# IBM PRODUCT ANNOUNCEMENT

Data Processing Division

## SYSTEM/3, FEATURING NEW SIZE PUNCHED CARD AND LOW PRICE DISK CAPABILITY, INTRODUCED FOR SMALL BUSINESS USE

· IBM today launches a new level of data processing capability for smaller businesses with the announcement of System/3, its new 96-column card size and RPG II. System/3 is small in size, low in price, big in performance. It is a system for now and for the future.

*Highlights*

. Newly developed 96-column card is one-third the size of the familiar 80-column card but holds 20 percent more information

. A new low entry card system for full function computing

. Low price disk capability is offered to provide increased versatility

. Both card and disk oriented configurations are supported by RPG II, incorporating extensions that make it powerful and easy to use

. An economic growth pattern is achieved by a wide range of speed and capacity options.

**96-Column Card** ... This dramatic development in document design has resulted in reduced machine size, lower costs, improved performance and reliability, improved human factors, reduced card storage requirements, lower card prices and reduced shipping costs.*

Four lines of Multi-Function Card Unit interpreting are provided for at the top of the new card - a total of 128 positions. The 5424 MFCU provides complete flexibility in formatting card printing on four lines. The System/3 64-character set utilizes six-bit (B, A, 8, 4, 2, 1) card code.

**Programming** ... The System Control Programming provided with card-oriented systems includes the User Maintenance Program and the System Initialization Program. These programs will be available in January 1970.

System Control Programming provided with disk oriented systems are the Disk System Management Program, Disk System Library Maintenance Program,

\* IBM will continue to provide 80-column card equipment, systems and related services.

Disk Utility Program and Disk Copy/Dump Program. These programs will be available in October 1970.

**Program Products** ... IBM Program Products for card-oriented systems include Card RPG II and Card System Utilities. These programs will be available in January 1970. Program Products for disk-oriented systems include Disk RPG II, Disk Sort, Disk Resident Card Utilities and a Utility Program for the IBM 1255 Magnetic Character Reader. These programs will be released in October 1970 with the exception of the 1255 Utility Program which is scheduled for December 1970.

Preliminary versions of all the before mentioned programs will be available in Basic Systems Centers prior to the delivery dates stated.

**System/3 Flexibility** ... Three integrated components constitute the basic system: The 5410 Processing Unit, the 5203 Printer and the 5424 Multi-Function Card Unit. A variety of speed and capacity options are available, thus affording substantial flexibility to the user.

In support of the System/3, two peripheral products are being introduced:

. The 5496 Data Recorder permits overlapping of keying, punching and printing by means of fully buffered storage areas. Additionally, verification as a standard feature provides dual capability on one machine.

. The 5486 Card Sorter is a fully alphameric 6-pocket desk-top machine available with either 1,000 or 1,500 cpm capability.

**Growth** ... The combined offering of System/3, the Data Recorder, the Card Sorter, and the 96-column card as a new account system will be the first step into a full function data processing system for the new user. System/3 will also give punched card users an economical growth step into stored program data processing. The 5444 Disk Storage Drive provides the power and versatility of direct access storage for new users of data processing equipment, and upward growth for punched card installations or for System/3 card configurations. The installation will retain its compactness due to the unique housing of the disk storage drives beneath the MFCU.

*C. B. Rogers*

C. B. Rogers, Jr.
Vice President - Marketing and Development

## SYSTEM/3 COMPONENTS INCORPORATE MANY TECHNOLOGICAL ADVANCES

### 5410 Processing Unit

. Highly integrated Monolithic Systems Technology

. A range of core storage from 8K to 32K

. EBCDIC internal coding - 8 bit byte plus parity

. "Cycle stealing" technique allows overlap of I/O devices with each other and processing

. A backlighted alphameric halt indicator on the operator console for simplified operator - system communication

. Dual program feature and programming support is available for disk oriented systems which allow two different programs to operate independently

. All device features and capacity changes are field installable.

### 5424 Multi-Function Card Unit

. Reads, punches, prints and selects

. Read, punch, print speeds of 250/60/60 cpm or 500/120/120 cpm

. Two independent hoppers each with 2,000 card capacity

. Four stackers with a capacity of 600 cards - each accepts cards from either hopper

. Engraved typewheel printing of up to four lines at the top of card is a standard feature. (Printing on the fourth, lowest line will cause some degradation in throughput.)

. Photoelectric card reading utilizing a single light source.

### 5203 Printer

. 100 or 200 lpm with a 48-character set print chain

. 96 print positions can be expanded to 120 or 132

. Universal Character Set feature allows additional chain cartridges to be used containing up to 120 characters

. Dual Feed Carriage feature allows two dissimilar forms to be prepared simultaneously, each independently controlled

. Vertical forms control is provided by the stored program -- no carriage tape required.

### 5444 Disk Storage Drive

. Unique arrangement of one permanent disk and one removable disk on the disk storage drive

. Due to unique disk arrangement, functional capabilities normally associated with two disk storage drives are now available on one drive

. Four configurations afford single or double drives with total on-line storage from 2.45 to 9.80 million bytes.

### 5440 Disk Cartridge

. Removable interchangeable disk for use on 5444 Disk Storage Drives

. Totally enclosed cartridge weighs only six pounds

. Up to 2.45 million bytes of storage provided by each cartridge.

### 5471 Printer-Keyboard

. Selectric typewriter for use as input to and output from the system

. Independent operation of printer and keyboard are under program control

. 12½ inch writing line provided

. 15½ characters per second printing (rated speed)

. Keyboard furnishes System/3 with 64-character set in addition to functional keys.

### 5475 Data Entry Keyboard

. Keyboard similar to that of 5496 Data Recorder is mounted on console work table

. Used in conjunction with the Card System Utilities package for data recording and/or data verification. Utilizes the 5424 MFCU for card punching, verification and printing.

### 1255 Magnetic Character Reader

. Serial I/O channel allows attachment of six pocket MICR input unit

. 500 documents per minute (rated speed)

. On-line or off-line operation.

### 5486 Card Sorter

. Unique six-pocket compact design permits seated operation

. Photoelectric sensing eliminates reading brush

. A card storage rack provided as an integral part of the sorter

. Feed hopper has capacity of 2,000 cards

. "Phase" sorting allows numeric sorting to be performed in 1½ passes per card column

. 1500 cpm operation approximates total throughput of 83 Sorter

. 1,000 cpm approximates total throughput of 82 Sorter

. All typical sorter operations can be performed - numeric and alphameric sorting. Special features permit sort suppression, digit selection, card counting and alphabetic sorting with reduced number of passes.

### 5496 Data Recorder

. Fully buffered storage areas for key entry; punch and print allow overlapping of these functions

. Provides for punching a full 64-character set

. Verify as a standard feature provides dual capability on one machine

. Word erase and automatic field erase provide for correction of operator detected errors

## 5496 Data Recorder (cont'd.)

- Four program levels standard
- Auxiliary duplication standard
- Unique three-level control provides for alphabetic and special character inhibition
- Program loading via switch control
- Automatic right adjust under operator control
- Engraved typewheel printing on a column-for-column basis is a standard feature
- Self-check number feature available as Modulus 10 or 11.

**Publications Support ...** An extensive selection of publications, planning aids and programs are available from the IBM Distribution Center, Mechanicsburg.

### Marketing Publications (Use Key "G")

| | | |
|---|---|---|
| A21-9078 | IBM 5486 | Card Sorter Operator's Guide |
| A21-9084 | IBM System/3 | Installation Manual - Physical Planning |
| A21-9086 | IBM 5496 | Data Recorder Operator's Guide |
| A24-3542 | IBM 1255 | Magnetic Character Reader Component Description |
| C21-7502 | IBM System/3 | Card and Disk System RPG II Fundamentals Programmer's Guide |
| C21-7505 | IBM System/3 | Card System Introduction |
| C21-7510 | IBM System/3 | Disk System Introduction |
| C21-7512 | IBM System/3 | Disk System Reference Manual |
| C21-7539 | IBM System/3 | Card Sort/Collate Programmer's Guide |
| X21-9088 | IBM System/3 | 96-Col. Card Mltple. Layout Form |
| X21-9089 | IBM System/3 | Sequence Specifications |
| X21-9090 | IBM System/3 | RPG Output - Format Specifications |
| X21-9091 | IBM System/3 | RPG Extension and Line Counter Specifications |
| X21-9092 | IBM System/3 | RPG Control Card and File Description Specifications |
| X21-9093 | IBM System/3 | RPG Calculation Specifications |
| X21-9094 | IBM System/3 | RPG Input Specifications |
| X21-9096 | IBM System/3 | Translation Table and Alternate Collating Sequence Coding Sheet |
| X21-9098 | IBM System/3 | Physical Planning Template |
| X21-9101 | IBM System/3 | Specifications for 1255 Utility |
| X21-9107 | IBM System/3 | Basic Assembler Cod. Form |
| X74-3700 | IBM System/3 | 96-Col. Card Layout (FF) |
| X74-3701 | IBM System/3 | 96-Col. Card Layout - Bl. |

### Program Product Publications (Use Key "D")

| | | |
|---|---|---|
| C21-7500 | IBM System/3 | Card System RPG II and Sort/Collate Reference Manual |

| | | |
|---|---|---|
| C21-7504 | IBM System/3 | Disk System RPG II Reference Manual |
| C21-7509 | IBM System/3 | Disk System Basic Assembler Program Reference Manual |
| C21-7521 | IBM System/3 | Disk System Utility Program for IBM 1255 Magnetic Character Reader Reference Manual |
| C21-7522 | IBM System/3 | Disk System Utilities and Sort Programs Reference Manual |
| C21-7538 | IBM System/3 | Data Recording and Data Verifying Programs Operator's Guide |

### Typical System Prices

| | Monthly Charge | Purchase |
|---|---|---|
| **Entry (card oriented)*** | | |
| 5410 Processing Unit (8K) | $310 | $15,200 |
| 5424 MFCU (250/60/60)** | 350 | 13,650 |
| 5203 Printer (100 lpm, 96 pp)** | 285 | 13,525 |
| RPG II | 35 | — |
| Utilities | 10 | — |
| | $990 | $42,375 |
| **Average (card oriented)*** | | |
| 5410 Processing Unit (8K) | $ 310 | $15,200 |
| 5424 MFCU (250/60/60)** | 350 | 13,650 |
| 5203 Printer (200 lpm, 120 pp)** | 385 | 16,200 |
| RPG II | 35 | — |
| Utilities | 10 | — |
| | $1,090 | $45,050 |
| **High Performance (card oriented)*** | | |
| 5410 Processing Unit (12K) | $ 410 | $20,100 |
| 5424 MFCU (500/120/120)** | 500 | 17,900 |
| 5203 Printer (200 lpm, 132 pp)** | 410 | 16,950 |
| RPG II | 35 | — |
| Utilities | 10 | — |
| | $1,365 | $54,950 |
| **Entry (disk oriented)*** | | |
| 5410 Processing Unit (12K) | $ 535 | $26,225 |
| 5424 MFCU (260/60/60)** | 350 | 13,650 |
| 5203 Printer (100 lpm, 96 pp)** | 285 | 13,525 |
| 5444 Disk Storage (2.45 million)** | 155 | 8,075 |
| RPG II | 45 | — |
| Sort | 10 | — |
| Utilities | 10 | — |
| | $1,390 | $61,475 |
| **High Performance (disk oriented)*** | | |
| 5410 Processing Unit (16K) | $ 650 | $28,700 |
| 5424 MFCU (500/120/120)** | 500 | 17,900 |
| 5203 Printer (200 lpm, 132 pp)** | 410 | 16,950 |
| 5471 Printer-Keyboard** | 150 | 7,500 |
| 5444 Disk Storage Drives** | | |
| (7.35 million) (2 units) | 455 | 20,150 |
| RPG II | 45 | — |
| Sort | 10 | — |
| Utilities | 10 | — |
| | $2,230 | $91,200 |

*Peripheral units (Data Recorder, Sorter) are additional.

**Includes necessary attachments.

**Delivery** ... First customer shipments of various System/3 configurations and components are scheduled as follows:

| | |
|---|---|
| 5496 Data Recorder | 12/69 |
| Card Oriented Systems | 1/70 |
| 5486 Card Sorter | 1/70 |
| Disk Oriented Systems | 10/70 |
| 5410 (24K and 32K) | 10/70 |
| Dual Program | 10/70 |
| 5471 Printer-Keyboard | 10/70 |
| 1255 Magnetic Character Reader | 12/70 |
| Serial I/O Channel | 12/70 |

The published delivery schedule will be announced in 90 days. Schedule dates for orders received during this 90-day period will be assigned by the regions on a sequential basis. No commitments are to be made until such dates are received in the branch office.

**RPQs** ... RPQs will be accepted and reviewed but will not be processed until 180 days after announcement. Response time thereafter is dependent upon complexity. First customer shipments of RPQ features are dependent on the complexity and magnitude of the feature, but in no case will they be made prior to 180 days after the first customer shipment of the base machine.

**Model Changes, MESs** ... MES orders for field conversion, installation or removal will be accepted after first customer shipment. Availability dates will be based on the complexity and engineering release dates for specific MESs. Availability dates will be published prior to first customer shipment.

**Systems Engineering Services** ... Skill Classification 1 -- Basic Systems applies to System/3. However, for guidance in applying skill classifications in all possible environments, see sales manual page SE 2.1.

**Educational Allowance** ... There is no educational allowance on System/3.

**Test Allowance** ...

| Processor Storage (bytes) | Hours |
|---|---|
| 8,192 | 21 |
| 12,288 | 23 |
| 16,384 | 25 |
| 24,576 | 27 |
| 32,768 | 27 |
| 1st 5444 Disk Storage Drive | 5 |
| 2nd " " " " | 3 |
| 1255 Magnetic Character Reader | 4 |

Installed card oriented systems upgraded to disk configurations will receive an additional 10 hours test allowance.

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A customer having unused pre-installation test time may use that time to convert data files at an IBM Basic Systems Center for up to one month after installation of System/3.

**Marketing Provisions** ... Systems Rental Plan "A" at 10% applies to most System/3 components. Rental Plan "B" applies to the 5471 and 5475. The Extra Shift Plan applies to the 5486 Card Sorter and the 5496 Data Recorder.

**Marketing Compensation Plan** ... Normal provisions apply with the following special highlights: System/3 qualifies as a New Account (Schedule A); System/3 qualifies as a First System; (Schedule B) for Plan III representatives only; and for Out-of-territory Quota Points (Schedule D). Out-of-territory points are:

. 5410 - 1,200 points
. 5444 - 400 points

In addition, a Sell Product Bonus (Schedule C) of 850 points to Non-Plan III representatives only for each System/3 order which meets the First System criteria (Schedule B, Paragraph A).

Reprinted Marketing Plan pages will be released shortly.

System/3 Questions and Answers

Q. Is System/3 IBM's initial entry into fourth generation hardware?

A. If one defines System/360 as third generation hardware, System/3 falls closer to this level of architecture. With the exception of the use of monolithic technology, the remainder of the system's components are enhancements of existing technology, i.e., card reading and punching, printing, ferrite-core memory, disk recording and retrieval. It is an evolutionary rather than a revolutionary architecture, the latter term the marketplace appears to attribute to a fourth generation.

Q. What are the salient features of the Multi-Function Card Unit?

A. A new stacker design allows the card to be controlled more effectively; high quality engraved printing is realized, and the number of parts used is half that found in the Model 20 Multi-Function Card Machine.

Q. What are some of the new features of the Printer?

A. In improving the price/performance of the IBM 1403 printer, many technical features have been added, one of the more important being the incrementing hammer magnet unit which require one-fourth the normal complement of hammer magnets and their associated drivers.

Q. What are the technical features of the 5444 Disk Drive?

A. The disk drive incorporates a newly designed actuator of excellent function at low cost. Coupled with this is the use of sophisticated read/write heads and disk technology heretofore available only on disks of higher function and cost.

Q. Why is it advantageous to eliminate punched paper tape in controlling vertical format on the printer?

A. Placing vertical format under control of the RPG program and the printer control circuits in the 5410 is an improvement because the operator does not have to install a different paper tape for each application. Printer setup time is decreased, and chance of error is reduced.

Q. What are the differences between RPG II and the RPG for the Model 20?

A. RPG II, a more powerful language, has been expanded to include many new functional capabilities such as a "look-ahead" feature, an ability to update tables and to output them at end of job, and a facility to interpret, while punching, without redefining the output line. These improvements give the programmer increased control over the execution of the program.

Q. Are the two RPGs compatible?

A. Programs written for the Model 20 RPG may be compiled on System/3 with minor changes.

Q. What is the primary purpose of the Basic Assembly Program?

A. Among other things, the Basic Assembly Program is designed to generate assembler subroutines for inclusion in RPG II Programs in those few cases where an added function is needed.

Q. Are System/3 programs compatible with System/360?

A. System/3 source programs will be compatible with some minor differences with System/360 if the new functions of RPG II are not required.

Q. Why was EBCDIC chosen for the System/3 CPU code?

A. Of all data processing systems, 95 percent use EBCDIC, BCD, or variants of these codes. The EBCDIC code is well defined with respect to a complete character set, a full and necessary set of control codes, method for handling algebraic sign overpunch numerics on punched cards, packed numerics, etc.

Q. Why was a Six-bit code chosen for the new 96-column card?

A. A Six-bit code was chosen because the 64-character set allowed in a six-bit code is sufficient to allow full communication with System/3 in the card mode for its intended application and use environment. It also makes available the maximum amount of unpunched space for machine interpreted or handwritten data.

The 64-character System/3 card code was chosen to facilitate compatibility with the data processing requirements of the system including collating sequence, compatible translation of algebraically signed overpunched fields in Hollerith cards and translation of EBCDIC.

Q. Can competitive I/O devices be used?

A. In line with normal IBM practice, Original Equipment Manufacturers' Information manuals will be made available to provide the necessary information for those who wish to interconnect non-IBM manufactured devices to System/3.

Q. How will System/3 "talk" to System/360?

A. As System/3 is designed primarily for the small business firm just getting started in computer operations, there is presently no direct computer-to-computer communications capability between System/3 and System/360.

Q. How will the unit record user convert his data into the 96-column card?

A. Conversion facilities will be provided at selected IBM Basic Systems Centers for those users with 80-column card files wishing to convert these to 96-column cards. Customers may use these conversion facilities within the normal program test allowance or at a specified hourly charge.

Q. Can the System/3 punch his data into 80-column cards?

A. The capability is available in the RPG II language and the hardware, i.e., 1442 Reader/Punch, will be available in the Basic Systems Centers. Normal hourly rates will prevail.

Q. Why did IBM use a 96-column card for System/3, instead of the conventional 80-column card?

A. Technological breakthroughs in the design of System/3 play an important role in reducing manufacturing costs, enabling IBM to offer the system to small business firms at a low price. The 96-column card contributes directly to these advances. For example, the compactness of the card enabled engineers to design card handling equipment requiring a minimum of moving parts, thus reducing maintenance downtime. Throughput was improved by two factors: the small card requires less distance to move from one processing station to another; and the 96 columns provide a higher data density than the 80 column card. These factors will allow small business firms to take advantage of the economies offered by the small card and System/3.

Q. What makes a one-disk-drive system attractive to the small commercial user?

A. The one-disk-drive system is attractive because of the excellent on-line disk storage capacity and low system rental. It is viable because of the unique fixed disk, removable 5440 cartridge combination on one 5444 Disk Drive. This combination allows a two-drive "like" running environment on one drive with resultant cost savings. The 5440 Removable Disk Cartridge could be used for data storage while the fixed disk could be used to store programs and subroutines to be run within the present processing cycle, to provide disk sort work areas, intermediate output storage and could also be used as a data storage extension if necessary. Naturally, other 5444 Disk Drive configurations will be utilized if additional on-line disk storage is required.

Q. What are the salient features of the Data Recorder?

A. This is an advanced machine functionally incorporating punching, verifying and such new features as buffered storage, right adjust, and field and record erase. These features should assist both experienced and inexperienced operators to achieve a significantly higher throughput with fewer errors.

Q. Who developed the Application Customizer?

A. It was developed by the Basic Systems Development group.

Q. Can other companies produce the cards without a license from IBM?

A. Any manufacturer can produce 96-column cards without a license.

Q. Is there small card I/O, i.e. 96-column card, planned for S/360?

A We will evaluate requirements for the use of the 96-column card on other systems, but it is not our policy to speculate on future products or announcements.

Q. Does IBM plan to continue to produce 80-column-card unit record equipment?

A. As long as the demand for 80-column card equipment dictates.