1401

The IBM 1401-G

. . . a new card processing system that combines the benefits of a stored program computer with the simplicity and low cost of conventional punched card equipment.

The 1401-G is a specially engineered version of the famous IBM 1401 data processing system. Yet anyone familiar with punched card processing and control panel techniques can quickly learn to program the "G." Its operation is simplicity itself.

In addition, this new system has the growth potential that progressive management wants and has a right to expect. All 1401-G applications can be run on larger 1401 systems with virtually no changes in programming.

The following pages will explain how this advanced system can raise your card processing operations to a new level of efficiency.

G

1401-G—new models . . . new card processing efficiency

The IBM 1401-G Models 11, 12 and 13 were designed with the present and future needs of the punched card user in mind. Paramount among these needs are higher productivity, lower job costs, and easy, effective conversion to stored program processing.

Features of "G" Models 11, 12 and 13

These new models are available in three sizes of core storage capacity: 1,400 positions with the Model 11 • 2,000 with the Model 12 • 4,000 with the Model 13. All have these features:

340 lines per minute printing speed: you can maintain this speed while overlapping with reading or punching, a unique "G" feature called "Interleaving."

120 print positions: standard on the 1403 Model 6 Printer, permits same forms layout used on the IBM 407 Accounting Machine.

450 cards per minute reading speed

240 cards per minute punching speed

You choose the capacity you need. You don't have to settle for more . . . or less . . . than you need. So the advance to stored program processing is really a small step in terms of "changeover" . . . but it's a giant step in terms of improved performance.

Let's look at conversion

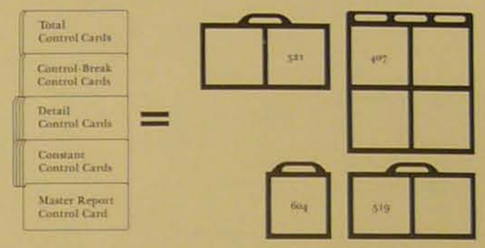
All 1401-G models use the same punched card input and printed output as your present system. They simply put a processing powerhouse in between. Rather than wire a control panel, you use a stored program to control the "G." There is no need to reconstruct files and records, or even change the content or format of reports.

In effect, you exchange a control panel for a deck of cards able to do more kinds of jobs in less time. Even debugging is simpler: you change punches or cards . . . not wires. And remember . . . *personnel who can wire a control panel can learn to program the 1401-G.*

For assistance in conversion, as well as in daily operations, IBM supplies you with valuable programming systems like Fourteen-o-one Automatic Report Generating Operation (FARGO) and Report Program Generator (RPG). FARGO is based on the logic of IBM accounting machines. It lets you load the cards containing the job description into the system along with data cards, so that in one pass the "G" can produce a desired report.

With RPG, writing a program is reduced to preparing an outline of the results you want from a given report. RPG is particularly helpful in converting existing procedures to your new stored program system . . . and you will find it especially suitable for providing special management reports on short notice.

The change is simple . . . the results can be far-reaching



FARGO Control Cards — IBM Control Panels

With control panels, several steps are required to handle a typical punched card billing application. Name and address cards, special instruction cards and line items or commodity cards must be processed on the IBM calculator, and punched with such data as discount amount and extended selling price. This complete card file is *again* processed in the accounting machine to produce customer invoices on preprinted forms. Simultaneously, summary accounts receivable record cards are produced on the IBM summary punch.

With the 1401-G and the FARGO program, one set of control cards replaces four billing control panels. You merely take the FARGO deck (provided by IBM) plus the same file of billing cards described above, and feed them into the 1401-G. In seconds . . . and in *one step* . . . your 1401-G will begin simultaneously to print invoices on your same preprinted forms and punch an accounts receivable card for each invoice.

IBM 1402 Model 5 Card Read Punch

IBM 1401-G Processing Unit Models 11, 12, 13

IBM 1403 Model 6 Printer

A system with support

Extensive punched card programs written, tested and maintained by IBM for 1401 systems are yours for immediate use with the new "G" models. In addition to FARGO and RPG, these include Symbolic Programming System, Basic Autocoder, and Utility Programs, all of which make it possible for your staff to convert from control panels to stored program processing with a minimum of training and effort. Result: full use of your new computing system without unnecessary delay.

System with a future

A new 1401-G model is not only a first step into electronic data processing. It's a step with a sense of direction. Here's why:

- All 1401-G applications can be run on the larger 1401 systems with virtually no changes.
- All personnel familiar with the "G" systems can work immediately with a larger 1401 system with minimum additional training.
- IBM's library of 1401 programming systems and user programs—available to you as 1401-G user—will continue to provide valuable support when you step up to a larger 1401 system.

Conclusion: the new 1401-G models have the growth potential that progressive management wants and has a right to expect. For costs comparable to that of conventional punched card equipment, the IBM "G" models provide a tremendous increase in speed, faster job completion and greater systems throughput. In short, more output per dollar and lower job costs.

The new 1401-G models are the latest members of the famed IBM 1401 series . . . with all the proven performance such lineage implies. These models make it easier than ever to reap the advantages of electronic data processing.

Let your IBM representative show you how to make the change quickly . . . at a minimum of cost . . . and with your future needs in mind.

THE 1401-G OFFERS THREE IMPORTANT ADVANTAGES

The advantage of getting work done faster

The speed with which the 1401-G can operate eliminates peak-load bottlenecks, does rush jobs on time, frees up machines for additional work. Cards are read at a rate of up to 450 per minute . . . punching at 250 per minute. Printing speed is 465 lines per minute. An important key to this outstanding performance is the system's ability to overlap either reading or punching with printing . . . so that you get an effective printing speed of 450 lines per minute.

The advantage of reducing job costs

Because the "G" can do far more jobs in one shift—without any increase in your present staff—the cost per job is drastically reduced.

In addition, you have room to grow. You can expand the workload without disrupting existing schedules.

The advantage of increasing management control

Computer processing can handle more applications . . . and deliver reports that are complete and timely . . . the kind of reports management needs for effective action. Facts for decision making on sales, inventory, production are readily available—all in addition to normal accounting information.

With the "G," these and other advantages are possible with little, if any, increase in your present overall cost.

THE 1401-G SYSTEM... ITS COMPONENTS... ITS FEATURES

IBM 1402-Model 4
Card Read Punch

- Reads up to 450 cards per minute.
- Punches up to 250 cards per minute.
- Has five 1,000-card capacity, non-stop [illegible] including radial stackers.
- Cards can be segregated in stackers under stored program control.
- Card reading and punching is checked for accuracy.
- A 1,200-card File Feed is standard on the read side.
- *Early Card Read* feature provides high card reading speeds while extensive processing routines are being executed.

IBM 1401-G
Processing Unit

- Contains all arithmetical, logical and input/output control functions.
- 1,400, 2,000 or 4,000 positions of core storage.
- Variable word length for both data and instructions permits optimum use of core storage.
- Visual display through console.
- Unique one-step print editing ability.
- Number and size of totals restricted only by number of available storage positions.
- Fast internal processing speeds: Add two 8-position fields: 0.299 milliseconds. Multiply a 6-position field by a 4-position field: 15 milliseconds. Compare two 8-position fields: 0.23 milliseconds.
- All data flow is parity checked.
- Completely edited line presented to the printer.

IBM 1403-Models 4 & 5
Printer

- 465 lines-per-minute alphameric printing rate.
- 100 (or 132) printing positions per line, 10 to the inch.
- Printing and carriage are under stored program control.
- Line spacing 6 or 8 lines per inch.
- Spacing (8 lines or less) at 33 inches per second.
- Skipping or ejecting (9 lines or more) at 75 inches per second is standard feature of most models.
- Operation is electronically checked.

The 1401-G is a modern, solid-state data processing system and is made up of the three units shown on the opposite page. It is a direct descendant of the famous IBM 1401 and offers the advantages that this implies: Proven performance for one. Easy transition to larger equipment for another.

In addition to performing all the basic operations of a card oriented 1401 system, the 1401-G can also perform either a read and print or punch and print operation in the time normally allotted to just a read or punch operation. This simultaneous operation of two input-output units is called *cycle interleaving* and is unique to the "G."

Optional Features

The following optional components and processing features can be added to meet the special requirements of your operations now, or to handle a growing workload in the future:

Auxiliary Ribbon Feeding—provides exceptional print quality for special applications.

Interchangeable Chain Cartridge—permits operator to change type font, style or special character arrangement. Change can be made quickly, without special tools. Operation of the printer remains unchanged.

Expanded Print-Edit—adds to the system's already wide latitude in report format by providing for Zero Suppression, Floating Dollar Sign, Decimal and Sign Control, Asterisk Protection, etc.

Read-Punch Release—allows processing to continue while card reader or punch prepares to start the next cycle. Result: An increase in processing time between successive card feed or punch cycles.

Sense Switches—A group of six switches—similar to set up chain switches on a 1407—which provide manual control of stored programs.

High-Low-Equal-Compare—permits indicators to be tested for a high, low or equal condition after a "compare" instruction has been given. This feature can be used for alphabetic as well as numeric data.

In addition, the following features are also available: *Additional Print Control, Space Suppress, and Bit Test.*

HOW BIG A STEP IS THE CHANGEOVER TO THE 1401-G?

It's a giant step in performance--but a surprisingly small step in terms of changes in your present processing operation. The 1401-G uses the same punched card input and printed output as your present system. It simply puts a processing powerhouse in between. Thus, there is no need to reconstruct files and records, or even change the content or format of reports. Of course there are some changes you may want to make--once you learn all the things this powerful system can do for you.

Because the 1401-G has been designed for operation by those familiar with punched card equipment, your present staff can learn to operate the new system after a brief period of training. This is also true of programming: *Anyone who can wire a control panel can learn to program the 1401-G.*

This easy transition to stored program processing will have a profound effect on the contribution that your present tabulating department can make to your business operations.

You will probably find that the "G" will enable you to cut scheduling time in half, reduce card handling far below the time now required on punched card equipment. More speed means more jobs on a one-shift basis. Increased versatility means combining many separate jobs into a single operation . . . and generating important reports and analyses that your present system cannot now accommodate.

COMPREHENSIVE PROGRAMMING SUPPORT FROM IBM

The extensive library of punched card programs written, tested, and maintained by IBM for the 1401 systems are available immediately for use with the 1401-G. These programming systems make it possible for your staff to convert quickly from control panels to stored program processing—with a minimum of training and effort. Result: Full utilization of your new computing system without unnecessary delay.

The 1401 program systems you will use—depending on your system's core storage —include:

1. Symbolic Programming System

This system allows the programmer to refer to program instructions or job data by name—without regard to their actual location in the computer—thereby simplifying the programming job.

2. Basic Autocoder

The 1401 Basic Autocoder is a more advanced symbolic language—an extension of the Symbolic Programming System —that provides continuity with the Autocoder language used in larger IBM systems.

3. Report Program Generator

The Report Program Generator simplifies the preparation of programs needed to prepare reports on your IBM 1401. The programmer supplies only a set of specifications—in punched card form—describing the input cards, the data to be used, the calculations to be performed, and the desired format of the output report or cards. The output from the Report Program Generator is a 1401 program in symbolic language which is then assembled and executed to prepare the desired report. The Report Program Generator is particularly helpful in converting existing procedures to your new stored program system. Management will find the Report Program Generator advantageous in its ability to provide special reports on short notice.

4. FARGO

FARGO is a programming system for the IBM 1401 which permits the user to describe a desired report using statements based on the logic of IBM Accounting Machines. FARGO is a "load and go" system—that is, cards containing the job definition are loaded into the 1401 along with the data cards to produce the desired report directly. A person with sufficient knowledge to accomplish a report job on an IBM Accounting Machine can, with little further training, use FARGO.

FARGO follows the IBM Accounting Machine approach to report preparation while Report Program Generator is used to handle more complex reports and has many features that are not available with FARGO.

Utility Programs

Tested programs are available for the handling of various repetitive functions, such as: clearing storage, loading cards, printing contents of storage, punching contents of storage, multiplying, dividing, etc.

THE IBM 1401-G... SYSTEM WITH A FUTURE

The 1401-G is more than a first step into electronic data processing. It is an exceptionally versatile base for expansion into larger IBM 1400 Series systems.

- All 1401-G applications can be run on the larger 1401 systems with virtually no changes.
- All personnel familiar with the 1401-G system can work immediately with a larger 1401 system with minimum additional training.
- IBM's library of 1401 programming systems and user programs will continue to provide the valuable support which was available to you as a 1401-G user.

In short, the 1401-G has the growth potential that progressive management wants and has a right to expect.

The value that smaller businesses are placing on stored program processing has been demonstrated by the immediate and widespread acceptance of the 1401 systems. Now the 1401-G makes it easier than ever to reap the advantages of electronic data processing. Your IBM representative can show you how to make the change quickly . . . *at a minimum of cost* . . . and with your future needs in mind.

IBM 1401 G