required and data items may be entered in any typing position.

  (Use of list-directed input/output requires an installation to have the FORTRAN IV Library [Mod I] (5734-LM1.)
- FORTRAN keyboard input format (free form source) permits the user, in writing his FORTRAN source program, to ignore all card-column dependencies. (A standard form option is also provided.)
- A SIFT utility is provided for two way conversion between standard and free form source, thus ensuring source format compatibility with the other OS/360 FORTRAN Compilers.
- Object programs are compiled directly into main storage.
- All subprograms in the OS FORTRAN IV Library are available to Code and Go programs, as are user-written programs previously compiled into object code by a batch compiler.
- Diagnostic messages are displayed at the user's terminal.
- Through the TSO EDIT command the FORTRAN Syntax Checker may be used to check source programs on a statement-by-statement basis prior to compilation.
- Prompting for correct specification of compilation parameters is a built-in feature of the compiler.

Compatibility ... All valid source programs compilable on FORTRAN IV (G1) (5734-FO2), or on FORTRAN E, G, and H compilers, compile on Code and Go FORTRAN with the standard form option in effect.

A SIFT utility invocable by the TSO CONVERT Command converts the format of FORTRAN source programs from free form to standard form or vice

versa. The SIFT utility is available for users who create a Code and Go FORTRAN source program using free form source and later wish to compile it on another System/360 FORTRAN IV compiler. In this case, the user should recognize that not all System/360 FORTRAN IV compilers support all of the language features of Code and Go FORTRAN (e.g., the DEBUG facility, and list-directed input/output). Data sets used and produced by Code and Go FORTRAN programs are completely compatible with those used and produced by the Operating System.

The language level supported by the Code and Go FORTRAN processor is compatible with and encompasses the American National Standard (ANS) FORTRAN.

In contrast to the other OS/360 FORTRAN compilers, Code and Go FORTRAN does not save object modules on secondary storage and does not produce source, object and storage map listings.

Minimum Systems Configuration ... Requires the minimum System/360 TSO configuration.

Performance ... Elapsed time from start of compilation to start of execution for 100 statement programs is generally three to four times faster than FORTRAN IV (G1) operating in the TSO foreground.

The object code produced by Code and Go FORTRAN is somewhat less efficient than FORTRAN IV (G1) (5734-FO2) object programs.

Publications ... OS/360 Time Sharing Option, Planning for TSO, GC28-6698 ... System/360: FORTRAN IV Language, GC28-6515 ... System/360 FORTRAN Program Products for OS and OS with TSO, General Information, GC28-6824.

Program Product Design Objectives: OS/360 System Time Sharing Option: Code and Go FORTRAN, GC28-6823, is available from Mechanicsburg.

Price ... The monthly charge is $275.

This program product cannot be ordered now. Ordering instructions will follow.

* * *

OS/360 FORTRAN IV (G1) (5734-FO2)

FORTRAN IV (G1) is an extended version of FORTRAN IV (G), adapted to run in Time Sharing Option (TSO) environment as well as in an OS (batch) mode.

Highlights ...

- FORTRAN IV (G1) complements the Code and Go FORTRAN processor (5734-FO1) in its ability to save object programs and produce source and object listings and storage maps.
- Users who have the FORTRAN IV Library (Mod I), (5734-LM1), may use the new FORTRAN IV list-directed I/O statements to simplify data entry and output at the terminal or other data set.
- TSO editing and syntax checking facilities are available for the creation and modification of FORTRAN IV (G1) source programs at a TSO terminal.
- Compilation progress and diagnostic messages may be directed to the terminal or suppressed.
- The compiler's entire listing data set may be optionally directed to the terminal.
- The Processor may be invoked most conveniently by the TSO FORTRAN Prompter (5734-CP3) which conversationally interacts with the terminal user to obtain the necessary compilation parameters.

Compatibility ... All source programs compiled by the FORTRAN IV (E), (G), and (H) compilers can be compiled by FORTRAN IV (G1). Source programs written in standard format for the Code and Go FORTRAN processor can be compiled directly by the FORTRAN IV (G1) processor. Code and Go programs written in the FORTRAN keyboard input format may be converted to standard form by a SIFT utility provided with the Code and Go processor. Data sets used and produced by the FORTRAN IV (G1) programs are completely compatible with those used and produced by the operating system.

The language level supported by FORTRAN IV (G1) is compatible with and encompasses the American National Standard (ANS) FORTRAN.

Minimum Systems Configuration ... Requires the minimum System/360 TSO configuration.

Any OS/360 configuration with at least 128K bytes of main storage is required for batch operation. The compiler and its object programs require the floating point arithmetic option.

Performance ... The FORTRAN IV (G1) compiler has the same performance and source program capacity as the FORTRAN IV (G) compiler.

Publications ... OS/360 Time Sharing Option, Planning for TSO, GC28-6698 ... and System/360 FORTRAN Program Products for OS and OS with TSO, General Information, GC28-6824.

Program Product Design Objectives - OS/360 FORTRAN IV (G1) Processor, GC28-6845.

Price ... The monthly charge is $65.

This program product cannot be ordered now. Ordering instructions will follow.

* * *

TSO FORTRAN PROMPTER (5734-CP3)

OS/360 TSO FORTRAN Prompter (5734-CP3) aids in conversationally entering the required job parameters to initiate a FORTRAN (G1) compilation.

Highlights

- The FORTRAN Prompter conversationally interacts with the terminal user and prompts for job parameter information which has been:
  - omitted
  - incorrectly entered
- Dynamically allocates required data sets for the compilation
- Invokes the OS/360 FORTRAN IV (G1) compiler (5734-FO2) to execute in the TSO foreground.

Minimum Systems Configuration ... Requires the minimum System/360 TSO configuration. (See P70-44A for details.)

Publications ... System/360 FORTRAN Program Products for OS and OS with TSO, General Information, GC28-6824 ... and OS/360 - Time Sharing Option, Planning for TSO, GC28-6698.

Program Product Design Objectives - Time Sharing Option FORTRAN Prompter, GC28-6843.

Price ... The monthly charge is $30.

This program product cannot be ordered now. Ordering instructions will follow.

* * *

FORTRAN IV LIBRARY (MOD I) (5734-LM1)

The FORTRAN IV Library (Mod 1) is an augmented OS/360 FORTRAN IV Library for use with the FORTRAN IV (G1) and Code and Go FORTRAN program product processors. The library provides the object-time routines required for list-directed I/O and terminal-oriented modifications to PAUSE and STOP processing.

Highlights

- List-directed I/O simplifies source program coding. No FORMAT statements are required.
- List-directed I/O simplifies data entry since column or card (line) boundaries are not significant.
- List-directed I/O is supported for the terminal in the TSO foreground and for any other FORTRAN I/O device in the foreground or background.
- FORTRAN list-directed output is compatible with PL/I Stream input.
- PL/I Stream output, if restricted to FORTRAN data types, can be read by FORTRAN list-directed input.
- PAUSE and STOP statement messages are directed to the user's terminal when the object program is running in the TSO foreground. (This function is also available to object programs compiled by the OS batch compilers.)

Compatibility ... FORTRAN IV OS compilers other than FORTRAN IV (G1) and Code and Go FORTRAN can use the routines of the Mod I Library, but do not have access to the list-directed I/O functions.

Conversely, FORTRAN IV (G1) and Code and Go FORTRAN object modules can be link-edited with the standard FORTRAN IV library, but will not gain the benefits of list-directed I/O and the PAUSE-STOP modifications.

Minimum Systems Configuration ... The FORTRAN IV Library (Mod I) can be used with any system configuration currently supporting OS/360 and in either a time sharing or batch environment. The library requires approximately 50K bytes of auxiliary storage.

Performance ... Functions currently existing in the FORTRAN IV Library will run as fast under the Mod I Library. List-directed I/O performance is comparable with existing NAMELIST I/O performance.

Publications ... OS/360 - Time Sharing Option, Planning for TSO, GC28-6698 ... and System/360 - FORTRAN Program Products for OS and OS with TOS, General Information, GC28-6824,

Program Product Design Objectives: OS/360 FORTRAN IV Library (Mod 1), GC26-6844.

Price ... The monthly charge is $65.

This program product cannot be ordered now. Ordering instructions will follow.

* * *

OS/360 IBM FULL AMERICAN NATIONAL STANDARD (ANS) COBOL* VERSION 3 5734-CB1

The Full ANS COBOL Version 3 provides OS/360 TSO COBOL users with the capability of compiling COBOL language programs in the TSO foreground. ANS COBOL Version 3 operates without TSO with the same control program options of OS/360 as did previous releases, and compiles previously coded ANS COBOL programs without conversion.

Highlights ...

- The COBOL compiler can be invoked most conveniently by the TSO COBOL Prompter (5734-CP1) which conversationally interacts with the terminal user to obtain the necessary compilation parameters and which dynamically allocates the required data sets for the compilation.
- Compilation progress and diagnostic messages may be directed to the terminal or supressed.
- The compiler's entire listing data set may be directed to the terminal.
- A COBOL source statement data set created using the TSO EDIT command may be modified by the terminal user via EDIT prior to or after compilation.
- Line (sequence) numbers appearing in columns one thru six of the COBOL source statement data set may be referenced in the diagnostic messages printed at the terminal.
- COBOL programs may be designed to interact with the terminal user. Programs can read input lines from the terminal, act on the information, and respond. The TSO ALLOCATE command is used to assign the external file name of the SELECT statement to the terminal.
- For COBOL Programs containing ACCEPT and DISPLAY clauses, or which generate TRACE and EXHIBIT output, the SYSIN and SYSOUT files may be defined as the terminal using the TSO ALLOCATE command.

Minimum Systems Configuration ... The Full IBM ANS COBOL Version 3 compiler operates under control of the IBM System/360 Operating System with or without the Time Sharing Option (TSO).

- Operation of the Full ANS COBOL Version 3 compiler without TSO requires a configuration of a System/360 with at least 128K bytes of main storage.
- Operation of Full ANS COBOL Version 3 under TSO requires the minimum TSO configuration **(See P70-44A for details).**

Performance ... The Full ANS COBOL Version 3 compiler shows no regression as compared with the performance of any previous release of the ANS (or USAS) COBOL compiler. Execution time of generated object code also shows no regression as compared with code generated by previous versions.

Publications ... OS/360 System Time Sharing Option: Planning for TSO, GC28-6698 and OS/360 Full American National Standard (ANS) COBOL, GC28-6396.

Program Product Design Objectives - OS/360: Full American National Standard (ANS) COBOL Compiler Version 3, GC28-6406.

Price ... The monthly charge is $40.

This program product cannot be ordered now. Ordering instructions will follow.

* * *

OS/360 TSO COBOL PROMPTER 5734-CP1

The TSO COBOL Prompter provides OS/360 TSO COBOL users with the capability of conversationally entering the required job parameters to execute a COBOL compilation.

Highlights ...

- The COBOL Prompter conversationally interacts with the terminal user and prompts for job parameter information which has been:
  - omitted
  - incorrectly entered
- Dynamically allocates required data sets for

*Formerly known as USA Standard (USAS) COBOL.

compilation in the TSO foreground.

- Invokes the Full American National Standard (ANS)* COBOL Version 3 compiler (5734-CB1) to execute in the TSO foreground.

Minimum Systems Configuration ... Operation of the COBOL Prompter under TSO requires the minimum TSO configuration.

Publications ... IBM System/360 Operating System Time Sharing Option: Planning for TSO, GC28-6698.

Program Product Design Objectives - OS/360: Time Sharing Option COBOL Prompter, GC28-6404, available from Mechanicsburg.

Price ... The monthly charge is $30.

This program product cannot be ordered now. Ordering instructions will follow.

* * *

TSO DATA UTILITIES: COPY, FORMAT, LIST, MERGE 5734-UT1

The OS/360 TSO Data Utilities consists of the following terminal commands:

COPY
FORMAT
LIST
MERGE

This program provides OS/360 Time Sharing Option users the capabilities of copying, merging, and controlled-format printing. The Data Utility commands are easy to use and are functionally complete. The design is consistent with the intent of TSO in that it addresses the professional programmer to the individual with no computer experience.

The Data Utility command processing programs provide full support of the TSO requirements and features. OS/360 password protection is supported by the Data Utilities. The data set organizations supported are sequential and partitioned.

The FORMAT and MERGE commands also serve as EDIT subcommands. When invoked as subcommands, the FORMAT and MERGE operations are oriented specifically toward the data sets being processed by the EDIT command.

The HELP command provides assistance for the inexperienced user.

Highlights ...

COPY

- Duplicates sequential or partitioned data sets
- Add members to a partitioned data set
- Merge two partitioned data sets
- Resequence records as they are copied
- Change record length, blocksize and record format on a copy to a physical sequential data set. On a copy to a partitioned data set the above attributes become those of the partitioned data set.

MERGE

- Copy all or part of a data set into a specified part of another data set
- Resequence the resultant data set or members of a partitioned data set.

LIST

- Prints all or selected records of physical sequential data sets or members of partitioned data sets
- Optionally prints specified columns of records

FORMAT

- Prints data sets in a format determined by embedded control words
- The control words enable the following capabilities:
  - Print a heading on each page
  - Center lines between the margins
  - Specify the number of spaces in the top and bottom margins
  - Cause right justification of lines
  - Page numbering
  - Stop printing
  - Reprint pages
  - Single and double line spacing
  - Space insertion at the beginning of each line
  - Line length variation
  - Page length variation
  - Paragraph indentation control

Minimum System Configuration ... Operation of the TSO Data Utilities under TSO requires the minimum TSO configuration.

Publications ... OS/360 Time Sharing Option TSO Data Utilities: COPY, FORMAT, LIST, MERGE Design Objectives, GC28-6750, and OS/360 Time Sharing Option Planning for TSO, GC28-6698.

Price ... The monthly charge is $1 15

This program product cannot be ordered now. Ordering instructions will follow

* * *

INTERACTIVE TERMINAL FACILITY: PL/I AND BASIC (5734-RC2)

The OS/360 TSO Interactive Terminal Facility (ITF provides problem solvers with PL/I and/or BASIC programming in the TSO environment.

The Interactive Terminal Facility consists of a Shared Language Component (SLC) joined to a PL/I component and/or a BASIC component

The Shared Language Component (SLC) interfaces with OS/360 Time Sharing Option and the user terminals, feeds all PL/I and or BASIC programs to the proper language component, and then executes that component's output when requested. Execution requires no linkage editing by the user, all necessary linkages are automatically provided by the SLC

The PL/I language supported by the PL/I component is a subset especially suited to the problem solver. Among the language features are:

- decimal floating-point arithmetic with 6 or 16 digits of precision
- label, bit-string, and character-string data
- list-directed and edit-directed stream transmission (terminal and file I/O supported)
- a variety of mathematical built in functions (SORT, COS, ATAN, EXP, etc.)
- the INDEX and SUBSTR built-in functions for string handling applications
- user-defined functions and subroutines
- arrays of up to three dimensions for bit-string character-string, and arithmetic data

An additional feature of the PL/I component is the PL/I desk calculator mode. In this mode, PL/I statements are executed immediately as they are entered.

Through the CONVERT command provided by TSO PL/I programs can be converted to a form acceptable to the OS/360 PL/I (F) compiler. Execution results for such programs will be the same provided care is taken in the declaration of arithmetic variables and in the use of arithmetic constants.

The BASIC language supported by the BASIC component is based on the BASIC programming language developed at Dartmouth College. Its simplicity and ease-of-use is particularly suited to the problem solver. Among the language features are:

- arithmetic data with single and double precision
- literal (character) data
- a wide variety of mathematical built-in functions (SORT, LOG, COT, etc.)
- program, terminal, and file input/output
- arrays of one or two dimensions (implicitly or explicitly defined)
- extensive matrix handling facilities (inversion, transpose, identity, multiplication, and more)
- single statement function definition

TSO Services ... Users can build, modify, save, retrieve, execute, interact with, and debug PL/I and/or BASIC programs from remote terminals using TSO's normal facilities for program editing, library management, data management and program execution. Each user's programs and data files are maintained as standard OS/360 data sets by TSO. Data files can be used interchangeably by PL/I and BASIC programs; that is, files created by BASIC programs can be used as input to PL/I programs and vice versa.

Programming Aids ... Syntax checking is performed for both PL/I and BASIC source statements, and messages are transmitted to the user as syntax errors are discovered. On-line error messages for errors recognized during compilation and execution are also provided. Special execution monitoring aids allow dynamic debugging of programs. Values of variables may be displayed or changed and the flow of execution may be traced.

Compatibility ... The PL/I and BASIC language facilities provided by the Interactive Terminal Facility under TSO are compatible with similar facilities provided by DOS-ITF and OS-ITF.

System Configuration ... Operation of ITF requires the same configuration as the Time Sharing Option of OS/360.

Terminal Support ... Terminals supported by ITF include all of the terminals supported by TSO.

Reference Material ... OS/360 Time Sharing Option Interactive Terminal Facility PL/I Language—General

Information, GC28-6827 ... OS/360 Time Sharing Option Interactive Terminal Facility BASIC Language—General Information, GC28-6828 ... OS/360 Time Sharing Option Interactive Terminal Facility Program Product Design Objectives, GC28-6822.

Prices ... ITF consists of a Shared Language Component (SLC) joined to either a PL/I Component, a BASIC Component, or to both. The monthly charge for single language capability (SLC plus PL/I or SLC plus BASIC) is $120.00. The second language component may be added for a monthly charge of $60.00.

This program product cannot be ordered now. Ordering instructions will follow.

Publication Support: The availability of the preceding publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will available at the IBM Distribution Center, Mechanicsburg, Pennsylvania.

IBM World Trade Data Processing

IBM CONFIDENTIAL UNTIL JUNE 1, 1970

PROGRAM PRODUCT ANNOUNCEMENT

ITF

The Interactive Terminal Facility ...
Time Sharing Power for System/360
Under OS or DOS

Program Products

Interactive Terminal Facility (ITF) is a new low-entry time sharing system ... providing efficient, fast problem-solving

Engineers, analysts, executives, non-professional and professional programmers work through terminals directly with the computer. They key in statements or problems and receive nearly instant replies or answers

The system is interactive The terminal user and the computer work together on programs with data, questions, answers and solutions

Choice of language ... Two languages are available at the terminals ITF-BASIC and ITF-PL/I, a subset of PL/I Both languages are easy to learn and easy to use, allowing problem solvers to become productive users of the system with a minimum of training.

The system that fits ... ITF is designed for up to 31 terminals in a dedicated or a multiprogramming environment

It can be added to System/360 Model 25 and larger (Model 44 excepted) operating under DOS/360 and to System/360 Model 30 and larger operating under OS/360 by providing appropriate communications facilities.

It will support 10 to 12 terminals in a 40K DOS partition, a 44K PCP partition, a 48K MFT partition or a 50K MVT Region

With additional core storage, ITF will handle up to 31 terminals at the same time.

Multiprogramming capability ... Batch jobs can be run concurrently with ITF under DOS/360 or OS/360. In the multiprogramming environment, ITF runs as a high-priority job ITF foreground and batch background jobs can interchange programs and data sets.

System Highlights ... All system and terminal functions are controlled by the user from his terminal. Some of the facilities are:

- Program Editing on a single-line or multiple-line basis
- Syntax analysis of source statements
- User interaction with executing programs
- Direct access file I/O statements
- On-line error messages
- Dynamic debugging of programs through special execution monitoring aids
- Desk calculator mode
- Private and common libraries for program and data storage

Availability ... Each program will be available in two stages:

DOS-ITF	
Release 1, supporting 2741	June 30, 1970
Release 2, supporting 2741 anc TELETYPE(c) 33/35**	December 31, 1970
OS-ITF	
Release 1, supporting 2741	July 31, 1970
Release 2, supporting 2741 and TELETYPE(c) 33/35**	January 31, 1971

System Engineering Services ... SE Services, identified with and related to the installation and use of the IBM Interactive Terminal Facility Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

Classification ... A Program Product with Programming Service Classification of A.

Details are on the inside pages.

John Fahey
WTC Director of DP Marketing

(c) Trademark of TELETYPE Corporation

** Terminals which are equivalent to those explicitly supported may also function satisfactorily. The customer is responsible for establishing equivalency. IBM assumes no responsibility for the impact that any changes to the IBM-supplied products or programs may have on such terminals.

FOR IBM INTERNAL USE ONLY

Release Date: June 1, 1970
Distribution: Selected European Countries Only

The Interactive Terminal Facility (ITF) provides problem solvers with PL/I and/or BASIC programming in a time-sharing environment. Users can build, modify, save, retrieve, execute, interact with, and debug PL/I and/or BASIC programs from remote terminals, many of which may be sharing the computer's CPU concurrently.

Design Points -- OS - ITF runs as a problem program under the most current Release of OS/360. No modification to OS/360 is required. It can run as a PCP job in a dedicated environment or as a high priority job in a partition of MFT or MVT. The minimum partition sizes are 44K bytes for PCP, 48K bytes for MFT, and 50K bytes for MVT.

DOS - ITF runs as a problem program under the most current Release of DOS/360. No modification to DOS/360 is required. It can run in a dedicated environment or as a foreground job in a partitioned DOS/360 system. The minimum partition size is 40K bytes.

Both BASIC and PL/I can be used in the minimum partition. 10 to 12 terminals can be supported in a minimum partition. Larger partitions will support more terminals up to a maximum of 31.

Languages -- The PL/I language supported is a subset especially suited to the problem solver.

Among the PL/I language features are:

- decimal floating-point arithmetic with 6 or 16 digits of precision

  label, bit-string, and character-string data

- list-directed and edit-directed stream transmission (terminal and file I/O supported)

- a variety of mathematical built-in functions (SORT, COS, ATAN, EXP, etc.)

- the INDEX and SUBSTR built-in functions for string handling applications

- user-defined functions and subroutines

- arrays of up to three dimensions for bit-string, character-string, and arithmetic data

Through the CONVERT command, PL/I programs can be converted to a form acceptable to the OS/360 PL/I (F) compiler or the DOS/360 PL/I (D) compiler. Execution results for such programs will be the same provided care is taken in the declaration of arithmetic variables and in the use of arithmetic constants.

An additional feature of the PL/I component is the PL/I desk calculator mode. In this mode, PL/I statements are executed immediately as they are entered.

The BASIC language supported is based upon the BASIC programming language developed at Dartmouth College. Its simplicity and ease-of-use are particularly suited to the problem solver.

Among the BASIC language features are:

- arithmetic data with single and double precision

- literal (character) data

- a wide variety of mathematical built-in functions (SORT, LOG, COT, etc.)

- program, terminal, and file input/output

- arrays of one or two dimensions (implicitly or explicityl defined)

- extensive matrix handling facilities (inversion, transpose, identity, multiplication, and more)

- single statement function definition

Libraries -- Each user has a private library in which his programs, text files, and data files are saved. A common library of programs, text and data files is also provided. It is maintained by installation-authorized personnel and its contents can be used by any user known to the system.

Data Files -- User programs may read and write data files on direct access storage. Files can be used interchangeably by PL/I and BASIC programs. In OS - ITF, data files are variable length members of a standard OS partitioned data set. In DOS - ITF, the CONVERT command can be used to convert ITF data files to DOS-compatible data sets and vice versa.

Programmer Aids -- Syntax checking of both PL/I and BASIC source statements is performed and messages are transmitted to the terminal user as syntax errors are discovered. On-line error messages for errors recognized during compilation and execution are also provided. Special execution monitoring aids allow dynamic debugging of programs. Values of variables may be displayed or changed and the flow of execution may be traced.

Promotional Material

G520-2241 ITF Brochure
G520-2242 ITF Flyer
GV20-0233 ITF Slides
GV20-6069 ITF Desk Top Flip Charts

The availability of the preceding publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies will be made available at the IBM Distribution Center, Mechanicsburg, Pennsylvania.

System Configuration ... The minimum machine sizes for OS-ITF are as follows:

PCP requires a minimum of 64K bytes, MFT requires a minimum of 128K bytes, and MVT requires a minimum of 256K bytes. In addition to the minimum hardware requirements for OS/360, the following complement of equipment is required:

Release 1

Quantity	Item	Description	Required Features
1	2311 or 2314	Disk Storage* Direct Access Storage Facility	
1	2702	Transmission Control Unit	with 8055 2741 Break Feature and features required to attach 2741 on switched or dedicated lines. (See page M 2700 in sales manual.)
1-31	2741	Terminals	with 4635 IBM Line Adapter (4-wire) 9571 Dual Case and PTTC/EBCD keyboard 4708 Interrupt Feature (4-wire)
For Dial Up Terminal: 2741 Model 1			with 3255 Dial Up 4708 Interrupt Feature 9114 Data Set attach WE 103A 9571 Dual Case PTTC/EBCD keyboard

Note: The Interval Timer Feature is required for the CPU.

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* 2311 disks require an IBM 2841 Storage Control Unit; if an installation already has a 2841, no additional requirement is imposed.

Release 2

In addition to the above configuration, the following devices will also be supported:

Quantity	Item	Description
1	2701	Data Adapter Unit (1)3815 Expanded Capability (3)3855 Expansion Feature
1-31	2741	Terminal with correspondence keyboard and standard IBM 72 print element
1-31		TELETYPE (c) Models 33/35**

Reference Publications ... Available from Mechanicsburg are:

OS/360 and DOS/360
Interactive Terminal Facility
PL/I Language
General Information
GC28-6825

OS/360 and DOS/360 Interactive Terminal Facility
BASIC Language
General Information
GC28-6826

OS/360 Interactive Terminal Facility
Program Product Design Objectives
GC28-6820

Terminal users' manuals will be available at release time.

Prices ... ITF consists of a Shared Language Component (SLC) joined to either a PL/I Component, a BASIC Component, or to both. The monthly charge for single language capability (SLC plus PL/I or SLC plus BASIC) is $120.00. The second language component may be added for a monthly charge of $60.00.

This program product cannot be ordered now. Ordering instructions will follow.

No RPQs will be accepted at this time.

** Terminals which are equivalent to those explicitly supported may also function satisfactorily. The customer is responsible for establishing equivalency. IBM assumes no responsibility for the impact that any changes to the IBM-supplied products or programs may have on such terminals.

Additional Information on DOS-ITF (5736-RC1)

System Configuration ... The minimum machine size for ITF under DOS/360 is 48K bytes. In addition to the minimum hardware requirements for DOS/360, the following complement of equipment is required:

Release 1

Quantity	Item	Description	Required Features
1	2311	Disk Storage*	— —
1	2702	Transmission Control Unit	with 8055 2741 Break Feature and features required to attach 2741 on switched or dedicated lines. (See page M 2700 in sales manual.)
1-31	2741	Terminals	with 4635 IBM Line Adapter (4-wire) 9571 Dual Case and PTTC/EBCD keyboard 4708 Interrupt Feature (4-wire)
For Dial Up Terminal:	2741	Model 1	with 3255 Dial Up 4708 Interrupt Feature 9114 Data Set attach WE 103A 9571 Dual Case PTTC/EBCD keyboard

Note: The Interval Time Feature is required for the CPU.

Release 2

In addition to the above configuration, the following devices will also be supported:

Quantity	Item	Description	Required Features
1	2314	Direct Access Storage Facility	
1	2701	Data Adapter Unit	(1) 3815 Expanded Capability (2) 3855 Expansion Feature
1-31	2741	Terminal with correspondence keyboard and standard IBM 72 print element	
1-31	TELETYPE (c) Models 33/35**		

Reference Publications ... Available from Mechanicsburg are:

OS/360 and DOS/360 Interactive Terminal Facility
PL/I Language
General Information
GC28-6825

OS/360 and DOS/360 Interactive Terminal Facility
BASIC Language
General Information
GC28-6826

DOS/360 Interactive Terminal Facility
Program Product Design Objectives
GC28-6821

Terminal users' manuals will be available at release time.

Prices ... ITF consists of a Shared Language Component (SLC) joined to either a PL/I Component, a BASIC Component, or to both. The monthly charge for single language capability (SLC plus PL/I or SLC plus BASIC) is $120.00. The second language component may be added for a monthly charge of $60.00.

This program product cannot be ordered now. Ordering instructions will follow.

No RPQs will be accepted at this time.

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* 2311 disks require an IBM 2841 Storage Control Unit; if an installation already has a 2841, no additional requirement is imposed.

** Terminals which are equivalent to those explicitly supported may also function satisfactorily. The customer is responsible for establishing equivalency. IBM assumes no responsibility for the impact that any changes to the IBM-supplied products or programs may have on such terminals.

IBM World Trade Data Processing **PROGRAMMING ANNOUNCEMENT**

TSO

OS/360 Time Sharing Option
Type I

TIME SHARING CAPABILITY ADDED TO OS/360 MVT

The OS/360 Time Sharing Option (TSO) extends to the terminal user the full power of OS/360. Under TSO up to 14 Time Shared regions may be defined, each of which may be time shared by many terminal users. Time shared jobs may execute any compiler or assembler supported by OS/360 and most existing programs. Through a device independent BSAM/QSAM interface to terminals, interactive programs may be written in any OS/360 language. This allows a program which can read a card reader and write to a printer to read and write the terminal.

In addition to providing an environment for user interactive programs, TSO also provides a comprehensive, easy-to-use set of conversational programs (commands) which give the TSO terminal user a wide variety of functions.

TSO is intended to support the terminal-oriented requirements of a wide range of users including both the experienced professional programmer and the individual with no computer experience.

Availability: 1Q71 as Type I with Programming Service Classification of A.

Highlights

- Concurrent time sharing and background operation under OS/360 MVT in 512K bytes of core.
- Language, data, and Data Management compatibility between background programs and time shared programs.
- A device independent BSAM/QSAM interface to terminals.
- Use of TCAM allows the same terminals to be used for TSO and TCAM message processing programs.
- A TCAM message control program is provided for 1050, 2741, and TELETYPE(c) terminal 33/35 as Time Sharing Terminals***.
- Command language facilities provide for:
  - Creating and editing data sets
  - FORTRAN and PL/I syntax checkers
  - Dynamically allocating and freeing data sets
  - Full CRJE-like functions (submit job to background and receive job output at terminal)
  - Dynamic program debugging
- Ten TSO Program Products are announced which provide significant new functions for the TSO user.

See the inside pages for other features and a brief description of the Command Language, Language Processors, Terminal and Control Units Supported, Minimum System Configuration, and Performance.

John Fahey
WTC Director of DP Marketing

(c) Trademark of TELETYPE Corporation

*** Terminals which are equivalent to those explicitly supported may also function satisfactorily. The customer is responsible for establishing equivalency. IBM assumes no responsibility for the impact that any changes to the IBM supplied products or programs may have on such terminals.

FOR IBM INTERNAL USE ONLY

Release Date: June 1, 1970
Distribution: Selected European Countries Only

P70-48C

Features ...

- General purpose time sharing capability operating concurrently with normal OS/360 background operation within one operating system.
- Up to 14 regions can be devoted to time sharing.
- Sharing of the main storage allocated to time sharing by more than one remote terminal user by swapping remote terminal user's programs in and out of a time shared region.
- Installation control of the time sharing algorithms which determine the priority and amount of processing time allocated to each job.
- Dynamic control of the allocation of system time between time sharing and background operation.
- Statistics gathering routines which provide data to assist the installation in tuning the system.
- SMF support by individual terminal user as an installation option.
- Control of the system resources by installation management.
- Conversational terminal command language which is powerful, easy to use, and permits the user to add additional commands. The TSO command language is like the CRJE (P69-31) command language, allowing the easing of conversion to the more powerful TSO command language.
- Environment for creating and executing conversational programs. A device independent BSAM/QSAM interface to terminals is provided for ease of development and installation of terminal-oriented application programs.
- Language, data and Data Management compatibility between conventional (batch) programs and programs developed at the terminal. Batch or terminal developed programs can be stored, retrieved and executed locally (at the computer center) or from the remote terminal allowing the sharing of data sets between time shared and background regions.
- A TCAM message control program is provided to support 1050, 2741, and TELETYPE(c) terminal Model 33/35 as Time Sharing Terminals. ***
- Use of TCAM (P69-91) to handle terminals allows the same terminal and/or communications lines to be used for both TSO and other TCAM applications.
- TCAM message processing programs can be swapped in and out of a time shared region. This provides more efficient utilization of main storage, especially during period of low utilization of terminal application programs.
- Terminal user may use any currently supported IBM OS/360 language processor (or equivalent) that is available at the installation.
- Command language facilities provide for creating, editing, copying*, merging*, formatting*, listing*, deleting, or renaming data sets.
- Direct access data sets can be dynamically allocated in a time shared environment as they are needed.
- Debugging command allows systems programmers and assembly language programmers to control the execution of a program, interrupting it at dynamically specified points.
- Languages supporting problem solving:
  - Interactive Terminal Facility: PL/I, BASIC**
  - Code and Go FORTRAN **
- For programmers, TSO provides:
  - Batch - compatible compilers with full functions.
  - Conversational invocation of compilers requiring minimal user knowledge, aided by prompting for necessary parameters: TSO ASSEMBLER Prompter** for ASSEMBLER (F), TSO FORTRAN Prompter** for FORTRAN IV (G1),** TSO COBOL Prompter** for Full ANS COBOL VERSION 3.** Code and Go FORTRAN, ** Linkage Editor, and Loader.
  - Syntax Checking - (PL/I and FORTRAN, all language levels)
  - Dynamic on-line program debugging facilities for systems programmers and assembly language programmers.
  - Conversational program execution capability.
  - CRJE-like functions, conversational initiation of batch execution.

Command Language ... A powerful, easy-to-use command language is provided which allows the remote terminal user to define his work in an uncomplicated manner. Commands generally use English language words to describe the functions to be accomplished. The remote terminal user has conversational control of his program; he can interrupt its processing and thereby stop the output from reaching his terminal. The system indicates at his terminal a change in the status of his program, the occurrence of an error and prompts the user for missing or erroneously entered information. Normal operation provides an unlocked keyboard allowing each user to proceed at his own rate. An editing command provides an option of presupplied line numbers which can be utilized both for positive notifications of the system being ready to accept input and as line identification. If the user does not understand a system message he received, he can generally request more information about the situation by simply typing a (?) question mark. The user, using the HELP command, can receive an explanation if he does not know how to use a command. The system will then display information on command functions and syntax at the user's terminal. The user can be "prompted" in a conversational manner if he fails to provide parameters the system needs for the language processors and command language. Prompting, however, can be eliminated for the experienced user.

The command language provides powerful facilities for creating and editing data sets. The terminal user can dynamically allocate data sets as he needs them and release these data sets when they are no longer required.

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* Function of TSO Data Utilities: Copy, Format, List, Merge (Program Product)

** Program Product

*** Terminals which are equivalent to those explicitly supported may also function satisfactorily. The customer is responsible for establishing equivalency. IBM assumes no responsibility for the impact that any changes to the IBM supplied programs or products may have on such terminals.

TSO Data Utilities: Copy, Format, List, Merge provides the facilities for interactive date and text handling including formatting, copying, listing and merging data sets.**

A set of commands is provided to submit jobs for processing in the background region. The output may be directed to the terminal, SYSOUT, or a specified data set.

Commands are provided for system programmers and assembly language programmers to debug programs during execution, allowing a user to start and stop programs, to inspect and change the program, to track program flow, and to display the values of variables during program execution.

Language Processors ... Any compiler or assembler supported by IBM OS/360 can be invoked from a TSO terminal. Compilers can be executed in the foreground, or, via the SUBMIT command, in the background in the batch environment. Special foreground terminal support is provided in ASSEMBLER (F), Full ANS* COBOL Version 3, FORTRAN IV (G1)** language processors and FORTRAN IV Library Model 1**. The FORTRAN IV Library Model 1 can be used with Code and Go FORTRAN in addition to FORTRAN IV (G1). Unique support allows automatic allocation of data sets required by the language processors and specially-formatted output, such as progress messages and error diagnostics. Syntax checking of source programs line by line as entered is provided for PL/I (F), FORTRAN, levels (E), (G), (G1)**, (H) Code and Go FORTRAN** and TSO ITF: PL/I, BASIC**.

To meet the needs of users who may not be professional programmers, three problem-solving languages are available with TSO, ITF PL/I**, ITF BASIC**, and Code and Go FORTRAN**. ITF BASIC is a simple, algebra-like language that can be quickly learned, yet it has the power to perform complex mathematical calculations. ITF PL/I is a subset of the full PL/I language. It is a more powerful language than BASIC for subroutine handling and is compatible with the full PL/I language, making it a good teaching tool. ITF PL/I can be used in two ways: statements can be executed as they are entered (desk calculator mode); or they can be collected into procedures for compilation and execution as programs or subroutines. Code and Go FORTRAN, a modified FORTRAN (G) compiler, provides the full FORTRAN IV language for terminal users. It has a very fast compile-and-execute sequence, carried out entirely in main storage. Code and Go FORTRAN accepts free form source statements and has simplified I/O statements for terminal I/O.

Terminals Supported ... TSO provides a TCAM Message Control Program which provides support for the following terminals and special features. The special terminal features are highly desirable in the TSO environment but are not required.

1050 Data Communication System*** on either switched or point-to-point lines with:
- 1051 Control Unit (Model 1 or 2)
- 1052 Printer-Keyboard
- Standard PTTC/EBCD element
- Text time-out suppression 9698
- Automatic EOB 1313 (or RPQ E28235)
- Transmit Interrupt 7900
- Receive Interrupt 6100

2741 Communications Terminal*** on either switched or point-to-point lines with:
- Standard PTTC/EBCD or standard Correspondence print elements
- Transmit Interrupt 7900
- Receive Interrupt 4708
- Print Inhibit - CPU control 5501 (269-106)

TELETYPE(c) terminal Model 33/35*** on switched lines with:
- 'XON' and 'XOFF' feature

Transmission Control Units ... TSO supports the following transmission control units:

1. IBM 2701 Data Adapter Unit with an IBM Terminal Adapter Type 1 and/or IBM Telegraph Adapter and/or Telegraph Adapter Type 2. The 2741 and 1050 Transmit Interrupt (7900) and Receive Interrupt (4708,6100) cannot be used when these terminals are attached to the 2701.
2. IBM 2702 Transmission Control Unit with an IBM Terminal Control Type 1 and/or Teletype Terminal Control Type 2. The following feature is necessary to support the 2741 and 1050 Transmit Interrupt (7900) and/or Receive Interrupt (4708, 6100):

   8200 Type 1 Terminal Interrupt (269-106)

3. IBM 2703 Transmission Control with an IBM Terminal Control Type 1 and/or Teletype Terminal Control Type 2. The following feature is necessary to support the 2741 and 1050 Transmit Interrupt (7900) and/or Receive Interrupt (4708, 6100):

   8200 Type 1 Terminal Interrupt (269-106)

Minimum System Configuration ... The minimum TSO configuration consists of System/360 Models 50 and up (67 in 65 mode) with at least 512K bytes of main storage for operation with MVT for concurrent Batch and TSO Operation. (A System/360 Model 50 with 384K bytes of main storage can be configured, providing a limited set of TSO functions; either time sharing or local batch job processing can be run, but not both at the same time.) Model 65 Multiprocessor is not supported in the initial release. Direct Access Storage Devices (2301, 2303, 2311, and 2314) are required for swap data sets. The record overflow feature is required. Additional DASD space is required for library storage; the exact requirements must be established by the installation.

To SYSGEN the TSO option, a minimum of 128K bytes of main storage is required, and either three 2311 disk storage drives and any other DASD or two 2314 disk storage modules are required by TSO.

(c) Trademark of TELETYPE Corporation

* Formerly known as USA Standard (USAS) COBOL.

** Program Product

*** Terminals which are equivalent to those explicitly supported may also function satisfactorily. The customer is responsible for establishing equivalency. IBM assumes no responsibility for the impact that any changes to the IBM supplied programs or products may have on such terminals.

MP/65 Statemont of Intent

It is the intent of the IBM Company to provide TSO support for MP65 in a later release. This information represents the technical intent of IBM with respect to this programming support. It is possible that the objectives of this intent will not be met. This intent is subject to revision or withdrawal, and no commitment or warranty is expressed or implied. (See the closing of this letter for Statement of Intent Guidelines.)

Performance ... OS/360 TSO provides general purpose time sharing capability with a high level of responsiveness to remote terminal users while providing capacity to process normal background operations. The high level of responsiveness will be provided for needs of the various users of TSO, professional programmer, non-professional programmer, and non-programmer. The performance of a multi-programming time sharing environment results in the dynamic interaction of the equipment configuration, programming systems functions, nature of the user's problems, and the manner in which they are handled. OS/360 TSO provides data collection capabilities to aid in understanding the dynamic interaction of the system so that it might be "tuned" to optimize the systems performance for the individual installation.

Publications ... IBM System/360 Operating System: Planning for the Time Sharing Option (TSO), GC28-6698, is available from Mechanicsburg.

IBM System/360 Operating System: Planning for System Management Facilities, GC28-6712 (TNL).

IBM System/360 Operating System: Planning for TCAM, TNL availability will be announced in a future PRL.

The following promotional material is available:

TSO Brochure	G520-2256
TSO Flyer	G520-2275
TSO Slides	GV20-0234
TSO Desk Flip Charts	GV20-6070

Publication Support: The availability of the preceding publications will be announced in a future Publications Release Letter. Initial DAPS quantities will be shipped at that time and additional copies made available at the IBM Distribution Center, Mechanicsburg, Pennsylvania.

Statement of Intent Guidelines

You must insure that:

1. In any discussions with customers or prospects of intent information, the IBM representative makes clear to the customer that intent information represents only technical objectives and does not constitute any announcement of a programming system.

2. All proposals or installation planning discussions with customers or prospects on intent information must be documented to the customer. The following disclaimer must appear in this or any other documentation of intent information:

   "This information represents the technical intent of IBM with respect to this program. It is possible that the objectives will not be met. The program is subject to revision or withdrawal, and no commitment or warranty is expressed or implied."

   The proposal section containing the Statement of Intent must be entitled "Statement of Intent".

   The description of the Statement of Intent which precedes the disclaimer must contain no omissions or rephrasing of the information contained in the WTHQ Statement of Intent release that could result in misrepresentation to the customer.

   The following sentence should be included after the disclaimer: "It should be clear that this Statement of Intent is not a Program Announcement and that a Program Announcement may or may not be forthcoming."

3. Orders secured from proposals in which intent information appears must contain installation plans not dependent upon the technical objectives or target schedules embodied in a Statement of Intent.

Note to World Trade Readers

This letter is a reprint of an IBM Programming Announcement and was mailed concurrently to USA and WT offices. The following changes, when appropriate, should be applied to the text for WT use.

[1] All programs announced as available have been shipped to the appropriate WT Program Libraries. Programs and associated material may be ordered as indicated on pages 9013 through 9017 Programming Section, WT DP Sales Manual.

[2] Advance copies of the form numbered publications mentioned in the above either have been shipped (with additional copies available from the IBM Distribution Center, Mechanicsburg, Pennsylvania) or will be shipped when available. In the case of the latter, availability will be announced in the Weekly DP Marketing Publications Release Letter.

[3] When a new version of a program is announced, current users must order it; they will not receive it automatically nor will they necessarily receive a prepunched request card in their Area.

[4] Programming distribution media may be different in this area based on local conditions although DTR, disk packs, etc., may be indicated.

[5] All references made to the Program Information Department (PID) should be understood to mean the appropriate WT Program Library.

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[8] References made to Engineering Change requirements should be verified with the local CE office. Although E/C requirements are identical for WT and IBM, availability and shipping dates will differ. NO PRODUCTION COMMITMENTS FOR PROGRAMS WITH E/C LEVEL REQUIREMENTS SHOULD BE MADE TO CUSTOMERS PRIOR TO VERIFICATION WITH LOCAL CE MANAGER OF EC AVAILABILITY

[9] World Trade now identifies certain current programs with a programming Service Classification of A, B, or C. Programming services to WT customers remain unchanged for programs classified A or B and for programs available only in World Trade. After January 1, 1970, Programming services for programs classified C will not include centralized Authorized Program Analysis Report (APAR) programming service or automatic distribution of corrections.

[10] Availability of machines or features not described in the World Trade Sales Manual should be verified with local Special Equipment Engineering.

IBM World Trade Data Processing

PROGRAM PRODUCT ANNOUNCEMENT

INFORMATION MANAGEMENT SYSTEM/360 (IMS/360) PROGRAM PRODUCT (5736-CX3) IS NOW AVAILABLE

IMS/360 enhances the capability of the Operating System/360 and facilitates implementation of medium to large common data bases in a multi-application environment. This environment accommodates both teleprocessing and conventional batch processing concurrently or separately. The system allows the evolutionary expansion of data processing applications from an IMS/360 batch to an IMS/360 teleprocessing environment.

IMS/360 includes basic support for the remote 2260 Display Station Model 1 and the 2848 Display Control Unit Model 3. Support will be limited to single screen transmission with message length being 960 characters maximum.

Information regarding 2260 support has been incorporated into the Application Description Manual (H20-0524) by a Technical Newsletter (N20-2012).

The combined teleprocessing data base facilities of the Information Management System/360 operate under Operating System/360 MFT (Multiprogramming with a Fixed Number of Tasks) or MVT (Multiprogramming with a Varied Number of Tasks).

The batch-only data base facilities of IMS/360 can operate under Operating System/360 PCP (Primary Control Program), MFT, or MVT.

The data base processing facilities are provided by a data management concept known as Data Language/I. These facilities assist the data base definition, creation, access, and maintenance functions.

Highlights ...

- The user can enter messages from remote input/output devices allowing both data base inquiry and update.
- The user can transmit messages to remote input/output terminals in response to application program message processing.
- A terminal command language provides for system control from a master terminal and for input message editing through all terminals of the system.
- Programs for message processing can be scheduled concurrently where each program is operative under a unique storage protection key of OS/360.
- Centralized definition and control of data base facilities are provided through Data Language/I to help the user maintain data base integrity in the teleprocessing multiprogramming environment.
- The system provides checkpoint/restart capabilities.
- The monthly charge is $600.00. The programming service classification is B.

On the reverse side is the Program Product Specifications sheet which may be reproduced and given to customers.

No RPQs will be accepted at this time.

Detailed information is in the sales manual write-up on pages 3 and 4 of this announcement.

Systems Engineering Services ... SE Services, identified with and related to the installation and use of the IBM Information Management System/360 (IMS/360) (5736-CX3) Program Product, are available for a charge at the applicable skill classification rate as determined by the host System or its System Operating Environment (see Sales Manual SE Section 2 for details).

John Fahey
WTC Director of DP Marketing

Release Date: June 1, 1970
Distribution: Selected European Countries Only

P70-48D

PROGRAM PRODUCT SPECIFICATION

Information Management System/360 (IMS/360) 5736-CX3

The IBM System/360 Information Management System (IMS/360) enhances the capability of the Operating System/360 and facilitates the implementation of medium to large common data bases in a multi-application environment. This environment accommodates both teleprocessing and conventional batch processing operations concurrently or separately. IMS/360 has four major objectives:

1. To provide data organization methods that are conducive to the creation and maintenance of large common data bases and the multi-application use of these data bases.
2. To provide the means to permit the user to facilitate development and maintenance of a data base system in the batch processing environment.
3. To provide the user with the ability to extend his data base processing to the teleprocessing or data communication environment.
4. To provide the user with an efficient telecommunication ability for developing a high volume/rapid response on-line system.

IMS/360 is made up of two major components: (1) the data base facility and (2) the data communication facility.

Data Base Facility -- The data base processing capabilities of IMS/360 are provided through a facility called Data Language/I. The functions of data base definition, creation, access, and maintenance are assisted by these capabilities. The full data base facilities of Data Language/I can be used in the IMS/360 batch processing or teleprocessing environment.

Data Communication Facility -- Data communication capabilities are characterized by the use of remotely located input/output terminals, connected to the computer, which provide the user with access to the data base. The communication network, consisting of IBM 2260 Display Stations and 1050 and 2740 communications terminals, enables the system to receive and transmit a variety of message types for multiple applications. Terminals need not be dedicated to specific applications. 2260 support is limited to single screen transmission only (maximum single message length of 960 characters) between the terminal and the message processing programs or other terminals. In addition, a 2260 cannot be designated as a master terminal.

Control information describing each message type allows the system to initiate message processing or message switching. Message entry may result in both data base inquiry and update processing. A user-provided library of application programs for message and batch processing and a description of their data base requirements must be provided. These application programs may be written in any of the following OS/360 programming languages: Assembler Language, COBOL, or PL/I.

Programming Systems: IMS/360 operates under Operating System/360 and is written in Assembler Language; teleprocessing and batch processing application programs may be written in either Assembler Language, COBOL, or PL/I. For proper execution of IMS/360, system definition and system execution must be performed under the same OS/360 release.

The batch-only system operates under PCP, MFT, or MVT and uses Sequential Access Methods and Indexed Sequential Access Methods.

The teleprocessing and related batch system operate under MFT or MVT and, in addition to the items above, use:

BTAM (with Communications Serviceability Facilities), SER 1 or Recovery Management Support, Sort/Merge service program (used by the IMS/360 System Log Utility Program), User-added SVC routines (three SVC numbers must be reserved for IMS/360).

If using MFT, Storage Protection and Interval Timing are required, PCI Fetch, Resident Access Methods, and Resident IDENTIFY and ATTACH macro instructions are highly recommended.

Minimum Machine Configurations: Input/output facilities used by batch-only IMS/360 (in addition to those required by OS/360, other non-IMS/360 application programs, and the data base itself), include one 7-track (Data Conversion Feature required) or one 9-track magnetic tape unit (required for system distribution and maintenance) ... 300 cylinders of 2311 Disk Storage for program storage and work space (or equivalent 2314 space). Additional input/output used by the teleprocessing IMS/360 program include at least one 1050 Data Communication System or 2740 Communication Terminal with appropriate control units ... a total of two 9-track magnetic tape units. The 2260 Display Station can be added, but cannot be used as an IMS/360 Master Terminal.

Minimum system requirements are 128K bytes for batch-only PCP operation, and 256K bytes for teleprocessing with MFT. In the latter case, the system for all practical purposes, would be dedicated to on-line IMS/360 applications.

THIS PAGE MAY BE REPRODUCED AND GIVEN TO CUSTOMERS

Information Management System (IMS/360) (5736-CX3): IMS/360 enhances the capability of the Operating System/360 and facilitates the implementation of medium to large common data bases in a multi-application environment. This environment accommodates both teleprocessing and conventional batch processing operations concurrently or separately. The system allows the evolutionary expansion of data processing applications from an IMS/360 batch to an IMS/360 teleprocessing environment.

The combined teleprocessing and data base facilities of IMS/360 operate under OS/360 MFT (Multiprogramming with Fixed Number of Tasks), or MVT (Multiprogramming with Variable Number of Tasks). If only the data-base batch facility is required the system will operate under OS/360 PCP (Primary Control Program) as well as MFT and MVT.

Description: IMS/360 operates within the definition and capabilities of OS/360 teleprocessing capabilities and is characterized by the use of remotely located input/output terminals, connected to the computer, which provide the user with ready access to the computer-maintained data base. The communications network consisting of 2260 Display Stations and 1050 and 2740 communications terminals enables the system to receive and transmit a variety of message types for multiple applications. Terminals need not be dedicated to specific applications. The 2260 support is limited to single screen transmission only (maximum single message length of 960 characters) between the terminal and message processing programs or other terminals. In addition, a 2260 cannot be designated as a master terminal.

Control information describing each message type allows the system to initiate message processing or message switching. Teleprocessing includes both data base inquiry and update processing. A user-provided library of application programs for message and batch processing and a description of their data base requirements must be provided for IMS/360 to enable the scheduling of message processing. These application programs may be written in the following OS/360 programming languages: Assembler, COBOL, or PL/I.

The execution of message-processing programs is scheduled by IMS/360 based upon message priority.

Another characteristic of the system is the use of direct access storage devices which allow the processing of single records located at random in the data base, as well as the processing of records referenced in a sequential manner.

The data base processing capabilities of IMS/360 are provided through Data Language/I. The functions of data base definition, creation, access and maintenance are assisted by these capabilities. Data base definition provides for the description of a hierarchical data segment structure. Although data base maintenance is always initiated by message and batch processing programs, the description of a program's data base requirements, data base definition, and mechanics for data base maintenance are provided externally. The full data base capabilities of Data Language/I can be used independently of the other IMS/360 functions for data base batch processing.

IMS/360 provides the user with checkpoint/restart capabilities. The normal mode of initiating the system is through these restart capabilities. Manual intervention is always required to initiate restart.

Features: IMS/360 is a general-purpose system ... the user tailors the system to his environment ... data base support supplied through Data Language/I ... application program independence from OS/360 data management access methods and organization ... variable-length record support ... application programs may be written in COBOL, PL/I, or Assembler Language ... application-independent support of 1050, 2740 and 2260 terminals ... dialin and multidrop communication line support for 2740/1050 ... single screen per message 2260 support ... teleprocessing or batch operations separately or concurrently ... security techniques available to user ... checkpoint/restart capability ... storage protection provided for each application processing program.

Use: The user of IMS/360 has the capability of structuring data bases, defining various applications, and tailoring the input/output terminal and data storage environment. He uses utility programs supplied to construct control blocks which tailor the system to his environment.

Special Sales Information: The program is designed for users with workloads of varying sizes and complexities. Primary users will be large data base oriented organizations.

The marketing representative should be cautioned that the development of a customer data base and placing it on-line can be a large and complex undertaking. Complete understanding of the applications and programming systems is essential. The development, by the marketing representative with the customer, of a thorough and effective implementation plan is the key to the successful installation of IMS/360. The normal implementation is a phased approach. The initial phase permits batch processing against the data base. Once data base experience is gained and the application needs dictated the teleprocessing phase can be initiated.

A reasonably simple application should be implemented initially, preferably in a test environment. The power of IMS/360 can be appreciated and effectively employed only as experience is gained in the use of its basic capabilities. Particular emphasis must be placed on system design to allow movement from batch processing to on-line processing with a minimum of difficulty. In addition, application program design, data base organization and retrieval techniques require careful thought. Poor application design can result in excessive use of core storage and degraded performance.

Branch Office Responsibilities: In planning for the successful implementation of IMS/360, a prerequisite is that the branch office understand the complexity of the system design activity required.

IMS/360, when used as a tool to implement an information system, requires all of the care and planning necessary for the successful implementation of any information system. The marketing representative should inform the user of the importance of appropriate education and training at all technical and management levels that would be affected by the implementation of such a system.

The marketing representative should be certain that the hardware configuration selected for the IMS/360 environment will meet the requirements of the customer applications. The branch is to obtain the approval of its district for all items on the District/Area Approval List, under the Branch Marketing Assessment Program.

Customer Responsibilities: A customer installing IMS/360 must meet Minimum Machine Configurations (paragraph below) ... see to it that appropriate OS/360 and System/360 training (including terminal and direct access storage education) be given to the system analysts, application programmers, system programmers and system operators ... have OS/360 installed successfully (no customer should attempt to implement IMS/360 until the installation has achieved proficiency in the use of OS/360) ... provide adequate protection against the accidental loss or misuse of his data (functions exist within IMS/360 to assist in providing data security) ... plan for installation and operation of his remote terminals ... make sure personnel are trained in COBOL, PL/I, or Assembler Language ... define parameters for each data processing application defined: the definition of each Data Language/I data base; the definition and construction of all messages and batch processing programs; the definition of various message types and their associated processing programs; the definition of the communication network utilized by the application program; the user must also structure IMS/360 by the creation of a control block for each communication line, terminal, message type, message processing program, and data base.

Programming Systems: IMS/360 operates under Operating System/360 and is written in Assembler Language; teleprocessing and batch processing programs may be written in either Assembler Language, COBOL, or PL/I. For proper execution of IMS/360, system definition and system execution must be performed under the same OS/360 release.

The batch-only system operates under PCP, MFT, or MVT and uses Sequential Access Methods and Indexed Sequential Access Methods.

The teleprocessing and related batch system operate under MFT or MVT and, in addition to the items above, use:

BTAM (with Communication Serviceability Facilities), SER1 or Recovery Management Support, Sort/Merge service program (used by the IMS/360 System Log Utility Program), User-added SVC routines. (Three SVC numbers must be reserved for IMS/360.)

If using MFT, Storage Protection and Interval Timing are required, PCI Fetch, Resident Access Methods, and Resident IDENTIFY and ATTACH macro instructions are highly recommended.

Minimum Machine Configurations: Input/output facilities used by batch-only IMS/360 (in addition to those required by OS/360, other non IMS/360 application programs, and the data base itself), include one 7-track (Data Conversion Feature required) or one 9-track magnetic tape unit (required for system distribution and maintenance) ... 300 cylinders of 2311 Disk Storage for program storage and work space (or equivalent 2314 space). Additional input/output used by the teleprocessing IMS/360 program include at least one 1050 Data Communication System or 2740 Communication Terminal with appropriate control units ... a total of two 9-track magnetic tape units. The 2260 Display Station can be added, but cannot be used as an IMS/360 Master Terminal.

The supported terminals and required features are:

2740 Model 1 - Nonswitched Network: Record Checking (#6114); Station Control (#7479); Terminal to Multiplexer (#9700); Dual Case Printing Element (#9571 or #9591); Automatic EOB (#1313) - [See note below].

2740 Model 1 - Switched Network; Record Checking (#6114); Transmit Control (#8028); Terminal to Multiplexer (#9700); Dual Case Printing Element (#9571 or #9591); Automatic EOB (#1313) - [See note below].

1050 System - Nonswitched and Switched Network: 1051 Model 1 or 2 with First Printer Attachment (#4408); Keyboard Request (#4770); Automatic EOB (#1313); 1052 Model 1 or 2 with Dual Case Printing Element (#9571 or #9591); Automatic EOB (#1313) - [See note below].

2260 Model 1 - Nonswitched Network: 2848 Display Control Model 3 with Display Adapter (#3357); Line Addressing (#4787); Non-destructive Cursor (#5340); Data Set Adapter (#9013); 2260 Display Station Model 1 with Alphameric Keyboard (#4766) - [See note below].

2701 Data Adapter Unit* with IBM Terminal Adapter Type 1 (#4645) for 1050, 2740; IBM Terminal Adapter Type III (#4657) for 2260 - [See note below].

2702 Transmission Control* with IBM Terminal Control Type 1 (#4615) with appropriate selective speed feature; Terminal Control Base (#9696) [See note below].

2703 Transmission Control* with Start-Stop Base Type 1 (#7505); IBM Terminal Control Base (#4619); IBM Terminal Control Type 1 (#4696); Line Speed Option

134.5 bytes (#4878) - [See note below].

2040 Processing Unit with Selector Channel-First (#6980); Storage Protection (#7520); Decimal Arithmetic (#3237).

*The user may choose the 2701, the 2702, or the 2703 to meet his minimum configuration requirement.

Note: Line adapter and/or data sets must be added as required to satisfy the user's communications control unit and communications line facilities.

Core storage requirements are described in the Application Description Manual (H20-0524). Minimum system requirements are 128K bytes for batch-only PCP operation, and 256K bytes for teleprocessing with MFT. In the latter case, the system for all practical purposes would be dedicated to on-line IMS/360.

Typical IMS/360 Configuration: A System/360 Processing Unit Model I (512K) with Multiplexer Channel ... three Selector Channels ... two tape controls ... ten 9-track Magnetic Tape Units ... two 2314 Direct Access Storage Facilities ... 1052 Expansion (#7955) and the features listed under Minimum Machine Configurations ... ten 1050 Data Communications Systems with the features listed under Minimum Machine Configuration ... fifty-two 2740 Communication Terminals with the features listed under Minimum Machine Configuration ... 2821 Control Unit Model 5 ... 2540 Card Read Punch ... two 1403 Printers Model N1.

Note: The maximum number of input/output devices, including communication lines, which may be attached to the system is in accord with capabilities of OS/360.

Basic Program Product Offering:

Unlicensed Documentation: One copy each of Program Description Manual (H20-0634), Operations Manual (Volume I Systems Operation H20-0635 and Volume II, Machine Operations H20-0636).

Licensed Machine Readable Material: One copy of Machine Readable Materials containing the Macro-Instruction Library and Load Module Library required to install IMS/360.

	Specify Number	Track/Density	Description	Quantity
Customer Supplied	9026	7DC/800	2400' MT	1 reel
	9028	9/800	2400' MT	1 reel
	9029	9/1600	2400' MT	1 reel
Order from IBM	9126	7DC/800	2400' MT	1 reel
	9128	9/800	2400' MT	1 reel
	9129	9/1600	2400' MT	1 reel

Prices:

Type	Program Number	DPMO	Programming Service Classification	Monthly Charge
5736	CX3	CX3	B	$600.00

Special Features:

Modification Support Package

Licensed Documentation: One copy of each volume of the System Manual - Volume I - PLM - Feature #8801; Volume II, Flowcharts, Feature #8802; Volume III, Microfiche for Program Listings - Feature #8803.

Licensed Machine Readable Material: One copy of Machine Readable Materials containing the IMS/360 Source Module Library.

	Feature Number	Track/Density	Description	Quantity
Customer Supplied	7008	7DC/800	2400' MT	1 reel
	7009	9/800	2400' MT	1 reel
	7010	9/1600	2400' MT	1 reel
Order from IBM	7013	7DC/800	2400' MT	1 reel
	7014	9/800	2400' MT	1 reel
	7015	9/1600	2400' MT	1 reel

There will be no additional charge for the Modification Support Package.

Additional Documentation:

Single Charge for Licensed Documentation: (available to licencees from PID, order by feature code)

Feature Numbers	Single Charge/Copy
8801 (Y20-0431*)	$26.50
8802 (Y20-0432*)	11.00
8803 (YB0-0433*)	3.00

*Order by form number from Mechanicsburg for IBM Internal Use Only.

Selling Price for Unlicensed Documentation: (order from Mechanicsburg, bill customer)

	Selling Price/Copy
Program Description Manual (H20-0634)	$6.50
Systems Operation (H20-0635)	8.50
Machine Operations (H20-0636)	4.00

Related Program Product Documentation: (available only from Mechanicsburg ... no charge).

Application Description Manual (H20-0524) with TNL (N20-2012)
IBM S/360 System Summary (A22-6810)
IBM OS/360 Concepts and Facilities (C28-6535)

For further information contact Industry Marketing, Manufacturing

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