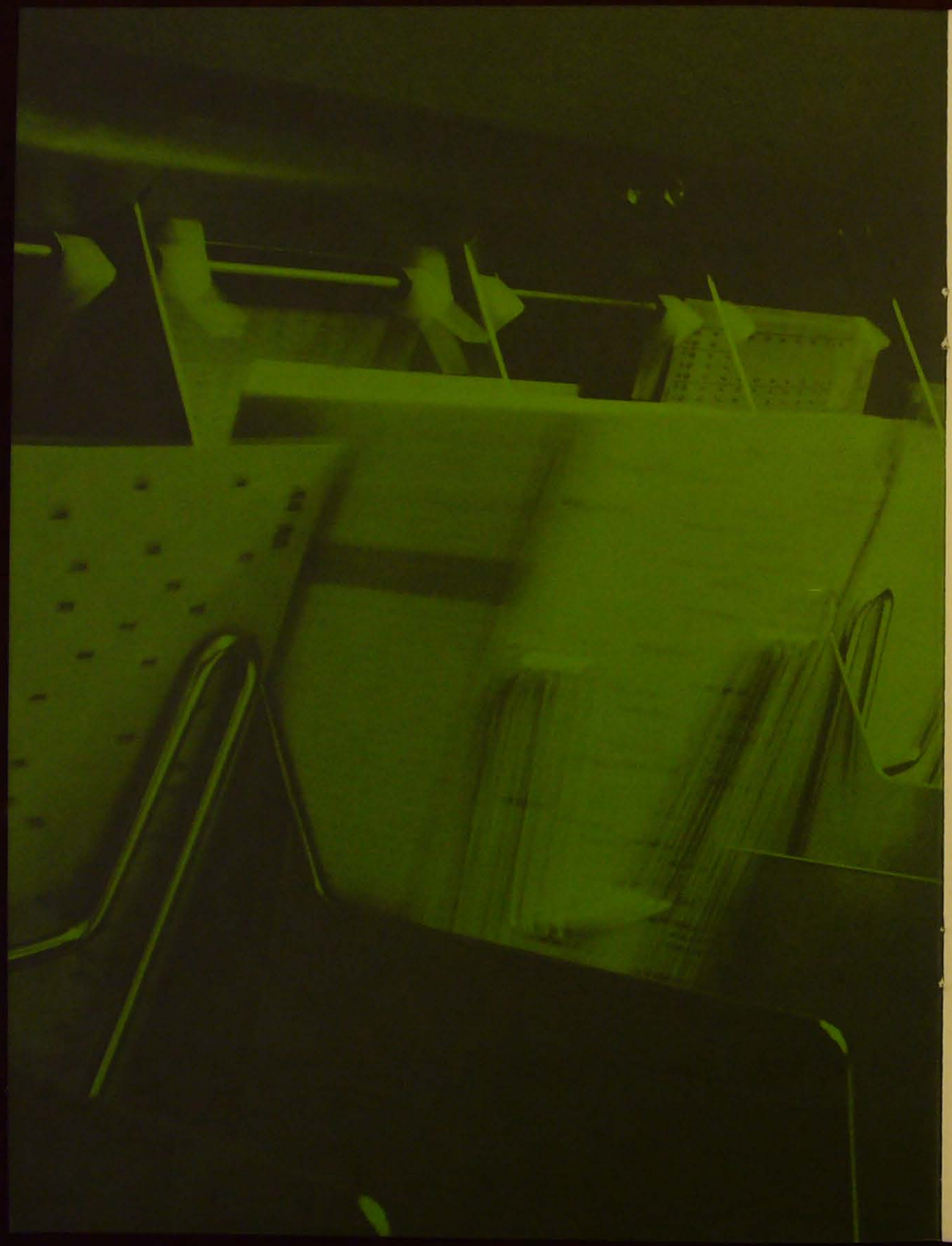
IBM 1401 Data Processing Systems

Card Tape RAMAC



IBM 1401 Data Processing Systems

Powerful and highly efficient, the popular 1401 systems provide new ways to solve the growing data-handling problems of active businesses. From three available system configurations, you can select the specific 1401 needed to meet your data processing requirements. For instance, the 1401 Card System processes punched card applications at high speeds; the 1401 Tape System processes data in split-seconds and provides compact storage for great volumes of information; and the IBM RAMAC® *1401 System features magnetic disks providing random access storage facilities.*

The modular construction of the low-cost 1401 permits the economical expansion of the system as your business needs increase. By adding appropriate special units, 1401 users can create a system which will handle magnetically inscribed documents, paper tapes and IBM TELE-PROCESSING® *equipment. With such outstanding flexibility, the 1401 can be tailored to process a variety of applications in a wide range of industries.*

An extensive library of tested and widely used Application Programs and Programming Systems is available to 1401 users. These programs add further economy to your 1401 installation by reducing programming efforts and increasing over-all data processing efficiency.

IBM 1401 Card System

The basic 1401 Card System is a compact, highly efficient computer which offers the user:

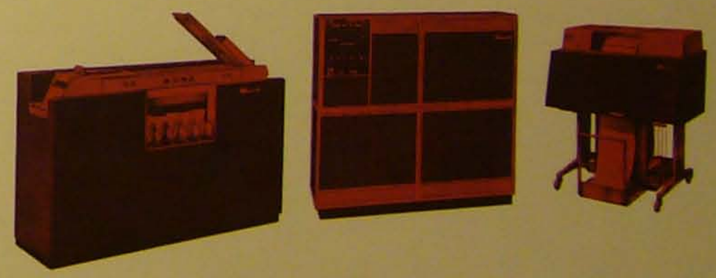
High-Speed Storage—from 1,400 to 4,000 alphameric storage positions with the IBM 1401 Processing Unit. Add an IBM 1406 Storage unit and storage is increased to 8,000, 12,000 or 16,000 storage positions! Since variable field and record length requires fewer positions to store a given amount of data, every position of storage is available for use. The "add-to-storage" logic of the 1401 determines the number and size of totals by the number of available positions in storage. Powerful instructions minimize the number of program steps required to move data from one location to another. The Processing Overlap Feature greatly increases data throughput speeds by allowing new data to be entered into storage while the 1401 is computing.

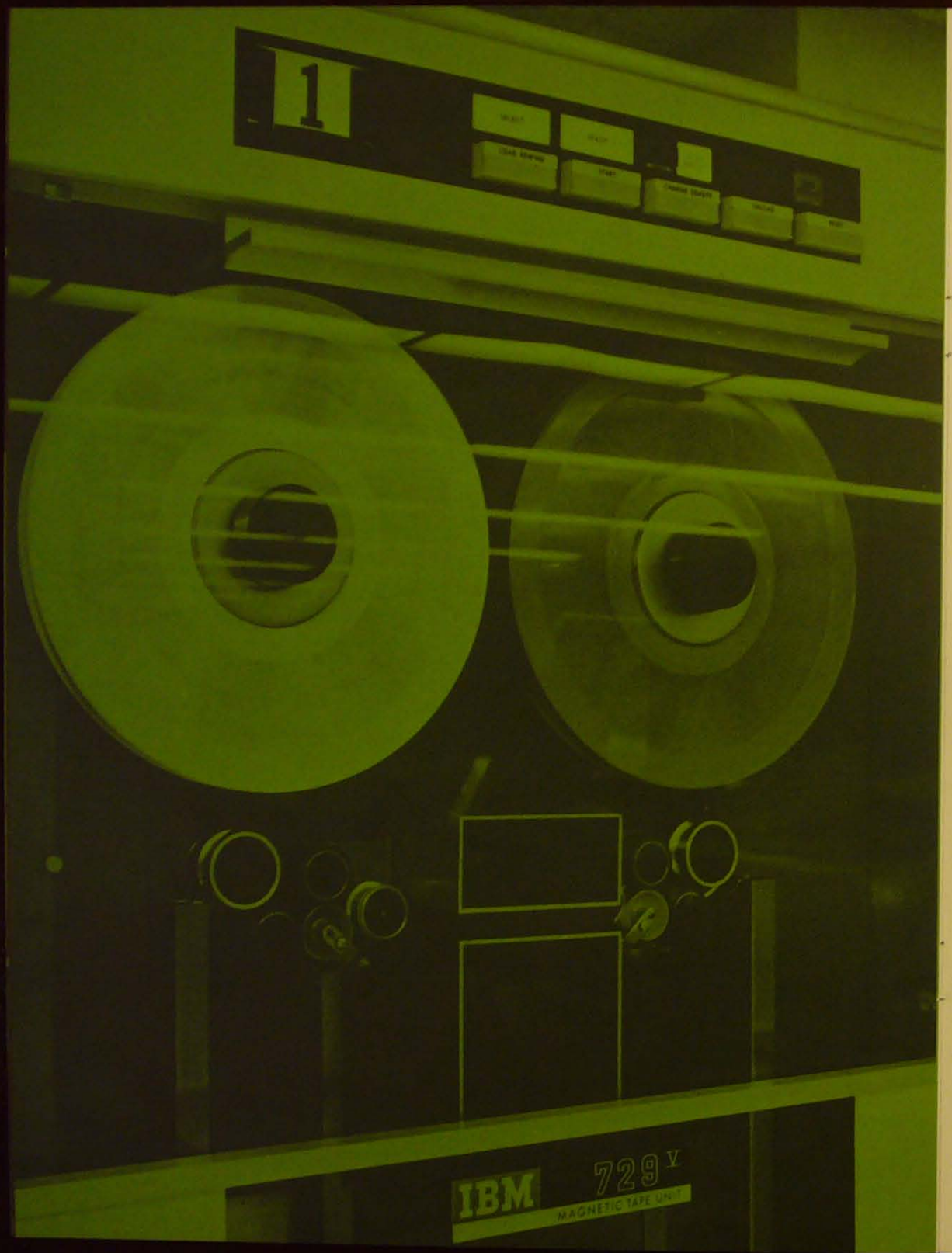
Fast Input—up to 800 cards a minute with the IBM 1402 Card Read Punch. The 1402 also provides punched card output at speeds up to 250 cards a minute. An optional read station on the punch feed permits the 1402 to punch output data into the *same* cards from which input data is read. A File Feed Device attached to the 1402 has the capacity for loading 3,000 cards at one time permitting almost continuous processing of large-volume card applications.

Flexible Printed Output—up to 600 lines of high-quality printed output on continuous paper forms with the IBM 1403 Printer. The optional Numerical Print Feature provides for the printing of solely numeric characters at a rate of up to 1,285 lines a minute. Engraved type suspended on a revolving chain prints up to 132 characters per line. The chain is easily changed by the operator when numeric, alphameric or special characters are required for a specific job. Since printing format and carriage control are directed by the 1401's stored program, control panel wiring is not required.

A unique device for the 1403 is the Selective Tape Listing Feature. This allows your operator to convert, whenever required, from wide-form printing to an 8-tape lister for the automatic preparation of cash letter lists. For banks (and other businesses requiring numeric listings), this means that individual lists of check amounts can be automatically printed during high-speed transit operations. As many as 1,285 numerical listings per minute can be printed if the Numerical Print Feature is also installed. When report requirements change, the tape feed mechanism easily slides out of the way, permitting the Printer to resume normal wide-form printing.

(Operating features of the IBM 1404 Printer are discussed in the Additional Components section of this book.)





IBM 1401 Magnetic Tape System

IBM magnetic tapes bring you new ranges of data transfer speeds, greater programming flexibility, and almost unlimited storage capacities. Magnetic tapes permit you to tailor input and output data according to your specific processing requirements. In terms of matching input/output speeds with internal calculating speeds, you achieve a more balanced data processing system.

For fast processing and compact storage of large volumes of data, you may select the low-cost IBM 7330 or the high-speed 729 Magnetic Tape Units. The unique IBM 7340 Hypertape Drive, Model 2 featuring cartridge-enclosed tape reels is available for auxiliary use with large scale systems using Hypertapes.*

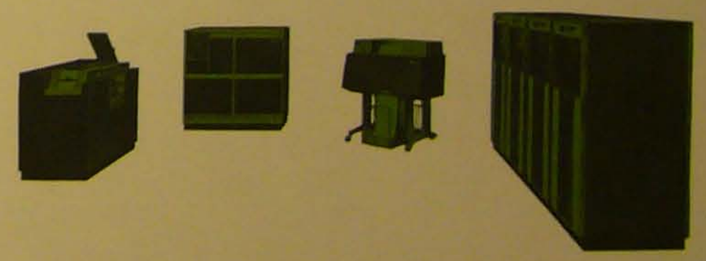
The low-cost 7330 operates under switch control to read and write both low- and high-density tapes at speeds ranging from 7,200 to 20,000 characters a second. The 729s process data at the following speeds:

Density:	*200 cpi or*	*556 cpi or*	*800 cpi*
Model II	15,000	41,700	
Model IV	22,500	62,500	
Model V	15,000	41,700	60,000 (requires 800 cpi Feature)
Model VI	22,500	62,500	

As many as six tape units can be attached to your 1401 system. These may be all of the same type or intermixed 7330s and 729s, permitting you to select the tape units most suited to a specific application. Horizontal and vertical parity checking of data and protection against accidental tape erasure assure you of dependable tape performances.

1401 Tape Systems are completely compatible with other IBM tape systems, thereby making your 1401 extremely valuable as an off-line and print editing auxiliary for larger IBM systems in addition to its use as an independent data processing system.

*Operating features of the 7340 are discussed in the Additional Components section of this book.



IBM RAMAC 1401 System

The RAMAC 1401 provides the means to store large volumes of data—and with each record available in split-seconds. With RAMAC, batches of data can be processed without first being arranged in sequential order. New transactions are recorded in the same order in which they occur.

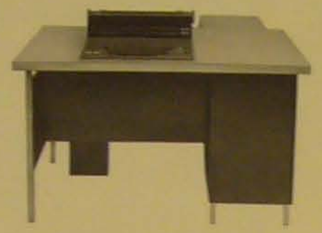
In organizations with decentralized operations, the RAMAC 1401 can serve as the central processing system for data transmitted from remote locations by IBM TELE-PROCESSING equipment over telephone or telegraph wires.

The IBM 1405 Disk Storage unit provides the random access storage facilities for a powerful RAMAC 1401 system. The 1405 is available in two models; Model 1 stores 10 million characters on 25 disks and Model 2 stores 20 million on 50 disks. On each disk there are 200 tracks to hold 200-character records. Any given record is addressable in milliseconds. The IBM 1407 Console Inquiry Station permits the operator to make direct inquiry to stored data. It automatically prints data, such as exceptions. The 1407 is especially useful for program testing and "debugging" other 1401 systems. It also serves as an auxiliary printer for the system.

(Operating features of the IBM 1311 Disk Storage Drive are discussed in the Additional Components section of this book.)

The IBM 1404 Printer
efficiently processes card and paper documents used as customer bills, delinquent notices, meter reading cards, employee checks, etc. It is used in lieu of the 1403 and has all the operating capabilities of the 1403 *plus* the ability to print card or continuous forms at high speeds. The 1404 can process punched cards ranging from 51 to 80 columns as well as 80-column cards with 80-column stubs attached. Two 80-column cards can be printed simultaneously with the same or different data and format. Printing speeds depend upon card size, number of lines printed per card or whether input is from punched cards, tapes or disk storage.

The IBM 1311 Disk Storage Drive
features easily removable disk packs which can be quickly changed by your operator to provide unlimited disk storage facilities for your 1401 system. As many as five 1311s can be attached to a system, each one able to store up to 2,000,000 characters. With the optional Track Record feature, up to 2,980,000 characters can be stored in each drive. Stored data is transferred sequentially at a rate of 77,000 characters per second. The lightweight disk packs are interchangeable from one 1311 to another and between IBM 1400 series systems and the IBM 7010 Data Processing System.



The IBM 1447 Console, Model 3 with Special Features
provides manual, buffered, and/or remote inquiry from distant locations to your centrally located 1401 system. The 1447 allows the operator to enter new data, change stored data, retrieve stored data, and alter programs. Under the 1401's stored program, the 1447 prints such information as exceptions or provides a printed log of all operations. Printing is accomplished at a speed of 14.8 characters a second. The 1447 can be programmed as a local inquiry station for direct disk storage inquiry. It allows direct attachment of a 1050 to your 1401 system.

The IBM 7340 Hypertape Drive, Model 2
reads and writes up to 34,000 alphameric and numeric characters and 68,000 digits a second. Rapid tape load and unload time is accomplished on the 7340 through the unique packaged tape cartridge feature. This eliminates manual threading of tape; protects tape from dust contamination and precludes possible tape damage through improper handling. Up to four Hypertape Drives can be attached to your 1401 through the IBM 7641 Hypertape Control and the IBM 1401 Serial Input/Output Adapter. A 1401 system with Hypertapes attached can be used off-line with IBM 7000 series systems using Hypertapes.

1401 Programming Support

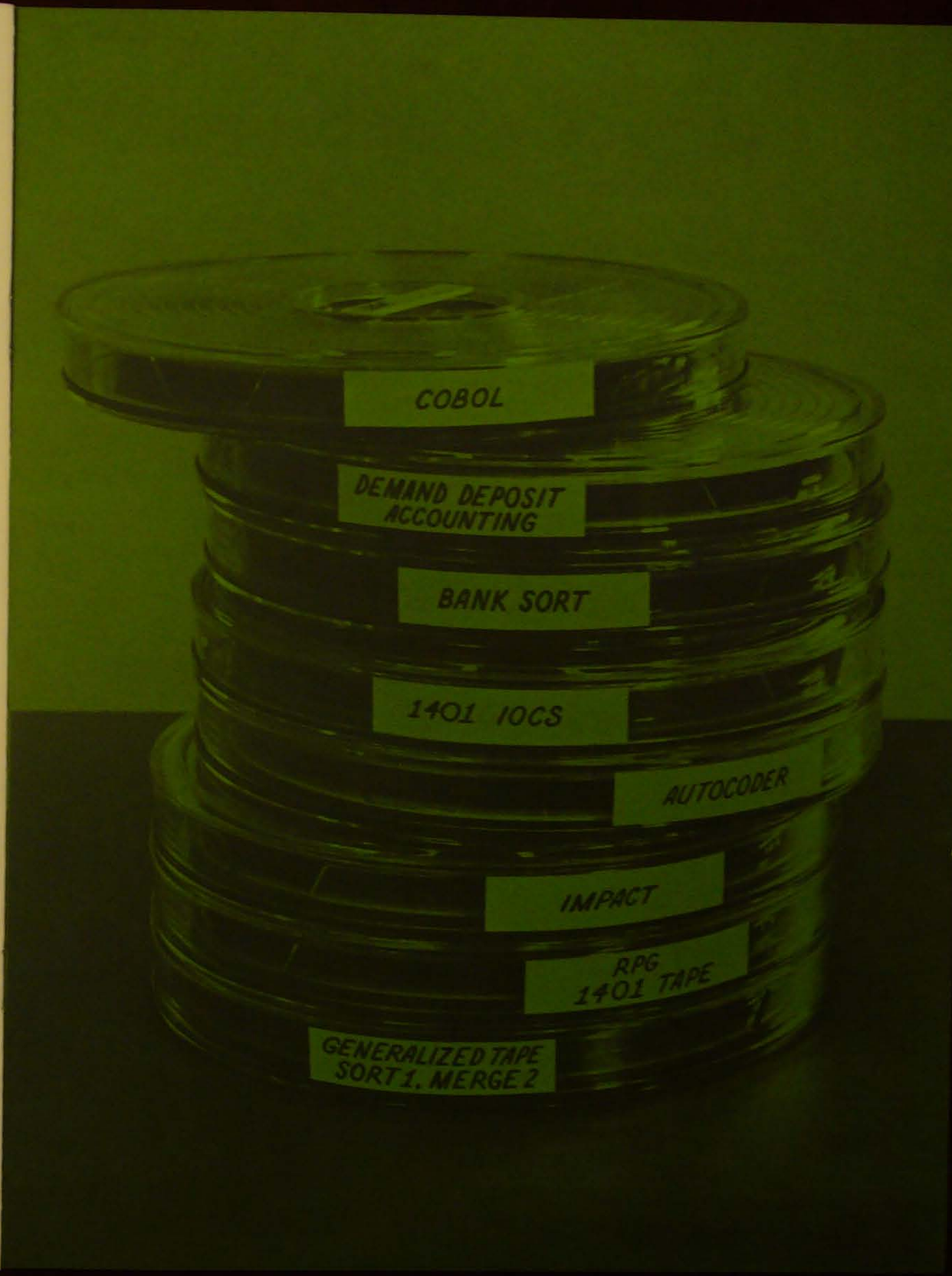
Application Programs for your 1401 are developed and tested by IBM. They are designed to speed the processing of specific applications, reduce customer programming efforts, and assist in increasing the efficiency of your business operations. Described below are just a few of the programs available:

- *Modular Inventory Management Simulator* (MIMS)
  A significant management decision-making tool, this program combines the advanced computer techniques of simulation and statistical inventory control. In manufacturing industries, this program can be used in augmenting a Management Operating System (MOS).
- *Inventory Management Program And Control Techniques* (IMPACT)
  A new approach to more profitable inventory management, this program results in balanced buying strategies based on your actual inventory requirements and forecasts. In distribution industries, IMPACT helps to avoid costly stockout and excess stock conditions.
- *Demand Deposit Accounting*
  This program is designed for commercial banks with a 1401/1412 system installed. It provides a completely pre-programmed series of runs for a "load and go" operation in the Demand Deposit application. Various exception reports are written during a posting run. A program to print these exceptions may be prepared using Report Program Generator.
- *Civilian Payroll Programs for Federal Government Agencies*
  A series of bi-weekly payroll programs that provide a standardized payroll program with full documentation for implementation. Fully compatible with most present payroll procedures, this program conforms to applicable federal laws and regulation.
- *Numerical Control Programs* (AUTO-PROPS II)
  A program which computes points and point arrays for X-Y axis numerically controlled machine tools used in drilling, boring, tapping, stamping, riveting and other machine operations. This program is expanded to give four decimal output accuracy for such machine tools as jig grinders and jig bores.
- *Auto-Rating for Fire and Casualty Companies*
  A program consisting of a series of subroutines designed to perform the rating calculations involved in issuing a policy covering private passenger automobiles and pick-up trucks. Provision is made for calculating such coverage with the limits of liability and deductibility as are published by the National Rating Organization.
- *Bank Sort Program*
  A special purpose magnetic tape sort designed to increase the speed of sorting input data entered on magnetic tape, from MICR-encoded checks, other encoded documents and from punched cards.

Programming Systems add to the over-all economy and operating efficiency of your 1401. The following is a partial list of programs and subroutines available for 1401 users:

- Report Program Generator for IBM 1401 Card Systems.
- Report Program Generator for IBM 1401 Tape Systems.
- Report Program Generator for IBM RAMAC 1401 Systems.
- COBOL for IBM 1401 with 4,000–8,000 positions of storage.
- COBOL for IBM 1401 with 12,000–16,000 positions of storage.
- IBM 1401 AUTOCODER.
- IBM 1401 Symbolic Programming Systems (SPS) 1 and 2.
- IBM 1401 Input-Output Control Systems (IOCS).
- IBM 1401 Generalized Tape Sort 1 Program.
- IBM 1401 Generalized Tape Sort 2 and Merge 2 Programs.
- FORTRAN for IBM 1401.
- FARGO—Report Generator for IBM 1401 Card Systems.
- Utility Programs for RAMAC 1401 Systems.
- Routines for Loading and Maintaining a Disk Drive plus other complete 1311 programming systems.
- IBM 1401 and 1009 Data Transmission Unit Utility Routines.
- AUTO-TEST for IBM 1401 Programs.
- Utility Programs and Subroutines for IBM 1401 Card Systems include: Clear Storage; Card Loader; Print Storage; Punch-Storage; Punch-List-Sequence Check; Multiply 1; Multiply 2; Divide; Dozens to Units Conversion; Units to Dozens Conversion.
  Program Detection Aids include: Insert Halts; Insert Linkages to Fixed Print Storage; Insert Linkages to Selective Print Storage; and Remove Linkages.
- Utility Programs for IBM 1401 Tape Systems: Card-to-Tape; Tape-to-Card; Tape-to-Printer; and Multiple Utility Program.

For further details concerning the IBM 1401 Data Processing Systems, contact your local IBM branch office.



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