

## GE-50 Series

### MANAGEMENT SUMMARY

The GE-50 Series is a line of compact, low-cost business data processing systems designed and manufactured in France by Compagnie Bull-General Electric. The low price-tags and comparative simplicity of these systems have led to rapid acceptance in the international computer market; by the end of 1969 more than 1,000 of the GE-50 Series systems had been installed.

The GE-50 Series currently consists of three processor models: the GE-53, GE-55, and GE-58. The GE-53, the smallest member of the family, is not now being marketed in the United States and therefore is not described in this report. The GE-55 was introduced to the European market in 1966 and to the United States in October 1968, with U.S. customer deliveries beginning in January 1969. The much faster GE-58 was announced in Europe in the Fall of 1969 and in the U.S. in February 1970; customer deliveries will start in October 1970 for card systems and in the first quarter of 1971 for disc systems.

The planned Honeywell acquisition of GE's computer business has naturally raised some questions about the future of the GE-50 Series. But it is now a near certainty that the 50 Series (unlike some of the other current GE

The French-built GE-55 and GE-58 computer systems are oriented toward low-volume business data processing functions. Disc pack drives (for the GE-58 only) and a single-line communication controller expand the scope of practical applications. Rental prices start at less than \$1,000 per month.

### CHARACTERISTICS

**MANUFACTURER:** General Electric Company, Information Systems, 13430 North Black Canyon Highway, Phoenix, Arizona 85029.

**MODELS:** GE-55 and GE-58.

### DATA FORMATS

**BASIC UNIT:** 8-bit byte, called on "octet" by GE. Each byte can represent 1 alphanumeric character, 1 or 2 BCD digits (in unpacked or packed format, respectively), or 8 binary bits.

**FIXED-POINT OPERANDS:** Arithmetic operations are performed on data held in registers, in packed decimal form. A single-register field is 5 bytes long and can hold up to 9 digits and sign; a double-register field is 10 bytes long and can hold up to 19 digits and sign. Other



*The GE-58 central unit combines processor, alphanumeric and numeric keyboards, card reader, and card punch (at right) in a single compact unit. The associated line printer is at left.*

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▷ computer lines) will continue to be actively marketed and supported throughout the world. The reason is that the 50 Series is significantly lower in both price and performance than the smallest members of the extensive Honeywell Series 200 computer family. Thus, the GE-50 Series will extend the Honeywell-GE product line downward and enable the new company to serve small businesses and first-time computer users who otherwise would be unable to afford its wares.

The GE-50 Series is being marketed on a limited basis in the U.S. Marketing and support efforts are currently being conducted in just five areas: Chicago, Denver, Detroit, Philadelphia, and Phoenix. Moreover, the U.S. marketing emphasis is on 10 "standard systems," as listed in the accompanying table and price list, with only a limited selection of additional peripheral equipment and optional features. Paper tape units, magnetic tape units, magnetic drums, and a plotter are all available in Europe but not in the United States at present. The marketing and support program will probably be broadened to nationwide coverage by the end of 1970.

The GE-55, as marketed in the U.S., is a small, stored-program computer equipped with effective facilities for on-line data entry plus a card reader, punch, and line printer. Most GE-55 applications will involve punched-card master files, with the variable transaction data keyed in by an operator seated at the console. The equipment is well designed for applications that involve a high degree of operator intervention. In addition to the typewriter-style alphanumeric keyboard, there is a separate numeric keyboard with an associated buffer and 6-digit display panel. The operator can read interpreted data printed on the top edge of each card just before the card is read. Moreover, she can load and unload the card reader and punch while seated at the console.

The newer GE-58 is a program-compatible system that offers integrated circuits and approximately 18 times the internal speed of the GE-55 at a somewhat *lower* entry cost. A GE-58 system with 5,000 bytes of 1.2-micro-second core storage, 100-lpm printer, 100-cpm card reader, and 40-col/sec punch can be rented for just \$910 per month or purchased for \$35,490. The basic system can be upgraded through the addition of 5,000 more bytes of core storage, a 200-lpm printer, and/or a 200-cpm card reader. Moreover, the GE-58 is also offered as a disc-oriented system, with one or two disc pack drives capable of storing either 2.88 million or 5.76 million bytes each.

A GE-55 or GE-58 can be linked to another computer by means of a DATANET-51 Single-Line Communication Controller and either a leased or switched telephone line. The other computer can be a GE-50, GE-100, GE-400, or GE-600 Series system or a non-GE computer that uses the BSC transmission mode. The DATANET-51 can turn a ▷

▶ operations, including move, compare, pack, and unpack, are performed on variable-length fields ranging from 1 to 99 bytes.

**FLOATING-POINT OPERANDS:** No hardware facilities; floating-point arithmetic is handled by subroutines. Standard format uses 5 bytes per operand, consisting of a 2-digit exponent, sign, and 7-digit fraction.

**INSTRUCTIONS:** Range from 1 to 8 bytes in length. Arithmetic instructions are 3 bytes long, consisting of a 1-byte operation code and two 1-byte register addresses. Most instructions using variable-length fields (Move Characters, Compare Characters, Pack, Unpack, etc.) are 6 bytes long, consisting of a 1-byte operation code, a 1-byte field specifying the operand length, and two 2-byte operand address fields.

**INTERNAL CODE:** Alphanumeric characters are represented in the ISO (International Standards Organization) internal code. Each character is defined by a 7-bit code; the high-order bit of each byte is 0. Special instructions perform code translations between the ISO internal code and the Hollerith punched card code.

### MAIN STORAGE

**STORAGE TYPE:** Magnetic core.

**CAPACITY:** See table.

**CYCLE TIME:** See table.

**CHECKING:** Parity bit with each byte is generated during writing and checked during reading.

**STORAGE PROTECTION:** None.

### CENTRAL PROCESSORS

**INDEX REGISTERS:** 100 five-byte numeric registers occupy core storage locations 0096 through 0595. The first ten of these registers can be used as base address registers, permitting base-plus-displacement addressing in many (but not all) instructions which reference core storage. The displacement, ranging from 000 to 999, is specified in the instruction and added to the contents of the specified base address register to form an absolute address.

**INDIRECT ADDRESSING:** None.

**INSTRUCTION REPERTOIRE:** 69 instructions, including 7 arithmetic commands, 31 data movement commands, 4 jump commands, 5 comparison and logical commands, 2 shift commands, 3 translate commands, 3 loading and debugging commands, 10 input/output commands, and 4 multiprogramming commands.

Addition and subtraction are performed on signed decimal operands of 9 or 19 digits. Multiplication is performed on signed 9-digit operands. Division is handled by a standard subroutine. Also provided are efficient facilities for data movement, comparisons, character insertion, logical AND and OR, packing, unpacking, conditional branching, and ISO/Hollerith code translation.

**INSTRUCTION TIMES:** See table. ▶

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**CHARACTERISTICS OF THE GE-50 SERIES STANDARD SYSTEMS**

MODEL	GE-55.01	GE-55.02	GE-55.03	GE-55.04	GE-58.01	GE-58.02	GE-58.03	GE-58.04	GE-58.05	GE-58.06
<b>CORE STORAGE</b>										
Cycle time, microseconds	7.9	7.9	7.9	7.9	1.2	1.2	1.2	1.2	1.2	1.2
Bytes fetched per cycle	1	1	1	1	1	1	1	1	1	1
Minimum capacity, bytes	5,000	5,000	10,000	10,000	5,000	5,000	5,000	5,000	5,000	5,000
Maximum capacity, bytes	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
<b>PROCESSOR</b>										
Instruction times, microseconds:										
Add (9-digit signed fields)	2,000	2,000	2,000	2,000	120	120	120	120	120	120
Add (19-digit signed fields)	2,700	2,700	2,700	2,700	165	165	165	165	165	165
Multiply (9-digit signed fields)	70,000	70,000	70,000	70,000	4,600	4,600	4,600	4,600	4,600	4,600
Move (10 digits)	2,400	2,400	2,400	2,400	225	225	225	225	225	225
Compare (9 digits)	1,700	1,700	1,700	1,700	120	120	120	120	120	120
<b>CHANNELS</b>										
No. of standard-speed channels	3	3	3	3	3	3	3	3	3	3
No. of high-speed channels	4	4	4	4	8	8	8	8	8	8
<b>STANDARD PERIPHERALS</b>										
No. of disc storage units	None	None	None	None	None	None	1	2	1	2
Card reader speed, cpm	150	150	150	150	100	200	100	100	200	200
Card punch speed, col/sec	40	40	40	40	40	40	40	None	40	None
Printer speed, lpm	100	200	100	200	100	200	100	100	200	200
No. of print positions	128	128	128	128	96 or 128	128	96 or 128	96 or 128	128	128
Data entry station	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of digits displayed	6	6	6	6	6 or 10	6 or 10	6 or 10	6 or 10	6 or 10	6 or 10

➤ GE-55 or GE-58 into a flexible, low-cost terminal computer, capable of processing data locally and communicating with a larger, centrally located computer at speeds ranging from 600 to 2400 bits per second.

The GE-50 Series equipment is quite compact, requires no false floor, and has fairly low power and air conditioning requirements. The GE-55 central unit (including processor, console, card reader, and punch) is just 64 inches wide, 54 inches deep, and 39 inches high. The GE-58 central unit is 80 inches wide, 70 inches deep and 48 inches high. The line printer used with both systems is 42 inches wide, 30 inches deep, and 40 inches high.

The GE-55 and GE-58 processors are controlled by microprograms in read-only storage. These wired-in microprograms initiate and control the series of elementary operations required to execute each machine instruction in the user's programs. The GE-55 processor contains 4K bytes and the GE-58 processor contains up to 6,826 bytes of 350-nanosecond read-only memory, none of which is directly accessible to the programmer. The flexibility of this microprogram control helps make it practical to utilize disc-oriented GE-58 systems with only 5K bytes of core storage. ➤

**➤ INPUT/OUTPUT CONTROL**

**I/O CHANNELS:** The GE-55 Processor has 3 standard-speed channels and 4 high-speed channels, while the GE-58 Processor has 3 standard-speed channels and 8 high-speed channels.

**CONFIGURATION RULES:** GE-55 and GE-58 systems are currently being marketed in the standard configurations listed in the table and in the price list. A DATANET-51 Communication Controller can be added to any of these configurations.

Normal channel assignments are as follows: The card reader, alphanumeric keyboard, and buffer for the numeric keyboard and digital display are all connected to Standard-Speed Channel 1. The card punch is connected to Standard-Speed Channel 2. The high-speed channels are used for the printer, disc drives, DATANET-51, and any other fast peripheral devices.

**SIMULTANEOUS OPERATIONS:** The card punch, numeric keyboard, and alphanumeric keyboard, which operate asynchronously on a character-by-character basis, can operate simultaneously with other peripherals and with internal processing. The card reader can operate simultaneously with other peripherals but not with internal processing. The GE-55 line printer can operate simultaneously with one other peripheral operation if the other operation is initiated first. In GE-58 systems, the line printer can be fully overlapped with other low-speed ➤

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▷ The instruction repertoire consists of 69 instructions ranging from 1 to 8 bytes in length. Arithmetic operations are performed upon data held in any of 100 five-byte registers, in packed decimal form. Addition and subtraction can be performed on signed 9-digit or 19-digit operands. Multiplication is performed on signed 9-digit operands, and division is handled by a standard subroutine. Data movement and comparison operations can be performed on fields ranging from 1 to 99 bytes in length. Overall, the instruction set is quite flexible—and neither significantly easier nor harder to learn and use than those of most competitive computers.

The GE-55 and GE-58 are theoretically capable of processing up to five programs simultaneously. Multiprogramming is controlled by four special instructions which must be inserted at appropriate points in the programs which are to be executed together. The multiprogramming capability will be of limited value to most GE-50 Series users because of: (1) the very limited core storage size and I/O equipment complement; (2) the lack of a storage protection scheme to prevent the programs from interfering with one another; and (3) the fact that the particular mix of programs to be executed together would have to be carefully written and tested with this in mind. Even so, the multiprogramming instructions will often facilitate the coordination of interrelated tasks within a single program.

Software support for the GE-50 Series is quite limited. The two available Card Operating Systems (Basic and Extended) are really just collections of utility routines which facilitate programming and operation.

To date, most GE-50 Series programming has necessarily been done in the basic machine language (which in this case is not really as difficult as it may seem). But GE has recently developed two new languages to facilitate the programmer's task. GESAL is a conventional symbolic assembly system that permits the use of mnemonic operation codes, symbolic labels, and macro-instructions. GECOL is a compiler that uses a COBOL-like language which is straightforward, relatively easy to learn, and well designed for small-scale business applications.

GECOL greatly enhances the overall utility and ease of use of the GE-50 Series computers, and it is likely that most new users of card-oriented systems will elect to use it. Even so, it is unfortunate that GE has chosen to develop a new, incompatible language rather than an appropriate subset of the widely used COBOL language. No disc-oriented version of GECOL has been announced to date. GE is considering a subset COBOL compiler and a report program generator (RPG) for disc-oriented GE-58 systems, but neither has yet been announced.

GE states that the GE-58, even before its U.S. introduction in February 1970, had competed very success- ▷

▶ peripheral operations. High-speed I/O operations, such as disc reading or writing, permit no simultaneity. If two or more peripheral devices are connected to a single channel, only one of them can transfer data at a time.

### MASS STORAGE

**DSU162 DISC STORAGE UNIT:** Provides economical random-access storage on industry-standard removable disc packs with 6 discs each. One or two DSU162 drives can be connected to a DSC050 Controller, which in turn is connected to a high-speed channel of a GE-58 Processor. (Disc storage cannot be used in GE-55 systems.)

Each DSU162 drive holds one disc pack at a time and has a comb-type access mechanism with one head serving each of the 10 recording surfaces. The basic unit has 100 data tracks on each recording surface. Each track is divided into 10 addressable sectors, and each sector holds 288 bytes. Total storage capacity of each disc pack is 2,880,000 bytes. An optional feature doubles the number of tracks on each surface and increases the disc pack capacity to 5,760,000 bytes.

Head positioning times for the DSU162 range from 25 to 90 milliseconds and average 60 milliseconds. Average rotational delay is 12.5 milliseconds. Data transfer rate is 156,250 bytes per second.

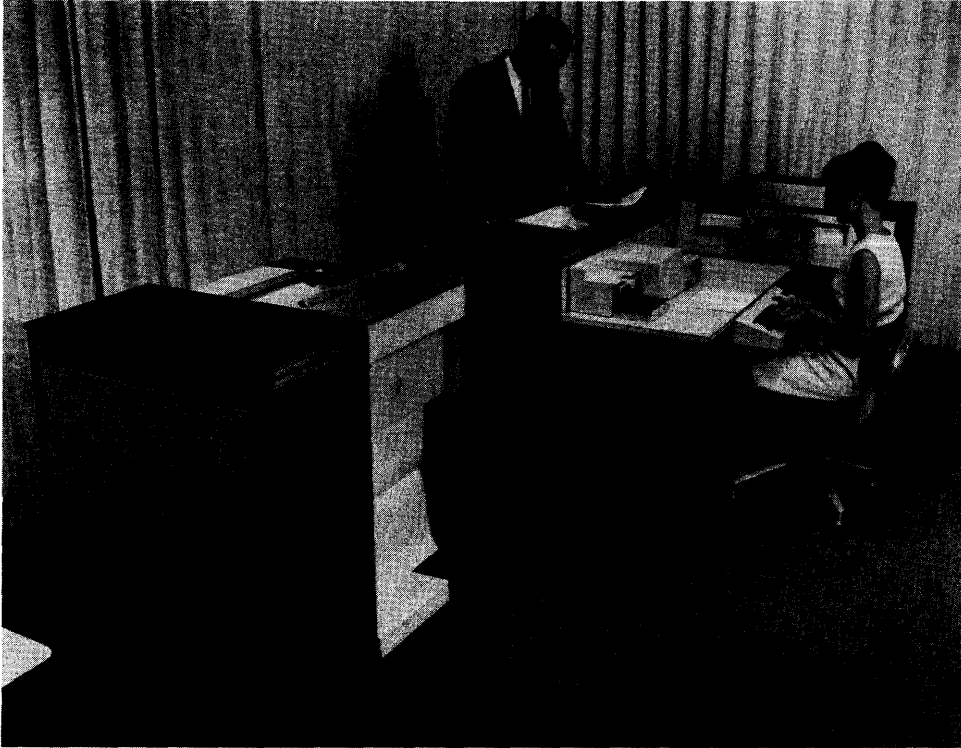
### INPUT/OUTPUT UNITS

**DATA ENTRY STATION:** Consists of a numeric keyboard and an alphanumeric keyboard. The numeric keyboard permits rapid entry of the digits 0 through 9 and three special characters; the keyed data is temporarily held in a 6-character buffer and displayed in a digital display (which can optionally be expanded to 10 characters in GE-58 systems). The display permits verification of the keyed data prior to storing it in memory, and can also be used to display stored numeric data. The alphanumeric keyboard resembles a typewriter, with 45 keys and a space bar. It permits entry of 63 characters in ISO internal code. Typed alphanumeric data goes directly into core storage, on a character-by-character basis.

**CARD READER:** Reads standard, Hollerith-coded cards of 80 or 51 columns. Reading speed is 150 cpm in GE-55 systems and either 100 or 200 cpm in GE-58 systems. Cards are read in column-by-column fashion by 12 photocells. The input hopper and single output stacker hold 500 cards each. Cards can be read singly or continuously. Data printed across the top of each card is visible to the operator before the card is fed to the read station. The reader halts and an indicator is lit when any of the following conditions is detected: feed hopper empty, stacker full, card jam, or defective read. In GE-58 systems, an optional feature permits optical reading of hand-written vertical black marks as well as punched holes.

**CARD PUNCH:** Punches standard 80-column cards in Hollerith code at a rated speed of 40 columns per second. The time required to move each card to the punch station is 330 milliseconds, and ejection speed (for columns to the right of the last column punched) is 80 columns per second. An optional printing unit permits interpretation of the punched data, with a resulting speed reduction to 20 columns per second. The input hopper and single output stacker hold 500 cards. The punch halts and an indicator is lit when any of the following conditions is ▶

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*This view of a GE-55 system emphasizes the free-standing line printer, available in either a 100-lpm or 200-lpm model.*

▷ fully against the IBM System/3 in the European market. Thus, it seems appropriate to analyze the similarities and differences between the two systems.

There are a number of noteworthy similarities between the GE-58 and the IBM System/3. Both are compact business data processing systems designed mainly for "entry" users who are installing their first computers. Both can be rented (in small card-oriented configurations) for less than \$1,000 per month. Both can be equipped with disc storage and single-line communication controllers. Both have slow printing speeds of 100 or 200 lines per minute. Neither system is program-compatible with larger computers. And neither system currently allows U.S. users to add magnetic tape or paper tape equipment.

But there are also a number of significant differences between the two systems:

- The GE-58 uses standard 80-column cards, whereas the System/3 uses IBM's new 96-column cards.
- The System/3 has substantially higher internal speeds despite a slower core storage cycle time.
- The System/3 offers card reading and punching speeds more than twice as fast as those of the GE-58.
- The GE-58 uses separate card reader and punch units, whereas the System/3 combines the reading

▶ detected: feed hopper empty, stacker full, card jam, or punch error.

**PRINTER:** Prints at a nominal rate of 100 lines per minute with a 64-character set, or at 200 lines per minute when a subset of 48 frequently used characters is employed. Available with either 96 or 128 print positions. Housed in a free-standing cabinet that is normally placed to the left of the central processor and console. Prints on continuous forms ranging from 3 to 16 inches in width and from 4 to 16 inches in depth. Horizontal spacing is 10 characters per inch, and vertical spacing is 10 characters per inch, and vertical spacing is either 6 or 8 lines per inch. Vertical formatting is controlled by a 3-channel paper tape loop. Printing is performed by hammer-actuated rotating print wheels; each wheel serves 4 adjacent print positions through horizontal movement of the paper between print-wheel revolutions.

### COMMUNICATIONS CONTROL

**DATANET-51 SINGLE-LINE CONTROLLER:** Equips a GE-55 or GE-58 Processor to transmit and receive data over a single communications line. Permits communication with any GE computer or with other equipment that uses the Binary Synchronous Communications (BSC) transmission mode. Usable on either leased telephone lines, at 2400 bits per second, or switched networks, at 600 or 1200 bits per second. A Polling option enables several GE-50 Series computers to communicate with a larger computer via the telephone network and one single-line controller at the central site. Transmission is synchronous, using the ISO code of 7 data bits plus odd parity. A validity check is carried out on received and transmitted data.

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▷ and punching functions in the 5424 Multi-Function Card Unit.

- The System/3 lacks the GE-58's standard facilities for efficient direct entry and display of data.
- The GE-58 has a much faster disc access time.
- The GE-58 card reader can be equipped to read pencil-marked data from cards.
- The GE-58 offers "bundled" support at no extra charge, whereas System/3 users must pay separately for most software, technical support, and educational services.

Each prospective user will have to decide for himself the relative emphasis to be placed upon these and other considerations. It might be well to remember that small data processing systems of this type are usually input/output-bound. In fact, in many applications their throughput will necessarily be limited by the speed at which an operator can key in the variable transaction data. Thus, the System/3's higher internal speed may prove to be less significant than the fully bundled support that GE provides.

If your business is the type that necessitates the processing of thousands of transactions and the generation of voluminous reports every day, you're likely to conclude that neither the GE-58 nor the System/3 can meet your needs. In that case, you'll probably have to raise your sights and consider somewhat more costly systems such as the GE-100 Series, the IBM System/360 Model 20 or 25, and the smaller Honeywell Series 200 models.□

### ▶ SOFTWARE

**BASIC OPERATING SYSTEM/CARD: BOS/C** is really not an operating system in the current sense of the word. Rather, it is a collection of utility routines designed to aid in programming and operating the GE-50 Series computers.

The major routines within BOS/C are:

A **Loader Program**, which loads programs in either unpacked debugging format (as written by the programmer) or packed operating format, initializes core storage and I/O control, and initiates execution of the program.

An **Alert Recovery Subroutine**, which implements standard error correction procedures.

A **Memory Dump Subroutine**, which prints the contents of selected areas of core storage.

An **Acceptability Program**, which verifies user programs in debugging format, prints an error listing, and (optionally) punches a new program deck with mnemonic operation codes translated into machine operation codes.

A **List Program**, which lists user programs in debugging format and (optionally) punches the parameter cards required by the Packer Program.

A **Packer Program**, which reads a program in debugging format and converts it into the packed operating format, with several instructions on each card.

A **Fixed-Point Divide Subroutine**, which handles dividends of up to 17 digits and divisors of up to 8 digits.

**Floating-Point Arithmetic, Comparison, and Conversion Subroutines.**

**Floating-Point Mathematical Functions**, including sine, cosine, square root, arctangent, hyperbolic tangent, logarithm, and exponential.

A **Statistical Analysis Routine**, which performs regression and correlation analysis.

A **PERT System** for project scheduling and control.

A **Punch Reproduce Duplicate (PRD) Program**, which facilitates a variety of card-handling functions.

A **Data List Program**, which transcribes data from punched cards to printed listings in varied formats.

**EXTENDED OPERATING SYSTEM/CARD: EOS/C** combines all the facilities of BOS/C plus two additional components: a symbolic assembly system called GESAL (GE Symbolic Assembly Language) and a core-resident Supervisor program that serves as an interface between user programs and the hardware.

GESAL permits the programmer to use mnemonic operation codes and meaningful symbolic labels. Pseudo-instructions are used to define the operating environment. GESAL also provides macro-instruction capabilities and debugging tools, and can produce relocatable object programs. Assembly is a three-phase process.

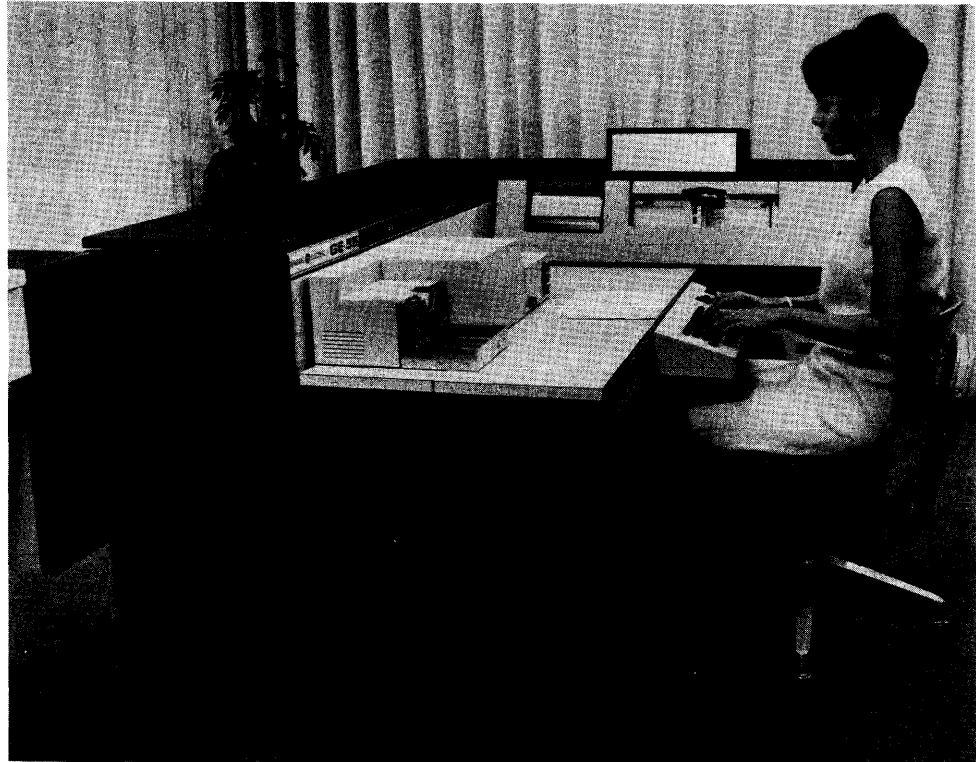
The EOS/C Supervisor is concerned primarily with the coordination between multiple tasks when the system is operated in the multiprogramming mode. It also provides selective variable-length memory dumps and facilitates transitions between successive programs.

**GECOL:** This COBOL-like language and compiler facilitate the programming of most business data processing applications. GECOL can be used on a basic GE-55 or GE-58 system consisting of 5K or 10K processor, card reader, card punch, and printer. No disc-oriented version has been announced to date.

Like COBOL, GECOL uses a single coding form, is largely self-documenting, and contains four program divisions: Identification, Environment, Data, and Procedure. But GECOL is definitely not a proper subset of the COBOL language. Many of the procedural verbs are different, and there are major differences in the formats of the Data and Procedure Divisions. A GECOL Data Division always consists of five sections—Read, Keyboard, Working Storage, Report, and Punch—which name and define all of the associated data items. The Procedure Division consists of an Input Section, which defines the procedures for entering and checking all input data, and a Process Section, which specifies the processing functions and output operations. ▶

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*All equipment except the line printer is within easy reach of an operator seated at the GE-55 console, as this photo clearly indicates.*



- The 23 GECOL procedural verbs are: LOAD, READ, NUMKEY, ALPHAKY, PRINT, PUNCH, DISPLAY, DUMP, CALCULATE, MOVE, STORE, LOOKUP, FORMAT, GOTO, IF, CALL, RETURN, STOP, END, RELEASE, USE, ENTER, and ACCEPT.

A GECOL compilation normally consists of three separate passes: two Acceptability runs, which check the source program for errors and produce a listing, followed by the Compile run, which generates and punches out a machine-language object program. For the Compile run alone, the time required to compile a typical 350-statement payroll program on a GE-55 was about 10 minutes; the resulting object program, together with the necessary supervisory routine and standard subroutines, occupied 4,900 bytes of core storage.

**APPLICATION PROGRAMS:** A payroll package is currently available, and inventory control, accounts receivable, accounts payable, general ledger, and sales reporting packages are in preparation.

### PRICING

**EQUIPMENT:** Prices of the four standard GE-55 systems, the six standard GE-58 systems, and all of the available peripheral equipment and optional features are tabulated in the equipment and optional features are tabulated in the equipment price list at the end of this report.

**SOFTWARE AND SUPPORT:** GE has not "unbundled" to date, so the equipment prices listed here include all of the GE software described in this report and all normal educational courses and professional assistance. GE-50 Series users will typically receive about one to four man-months of technical support, depending upon their needs.

**CONTRACT TERMS:** The standard GE rental agreement entitles the customer to unlimited usage of the equipment. However, if the equipment is used for more than 25 shifts per month, an additional charge of 20% of the basic monthly maintenance charge is imposed to compensate for increased stress on the equipment. If usage exceeds 50 shifts per month, the additional charge is 30% of the basic monthly maintenance charge. The standard agreement provides maintenance of the equipment for five 9-hour days per week. Extended periods of maintenance coverage are available at extra cost.

Long-term leases of GE computer equipment, with full GE support, are offered by the Systems Capital Corporation under its "4-5-6 Plan." Monthly savings, as compared with the GE rental charges under a standard one-year rental agreement, are approximately 9% for a four-year lease, 12.5% for a five-year lease, and 18% for a six-year lease. ■

## GE-50 Series Equipment Prices

		Purchase Price	Monthly Maint.	Rental (1-year lease)*
<b>GE-55 STANDARD SYSTEMS</b>				
GE-55.01	Central Processor with 5,000 bytes of memory Printer; 100 lpm, 128 positions Card Reader; 150 cpm Card Punch with Print Unit	38,690	194	990
GE-55.02	Central Processor with 5,000 bytes of memory Printer; 200 lpm, 128 positions Card Reader; 150 cpm Card Punch with Print Unit	43,010	216	1,100
GE-55.03	Central Processor with 10,000 bytes of memory Printer; 100 lpm, 128 positions Card Reader; 150 cpm Card Punch with Print Unit	46,490	233	1,190
GE-55.04	Central Processor with 10,000 bytes of memory Printer; 200 lpm, 128 positions Card Reader; 150 cpm Card Punch with Print Unit	50,810	255	1,300
<b>GE-58 STANDARD SYSTEMS</b>				
GE-58.01	Central Processor with 5,000 bytes of memory Printer; 100 lpm, 96 positions Card reader; 100 cpm Card Punch	35,490	178	910
GE-58.02	Central Processor with 5,000 bytes of memory Printer; 200 lpm, 128 positions Card Reader; 200 cpm Card Punch	48,650	245	1,250
GE-58.03	Central Processor with 5,000 bytes of memory Printer; 100 lpm, 96 positions Card Reader; 200 cpm Card Punch Two DSU162 Disc Storage Units DSC050 Disc Controller	56,940	284	1,460
GE-58.04	Central Processor with 5,000 bytes of memory Printer; 100 lpm, 96 positions Card Reader; 100 cpm Card Punch Two DSU162 Disc Storage Units DSC050 Disc Controller	66,620	330	1,710
GE-58.05	Central Processor with 5,000 bytes of memory Printer; 200 lpm, 128 positions Card Reader; 200 cpm One DSU162 Disc Storage Unit DSC050 Disc Controller	70,100	351	1,800
GE-58.06	Central Processor with 5,000 bytes of memory Printer; 200 lpm, 128 positions Card Reader; 200 cpm Two DSU162 Disc Storage Units DSC050 Disc Controller	79,780	397	2,050
<b>PERIPHERAL EQUIPMENT AND OPTIONS</b>				
AMM056	5,000 Additional Bytes of Core Memory (for GE-55)	7,800	39	200
AMK050	5,000 Additional Bytes of Core Memory (for GE-58)	7,740	39	200
ADF050	Visual Display Extension (6 to 10 digits; for GE-58)	1,550	8	40
CRS050	200 cpm Option (for 100-cpm GE-58 card reader)	7,350	37	190
OMR050	Optical Mark REeding (for GE-58 card reader)	2,320	12	60
CPA050	Card Punch; 40 columns/second	3,870	22	100
PCP050	Print Unit Option (for CPA050)	1,160	6	30
PRT059	Printer; 100 lpm, 128 columns	8,580	43	220
PRT053	Printer; 200 lpm, 128 columns	12,900	65	330
PMK051	128 Print Position Option (for 96-position GE-58 printer)	1,550	8	40
PMK053	200 lpm Option (for 100-lpm printer)	4,260	22	110
DSU162	Disc Storage Unit	13,550	68	350
CDK056	Double Capacity Option (for DSU162)	5,490	28	325
SLC055	DATANET-51 Single-Line Controller	7,740	39	200
PLF055	Polling Option (for DATANET-51)	2,320	12	60
ACA050	DATANET-51 Adapter (for GE-58 Processor)	780	4	20
CS100	Card Sorter (stand-alone, with general card counter and sort suppression)	3,880	23	80
P112	Card Punch (stand-alone keypunch, with printing unit, selective duplication, automatic right justification, second drum, and special eject stacker)	4,150	40	110

\* Rental prices include equipment maintenance.