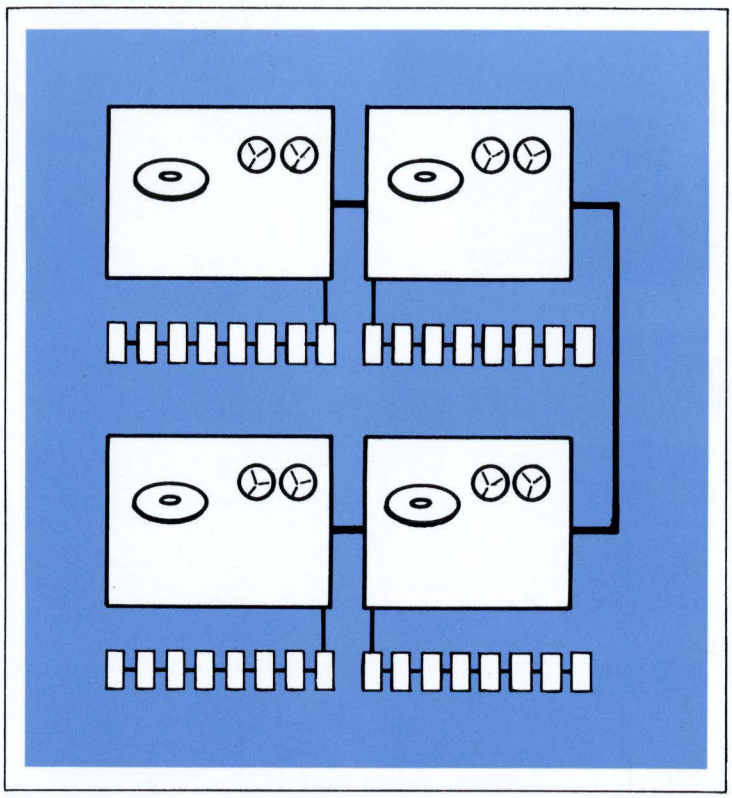


INFOREX

MULTI-SYSTEM SUPERVISOR

SUPERIOR DATA MANAGEMENT WITH REAL COST SAVINGS THROUGH:

- **IMPROVED SUPERVISORY CONTROL**
- **JOB SCHEDULING FLEXIBILITY**
- **OUTPUT TAPE SELECTION**
- **MULTIPLE PROCESSOR RELIABILITY**
- **MASTER POOLING**

The Inforex Multi-System Supervisor Feature (MSS) is designed for users having two or more 1301 or 1302 Systems at one location. With this Feature you can serially connect up to four 1301 or 1302 Control Units, with up to eight Keystations connected to each Control Unit. The supervisor can monitor activities at all Keystations and initiate data transfers from any Keystation.

Improved Supervisory Control Each Control Unit can store up to 128 program formats in four levels; formats in one Control Unit need not be the same as those in the other Control Unit. These formats allow a wide variety of data entry and verification job assignments under program control or a single non-stored program may be in use at each keystation.

Job Scheduling Flexibility The supervisor can monitor on a "real time" basis the status of each job, since a record of every job started, interrupted or completed is stored by the interconnected Systems. This record is displayed upon command at the supervisory Keystation CRT.

Output Tape Selection For wide flexibility in tape processing on several computers, each Control Unit may have a 7-track 556 BPI, 7-track 800 BPI, 9-track 800 BPI, or 9-track 1600 BPI tape drive (feature).

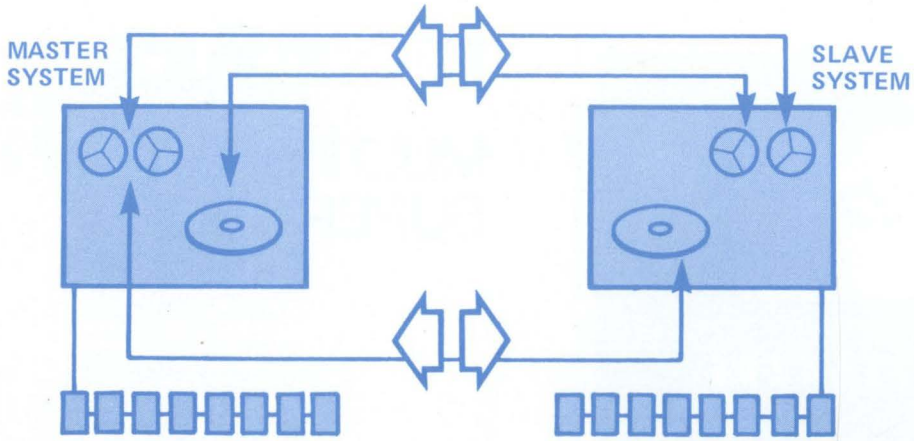
Multiple Processor Reliability With MSS, a maximum of eight Keystations are tied to a Control Unit; therefore, productivity loss is minimized should equipment malfunctions occur. In addition, a 1301 or 1302 system with the Multi-System Supervisor Feature gives the throughput and data management capability of a large system plus the backup protection of multiple tape, disc and processor elements.

Master Pooling Data may be transferred within connected Systems as follows:

- *Master System Tape to Slave System Tape
- Slave System Tape to Master System Tape
- Slave System Tape to Master System Disc
- Master System Disc to Slave System Tape
- Slave System Disc to Master System Tape
- Slave System Disc to its own System Tape

*Master System may be any of those connected and is so designated when one of its Keystations is the supervisory Keystation.

Batches of a priority job on multiple systems, when completed and verified, are easily transferred to one tape for rapid processing. Also, very large jobs may be "spooled" with significant time saving benefits.



CONDENSED SPECIFICATIONS

The "Master" Control Unit is simply the System from which the MSS command is issued. The slave units are any of the other three connected Systems. The MSS Feature provides the following wide range of data handling, transfer capabilities:

- Disc File Paging or Searching
- Disc File Cancellation
- Incompleted Disc File Cancellation
- Program Control Cancellation
- Tape Transfer Continue
- Tape End Processing (for End of Tape and Multi-Volume File Processing)
- Continue Tape Transfer (for Multi-Volume File Processing)
- Tape Validation
- Tape Cancel and Rewind
- Transfer File Cancellation (if this option is installed)
- Disc to Tape Transfers
- Tape File Page
- Tape Record Page and Search

OPERATIONAL NOTES

It is important to note that the MSS Feature does not allow data transfer between two Slave systems. Only two Systems in the group may interact at any one time. Also, connected Systems must be of the same model, i.e., 1301 to 1301, 1302 to 1302.

If the tape records are to be blocked or unblocked, the Master System must have the Inforex Blocking Feature installed.

The output tape will have "tape characteristics" defined by the tape configuration of the System which writes the tape. If both 7-track and 9-track tape drives are being used, caution should be exercised in transferring data from the 9-track System's disc or tape to the 7-track System's tape drive. Also, only 64 different characters and special symbols can be recorded on a 7-track tape, compared to 256 different possible combinations on 9-track tape drives.

PREREQUISITES

Power Requirements All systems must share the same AC power line and ground. There are no other prerequisites other than normal physical installation requirements.

Cable Interfacing The Multi-System Supervisor supports up to four 1301/1302 Control Units. INFOREX will supply the data cables to interconnect the Control Units. Standard cable lengths are 30 feet from Control Unit to Control Unit. The maximum permissible distance from the first to the last Control Unit is 1000 feet.

For additional information contact your local representative or:

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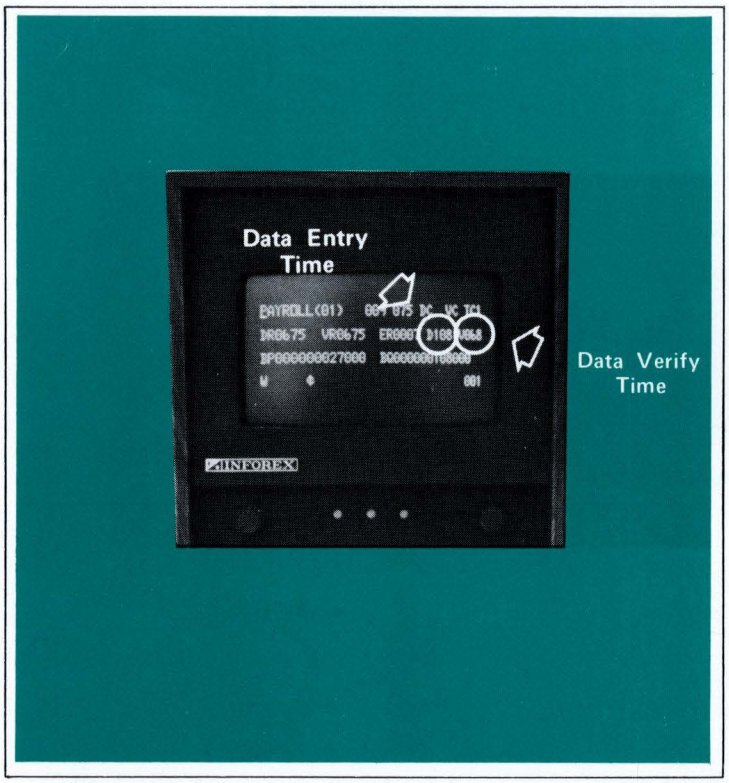


INFOREX

INTERVAL TIMER

SUPERIOR DATA MANAGEMENT WITH REAL COST SAVINGS THROUGH:

- MEASUREMENT OF PRODUCTIVITY
- ESTABLISHMENT OF STANDARDS
- JOB SCHEDULING
- ACCOUNTABILITY

The Inforex Interval Timer Feature provides management with a real-time method of monitoring System and operator throughput. An integral clock within Systems 1301/1302 records data entry and verify operations in minutes and displays the time in the Jobfile library for each batch interrupted or completed.

Measurement of Productivity As each operator starts either data entry or verification operations, the start time is automatically recorded. The supervisor may at any time call up the jobfile record stored within the system and determine the status of each batch. This includes the batch name and number, designation of data entry or verify operator, number of records entered and verified, the batch status (in process, interrupted or completed), and the elapsed time in minutes. Validity is assured because this record cannot be modified by operators or the supervisor.

Establishment of Standards On a hourly, daily, weekly, or monthly basis standards may be established by jobtype and operator. The jobfile records may, on a predetermined schedule, be transferred as a data set to tape. This historical data may then be evaluated by simple listing or by computer processing, to help in the development of "standards".

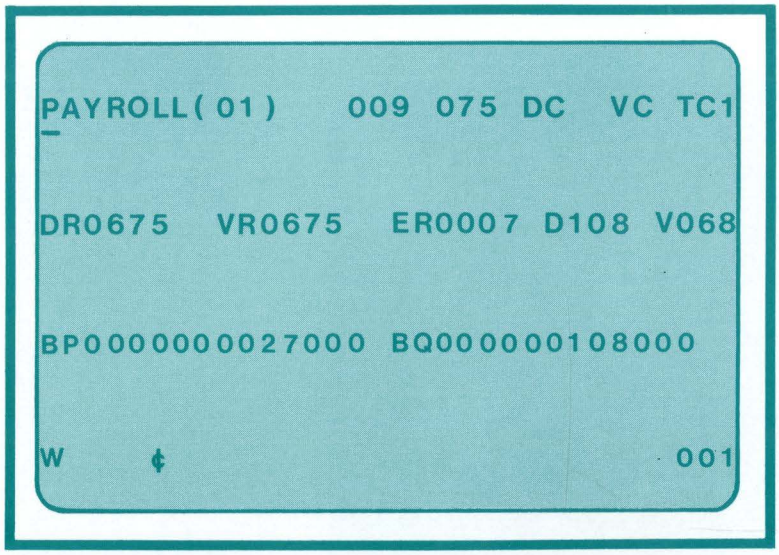
This provides a management tool for determining individual operator performance and system throughput, as well as a comparison to previous data entry methods employed.

Job Scheduling The quantitative analysis provided by records of operator and system throughput is an invaluable tool in workload management. The supervisor can allocate operators and equipment in an economical fashion to eliminate unnecessary overtime, while meeting operating requirements. Typical month-end and year-end data processing peak loads can be anticipated and resources allocated accordingly.

Accountability Individual operator performance is based on actual work accomplished. Therefore, incentive programs can be initiated and motivational management used to maximize data preparation efficiency.

The data entry operation can also document time and costs by job and thereby allocate expenses to user departments within companies, or to clients in the service bureau field.

With approximately 50% of data processing expenditures allocated to data preparation, measurement of efficiency by the Interval Timer Feature provides excellent resource control.



EXPLANATION OF THE JOBFILE RECORD:

Jobname (Batch #)	Data Entry Operator Identifier	Verify Operator Identifier	Data Entry Complete	Data Verification Complete	Transfer To Tape Status

Records Entered	Records Verified	Changes Made In Verification	Total Entry Time	Total Verify Time
675	675	7	108 Min.	68 Min.

Balance Total: Total Payroll Hours

Balance Total: Total Payroll Dollars

Printer Information

Cursor Position

Prerequisites

There are no unique or special considerations nor constraints imposed by this feature, with systems 1301/1302.

For additional information contact your local representative or:

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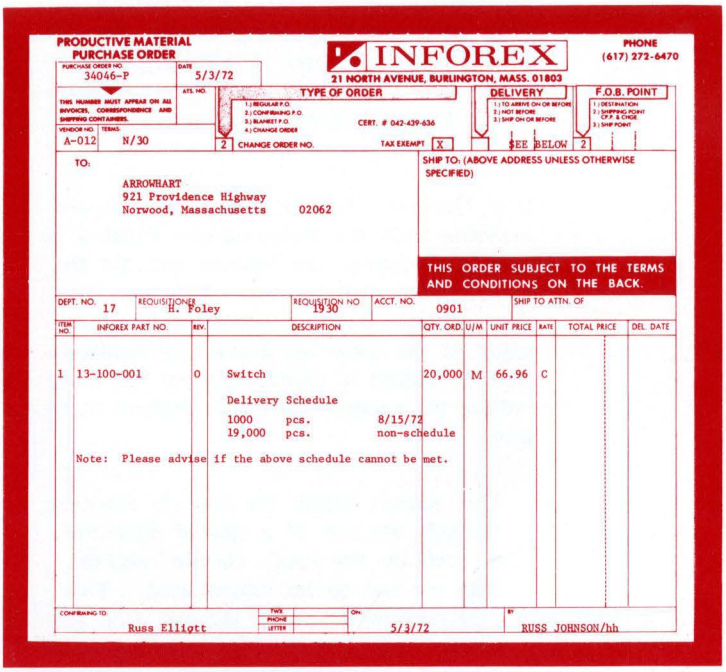


PRODUCTIVE MATERIAL PURCHASE ORDER

INFOREX

21 NORTH AVENUE, BURLINGTON, MASS. 01803

PHONE (617) 272-6470

PURCHASE ORDER NO. 34046-P

DATE 5/3/72

THIS NUMBER MUST APPEAR ON ALL INVOICES, CORRESPONDENCE AND SHIPPING CONTAINERS.

ATT. NO.

TYPE OF ORDER: 1.) REGULAR P.O. 2.) CONFIRMING P.O. 3.) BLANKET P.O. 4.) CHANGE ORDER

CERT. # 042-439-636

DELIVERY: 1.) TO ARRIVE ON OR BEFORE 2.) NOT BEFORE 3.) SHIP ON OR BEFORE

F.O.B. POINT: 1.) DESTINATION 2.) SHIPPING POINT CPP & CHGS. 3.) SHIP POINT

VENDOR NO. A-012 TERMS N/30

2 CHANGE ORDER NO.

TAX EXEMPT X

SEE BELOW 2

TO:

ARROWHART
921 Providence Highway
Norwood, Massachusetts 02062

SHIP TO: (ABOVE ADDRESS UNLESS OTHERWISE SPECIFIED)

THIS ORDER SUBJECT TO THE TERMS AND CONDITIONS ON THE BACK.

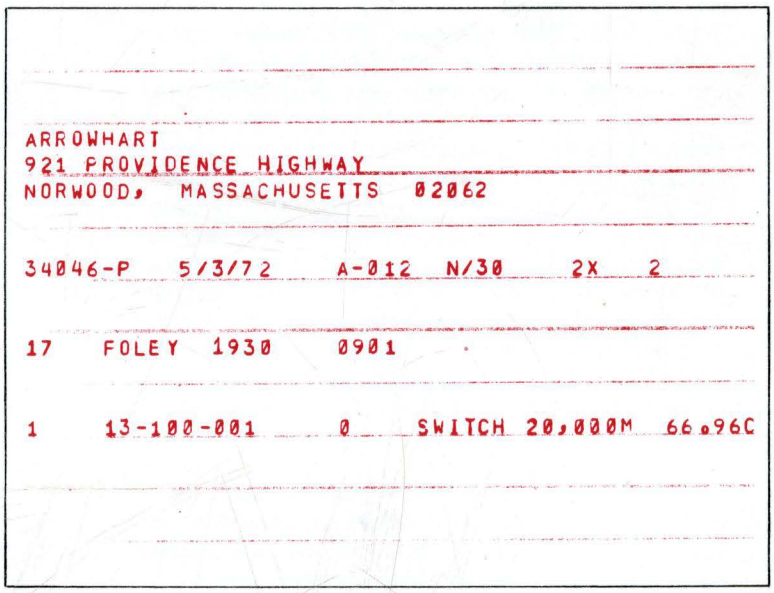
DEPT. NO. 17 REQUISITIONER H. Foley REQUISITION NO 1930 ACCT. NO. 0901 SHIP TO ATTN. OF

ITEM NO.	INFOREX PART NO.	REV.	DESCRIPTION	QTY. ORD.	U/M	UNIT PRICE	RATE	TOTAL PRICE	DEL. DATE
1	13-100-001	0	Switch	20,000	M	66.96	C		
			Delivery Schedule						
			1000 pcs. 8/15/72						
			19,000 pcs. non-schedule						
			Note: Please advise if the above schedule cannot be met.						

CONFIRMING TO: Russ Elligtt TWX PHONE LETTER ON: 5/3/72 BY: RUSS JOHNSON/hh

Source Document

Record Entered



Reformatted Printout

INFOREX

REFORMATTING

SUPERIOR DATA MANAGEMENT WITH REAL COST SAVINGS THROUGH:

- **RETENTION OF SOURCE DOCUMENTS**
- **IMPROVING OPERATOR EFFICIENCY**
- **DATA INTEGRITY**
- **SOURCE DATA CAPTURE**
- **COMPUTER-READY INPUT**

The Inforex Reformatting Feature enhances the overall performance of Systems 1301/1302. Consideration has been given to the wide variety of source documents used for a multitude of jobs within any one data preparation site. It optimizes operator productivity by eliminating the repetitious keying of constant data into each record. Conversion from keypunch and key to tape formats is simplified and host computer reprogramming is minimized.

Retention of Present Source Documents Business operates on paper, and the number and complexity of forms in use today are the result of the user's needs. But the layout and content of forms are often incompatible with efficient key entry and computer operations. Inforex reformatting allows business to retain their present and historic documents while permitting translation into computer-acceptable input. Reformatting occurs in a background mode during disc to tape transfer and all normal data entry functions may occur concurrently.

Improving Operator Efficiency Source documents can be read by the operator left to right and top to bottom in logical order, thereby allowing maximum keying rates.

The tape format required by the computer's application program is automatically provided via predefined reformatting programs stored within the Inforex System.

Data Integrity Edit words may be added to the output tape, selected data may be deleted when it is not required for certain computer runs or retained for others, and fields may be rearranged --all under the user defined program controls.

Source Data With full-record CRT display, the "forms" capability is a powerful tool for data entry outside the traditional data preparation site. A Keystation may be located up to 1000 feet from the Control Unit where non-data conversion operators (such as in shipping, receiving, accounting and sales departments) can enter data directly into a pre-defined displayed format. This "fill in the blanks" mode of operation allows editing and correction at the point of origin, thereby eliminating redundant computer processing and the creation of error tapes. The forms may be suppressed during the disc to tape transfer with only the variable and/or System-inserted Data written on tape.

Computer-Ready Output Reformatted tapes are computer ready, may be blocked or unblocked (if this Feature is installed), files may be re-arranged, blank fields and constant data inserted, records deleted, batch headers added -- all under the control of the user.

Although the standard record length on disc is 125 characters, a user may "pack" multiple logical records per physical record and "explode" them to the desired record length during the disc to tape transfer. The ability expands the useful storage capacity on disc: for example, on System 1301, to 20,000 records of 29 characters in length, and 72,000 records on System 1302.

Systems may be fitted with a variety of tape drives: 7-track 556 – 800 BPI or 9-track 800 – 1600 BPI, all compatible with presently installed high-speed computer room tape drives.

CONDENSED SPECIFICATIONS

The reformatting is accomplished during the disc-to-tape transfer. Immediately prior to the disc to tape transfer the appropriate Reformatting Program is retrieved from the Program Library. Each Reformatting Program resides in the Program Library.

User Options Two no-charge options are available with the Reformatting Feature to further customize the feature and aid the user in data management. The user may elect to have either or both options activated at the time the feature is installed. Neither option is mandatory nor do they reduce the capability of this feature in any way.

Option 1:

This option allows the user to identify, through the use of a special character (chosen by the user), certain records that are not to be reformatted. This option permits special records such as batch headers and other "informational" records to be included in the data stream and written on tape without being reformatted.

The special character and the position in the record where the character will be recorded must be specified when the feature is installed. The special character and its record position are fixed and cannot be changed from job to job.

Option 2:

This option allows the user to "delete", or not write on the output tape, blank logical records. Detection of a special character (user defined) in the first position of a data field indicates that the logical record is blank.

The special character is chosen by the user when the feature is installed and does not have to be the same special character used for Option 1. The special character and its position are fixed and cannot be changed from job to job.

PREREQUISITES

This feature has no unique prerequisites other than sufficient storage area in the program library for reformatting programs, in addition to the normal data entry/verification programs stored there.

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INFOREX

EXPANDED TAPE PROCESSING

SUPERIOR DATA MANAGEMENT WITH REAL COST SAVINGS THROUGH:

- **TAPE SEARCH FOR RECORDS OR FILES**
- **TAPE UPDATE IN PLACE**
- **TAPE RECORD AND FILE PAGING**
- **TAPE VALIDATION**
- **TAPE TO DISC TRANSFER**

The Inforex Expanded Tape Processing (ETP) Feature provides a wide range of tape handling capabilities which expand the high performance of Systems 1301/1302 even further. The user now has an economical means of accessing data retained in magnetic tape libraries and thereby can eliminate expensive computer and printing operations. Name and address files, inventory lists, parts lists, personnel records, equipment history files, etc., can be retrieved for additions within records, deletions, corrections and updates. These operations in low volume applications are best performed directly on tape, or conversely with large files and extensive modification, can be transferred to the System's random access disc.

Tape Search for Records or Files A single record or the first record of a file may be retrieved and displayed on the operator's CRT. The search argument can be as simple as a single character anywhere in a record, or it may be the entire record. The system will search the tape either forward or backward until a valid compare is found, or if not found will continue to the end of the file.

Tape Update in Place Once a record is found, any character or the entire record may be rekeyed and the tape written over. If desired the record may be completely deleted.

Tape Record and File Paging Single records may be displayed sequentially, or if required, the first record of each subsequent file. These operations are very useful when extensive updates are to be performed in a major portion of the file.

Tape Validation Data integrity is an integral requirement of properly managed data preparation operations. To insure against loss of records or data within records, "Tape Validation" is extremely valuable. This process checks each taped record for parity and computes the number of records written on tape.

Tape-to-Disc Transfer When tape-resident data requires extensive modification, it is best performed by more than one operator, and this in turn is best accomplished on Disc. The supervisor can perform file division and logical record batching, which permits management of operators who are concurrently adding to existing records, deleting records, or inserting new records within their assigned batches.

Another powerful tool in maximizing the capabilities of Inforex Systems is creating a library of

program control formats on tape. This eliminates the need for entering often-used job programs from the keyboard. Sets of 128 programs can be retained on tape for use in multiple-System sites, or in single-System locations where a wide variety of program formats are necessary to meet operating requirements.

The program tape is loaded in rapid fashion, the System searches out the program set requested, and transfers that set of programs from the tape to the System's disc-resident Program Library and Program Directory. All files on the disc, including program control formats, may be written on tape as required.

PREREQUISITES

This Feature requires no special hardware adaption or operational consideration. The feature was developed to operate effectively with blocked tape.

BLOCKING

- **COMPUTER READY OUTPUT**
- **USER SELECTED BLOCKING**
- **COMPATABILITY WITH ETP**

The Inforex Blocking Feature further enhances the operation of Systems 1301/1302 in eliminating the data entry "bottleneck" created by the tremendous processing power of third generation computers.

Computer Ready Output Improving throughput in data preparation is one element of the total data entry task. Blocking improves the second element, the form in which data is made computer-ready.

User Selected Blocking Utilizing blocked tapes reduces the tape input and output processing times for both Inforex Systems and the computer. Multiple user records may be grouped or "blocked" into one record of up to 800 characters. Users may specify the record length and blocking factor; however, the logical record must be at least 16 characters in length.

Compatability with ETP Unblocking is used with Inforex Systems in conjunction with the Expanded Tape Processing Feature. Tape-resident records which are blocked must be unblocked during transfer to Disc. If users require special padding characters, they will be provided by a no-charge option with the Blocking Feature.

For additional information contact your local representative or:

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INFOREX

1600 BPI TAPE DRIVE

SUPERIOR DATA MANAGEMENT WITH REAL COST SAVINGS THROUGH:

- **AUTOMATIC ERROR CORRECTION**
- **DATA INTEGRITY**
- **GREATER STORAGE CAPACITY**
- **HIGH SPEED TAPE DRIVE COMPATIBILITY**

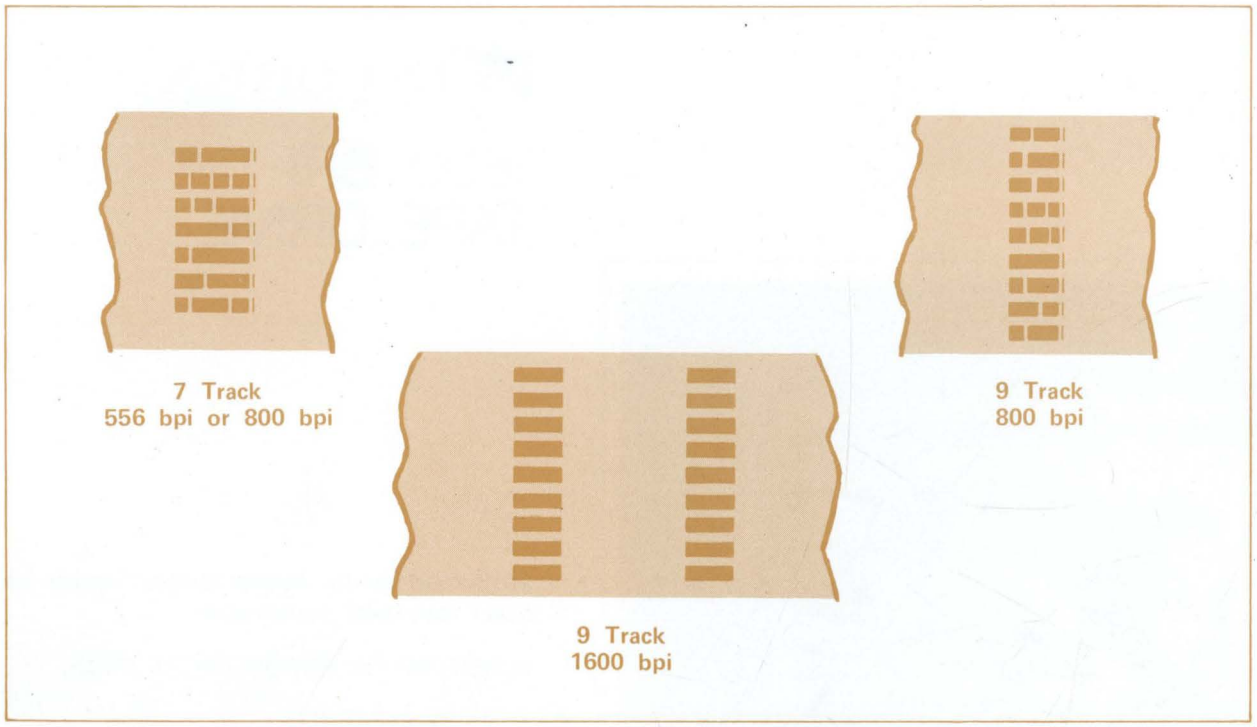
The Inforex 1600 BPI Phase Encoded Tape Drive is offered as an optional feature to meet the industry trend towards the use of higher speed transports. These transports permit tape speeds of up to 200 ips, thereby lowering the time spent on CPU I/O channels. In addition to the economics associated with higher read in rates, phase encoding of data is inherently more reliable.

Automatic Error Correction Single track errors caused by tape defects are automatically corrected by the tape drives' sophisticated electronic detection system. Tape damage or contamination problems which may cause a loss of a weak signal or incorrect bit decoding are also improved by phase encoding.

Data Integrity Electrical and mechanical "skew" are a cause of read errors and also cause incompatibility between tape transports. Phase encoding provides a significant improvement in eliminating such problems.

Greater Storage Capacity Data stored at 800 BPI on 8½ inch reels (1200 feet) will store 8900 800 character record blocks. The 1600 BPI phase encoded recording, however, increases the equivalent storage capacity to 17,200 record blocks of 800 characters; tape libraries and reel handling, therefore, can be reduced. The cost associated with moving large volumes of taped data via commercial transportation is also significantly reduced.

High Speed Tape Compatibility Inforex's 1600 BPI recorded tapes are compatible with the high speed tape transports available from IBM, Storage Technology, and other independent producers of this class of equipment.



CONDENSED SPECIFICATIONS

Number of tracks	9 track
Data density	1600 BPI
Recording mode	Phase Encoded
Tape velocity	12.5 IPS
Instantaneous speed variation	±4%
Start/stop displacement	0.19 inch ±0.02 inch
Start/stop time	30ms ±1ms
Rewind speed	50 IPS high speed rewind 12.5 IPS unload speed.
Tape specifications	0.5 inch wide, 1.5 mil think computer grade
Reel Size	8½ inch (1200 feet)
Electronics	Linear IC, silicon solid state and DTL logic

For additional information contact your local representative or:

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INFOREX

ON-LINE COMMUNICATIONS

FAST, EFFICIENT ON-LINE COMMUNICATIONS PROVIDING SUPERIOR DATA MANAGEMENT AND REAL COST SAVINGS THROUGH:

- LOCAL OR REMOTE TRANSMISSION CONTROLLER COMPATIBILITY
- VARIABLE TRANSMISSION SPEEDS
- BACKGROUND OPERATIONAL MODE
- UNATTENDED OPERATION
- AUTOMATIC ERROR DETECTION AND RECOVERY

Inforex On-Line Communications Feature permits Systems 1301/1302 to send and receive taped data over customer or common carrier networks to and from computers via IBM's 2701 or 2703 Data Transmission Control Units, or via the BISYNC Adapter for users of the IBM Model 360/20. This feature utilizes unique capabilities that depart from the standard 2780 concept to enhance the performance of system and communication operations. For example, a resident Communications record provides the real-time status of transmissions, and is available for call up and display by the supervisor as required.

Local or Remote Transmission Controller Compatibility Inforex Controls Units are compatible with standard modems and the IBM 2701/2703 Data Transmission Control Units or the BISYNC Adapter. Data is transmitted serially in synchronous, half-duplex mode. Two-wire (voice band) or four-wire (full duplex) common carrier facilities may be used. The feature operates in a half-duplex mode, even if a full duplex four-wire network is employed.

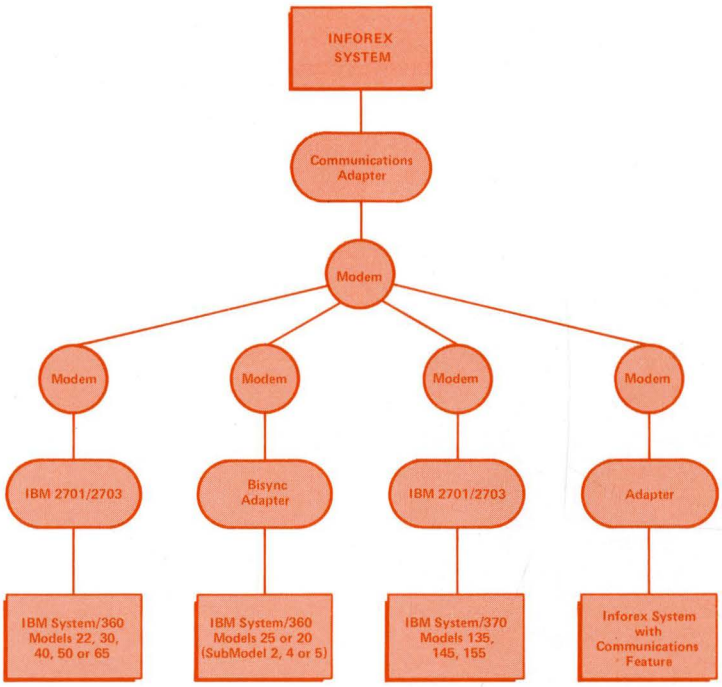
Text data is transmitted serially utilizing EBCDIC code, therefore, any one of the 256 bit combinations is allowed when the host controller has the transparency feature.

Variable Transmission Speeds Inforex equipment is compatible with all industry standard modems. The effective transmission speeds range from 300 to 9600 baud, depending on the modem used and the configuration of the 2701 or 2703 controllers.

Background Operational Mode Data transmission is accomplished in the background without interruption to normal system activities, such as data entry verification, balancing, searching or paging a file. Inforex systems 1301/1302 assumes a passive role, permitting the host computer to send or receive data whenever the supervisor places the system in a "ready" or "available" status.

Unattended Operation Systems 1301/1302 may be unattended during the data transmission with Control Unit "Power On", the modem set to "Auto", and a tape mounted and positioned. Distributor networks, for example can record daily activity and update inventory level files on a batch basis during the night taking advantage of lower line rates.

Automatic Error Detection and Recovery The communications network Error Recovery Proce-



dures are dictated by the host computer. As such the Inforex systems assume a passive role responding to computer directed procedures.

In addition to the above computer recovery procedures, data integrate is assured by a series of tests performed by the Inforex system.

These are:

1. Agreement of the sequence number
2. Agreement of CRC characters
3. Telephone Line break check
4. Tape parity error checking

CONDENSED SPECIFICATIONS

Transmission Mode – serial, in synchronous mode, in transparent text, over half-duplex or voiceband common carrier facilities, or private leased lines.

Modem The Systems are compatible with all industry standard modems having, Interval Timing, EIA RS232-C specifications, and synchronous transmission. Recommended but not manditory are: Alternate Voice and Selective Unattended Answer Features.

Transmission Speed – 300-9600 BAUD with power source on same line as Control Unit on the modem used on confuguration of the Transmission Controller.

Transmission Controllers – IBM 2701/2703, or BISYNC Adapter.

For additional information contact your local representative or:

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INFOREX

MODEL 1402 PRINTER

EFFORTLESS, LOW-COST PRINTING WITH RELIABLE, QUIET SERIAL PRINTER FEATURING:

- **FULL 132 PRINT POSITIONS**
- **ELECTRONIC TYPEWRITER PRINT QUALITY**
- **MULTIPLE COPIES**
- **USER FLEXIBILITY**
- **EASY OPERATION**

The Model 1402 Serial Printer is an Inforex Feature offered for the generation of hard-copy reports and statistics from Systems 1301 and 1302. It prints directly from disc or magnetic tape with or without editing . . . and printing occurs in a "background" mode, permitting uninterrupted data entry operations and thereby enhancing system throughput.

Full 132 Print Positions The Serial Printer operates at a speed of 30 characters per second on average text with up to 132 print positions per line. A 64-character-set print disk produces modern, legible type and can be easily removed by the operator to install a replaceable spare.

Electronic Typewriter Print Quality Proven servomechanisms and state-of-the-art electronic circuits quickly and accurately position the carriage and print disk--no mechanical stops are used. Printing occurs only when all motion has stopped, resulting in print quality comparable to that of the finest electronic typewriters. Since mechanical stops are eliminated, operation is quiet, vibration free and extremely fast, maintaining the fatique-reducing environment of "whisper quiet" Systems 1301 and 1302.

Multiple Copies Up to six-part standard continuous fan-fold forms (15 inches maximum width) are pin fed through the Printer. The original and all copies reveal sharp and clearly legible type.

User Flexibility Program control of the Printer by system software offers the user a wide array of functions to create hard-copy output in exactly the form required. These include . . .

Disc to print
Tape to print
Data reformatting
Zero suppression
Floating dollar sign
Print selected fields
Edit word insertion
Line advancing and page skipping
Stored page and column headings
Automatic page numbering
Multiple line print from one data record

Easy Operation Paper loading is as simple as rolling paper into a standard typewriter. Left- and right-hand clamps on an adjustable tractor position and hold the paper against the feed pins . . . and a crossbar with movable rollers gently but firmly presses the paper to the platen so that printed type is aligned and never fuzzy. Ribbon, fabric or one-time carbon available in one or two colors, is contained in a snap-in cartridge, making the task of changing ribbons simple and clean. And because it's a desktop model, the Serial Printer takes up little room and can be conveniently located near the System's Control Unit or supervisor's keystation . . . whichever desired.

Typical Applications include supervisor reports on operator and system performance, listing of records character by character, job and batch status reports, and audit trail documents in conjunction with jobs using balance totals. Its innumerable uses include printing of all amount fields from disc records, all batch header information from tape index files, all error records scheduled for correction . . . the Model 1402 Serial Printer can create hard copy of any tape or disc data.

SPECIFICATIONS

Performance

Print Speed	30 characters per second on average text
Character Set	64 characters
Print Line	132 print positions
Forms Width	15 inches maximum
Carriage Return Time	400 msec maximum for 132 print positions
Column Spacing	9 characters per inch nominal
Vertical Spacing	6 lines per inch

Electrical

Voltage	+5 Volts DC ±15 Volts - 115 AC
Current	4 Amps (8 Amps peak)
Power Consumption	100 Watts (average)

Physical

Height	8½ inches
Width	22½ inches
Depth	13½ inches
Weight	30 pounds
Color	black

For additional information contact your local representative or:

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INFOREX

OPERATOR ASSISTANCE FUNCTIONS

SUPERIOR DESIGN PROVIDES GREATER DATA PREPARATION EFFICIENCY THROUGH:

- **EASY CONVERSION**
- **COMPLETE PROGRAM CONTROL**
- **CONVENIENT KEYBOARD & DISPLAY**
- **CONVERSATIONAL SYSTEM MESSAGES**
- **QUICK–LOOK INFORMATION DISPLAYS**
- **FLEXIBLE VERIFICATION METHODS**
- **SIMPLE DELETION & INSERTION OF RECORDS**

In the majority of data processing operations approximately 50% of expenditures is allocated to data preparation. Of this amount 10% is spent on equipment and 90% for personnel . . . so Inforex designed Systems 1301 and 1302 with the operator in mind. We considered ease of learning to operate the 2901 Keystation used with the systems, a quick understanding of their functions, and a comfortable, noiseless environment.

Easy Conversion Conversion from the punched card or key-to-tape devices can be an efficient, gradual and effortless operation . . . and is well worthwhile. Although you may wish to use the full 125-character record, little is sacrificed by remaining in an 80- or 90-column format. This means that conversion can be logical, virtually "painless" and accomplished as other data processing modifications occur. Keypunch cards and mini tape reels, associated with keypunch and key-to-tape equipment, are eliminated . . . and so are their cumbersome handling and cataloging. Program control formats are instantly retrieved at any keystation from disc storage . . . drum cards and program strips are not needed. Both data entry and verification procedures are predefined, eliminating another source of errors.

Complete Program Control Electronically stored equivalents of a drum card are easily created by the lead operator or supervisor. Field start and field continuation codes are used to define fields that make up a record. Up to four levels of program control or two levels and auxiliary duplication information may be established for each jobtype. And, if you wish, program levels may be linked together under system control, such as program level 1 to 3 to 4 to 2 and back to 1 again. This "cascading" of program levels eliminates the need for the operator to change switch settings or key the appropriate program level . . . it also permits record lengths of up to 488 characters. Inforex supplies Station Program Control Layout forms to assist in the development of a Program Library.

Convenient Keyboard & Display The electronic keyboard is in the standard industry arrangement, allowing an easy transition from keypunch or key-to-tape equipment to operating Inforex Systems . . . which are designed to keep pace with the fastest operator. Keying is whisper quiet . . . but of sufficient

sound for maintaining rhythm. The monitor behind the keyboard is a full-record CRT display which allows the operator to view, in complete context, 125-character records as they are keyed. Position within a record is designated by a three-digit counter incrementing or decrementing in conjunction with a moving cursor.

Conversational System Messages More than 40 system-generated messages are presented on the CRT display. Messages like "INVALID KEY," "NOT L ZERO," "FIELD FULL" and "END OF FILE" direct the operator through each job . . . freeing the operator from frustrating and time-consuming decisions and at the same time assuring data integrity. Whenever a message is generated, an indicator light on the keyboard rapidly flashes on and off and the keyboard is in a "disabled mode" . . . except for depression of the RESET key which automatically allows the operator to continue the assigned task.

Quick-Look Information Displays To assist the operator in every step of keystation use, data can be instantly retrieved for viewing on the CRT by a simple two-key operation. Display commands from the keyboard can retrieve . . .

- Program formats
- Original records
- Auxiliary data stored in the system
- Record counts for data entry and verification
- Records corrected during verification
- Balance totals
- Negative balance totals
- Program level in use
- Last Job Control Statement issued

Display commands, coupled with the keyboard indicator light and system-generated messages, virtually eliminate operator confusion . . . ensuring high productivity.

Flexible Verification Methods Verification methods vary by job, company and industry requirements. Inforex Systems allow complete flexibility so that the user can define verification procedures. Program control formats are created by the user for each job, and both data entry and verification parameters are defined. One job may call for complete rekeying of record content . . . another for alpha character sight verification and numeric rekeying . . . and a third for sight verification only. Regardless of the method used, operators are automatically stepped through records. Fields programed for key verification must be rekeyed since all forward function keys are inoperable in the verify mode. If a "V" was used as the first character of a jobname when creating the program control format the system will not allow transfer of a batch from disc to tape unless it is completely verified.

Key verification procedures are simple. The industry standard "three retry" method is used for changing a character from the one entered in the data entry mode to another in the correction mode. However, if an entire field requires correction, use of the verification correction (VER COR) key simplifies this procedure by placing the operator in a data entry mode for that field only. The operator may then either sight verify the correction or the user may elect an option that forces key verification of a corrected field.

Inforex Systems also allow concurrent data entry and verification of the same job and batch when more rapid processing is desired.

Simple Deletion & Insertion of Records Records can be inserted into or deleted from a file by using keys specifically designated for the task rather than complicated operational procedures associated with most other data entry systems. Batch record count and balance totals, if used, are corrected by the system when records are inserted or deleted.

For additional information contact your local representative or:

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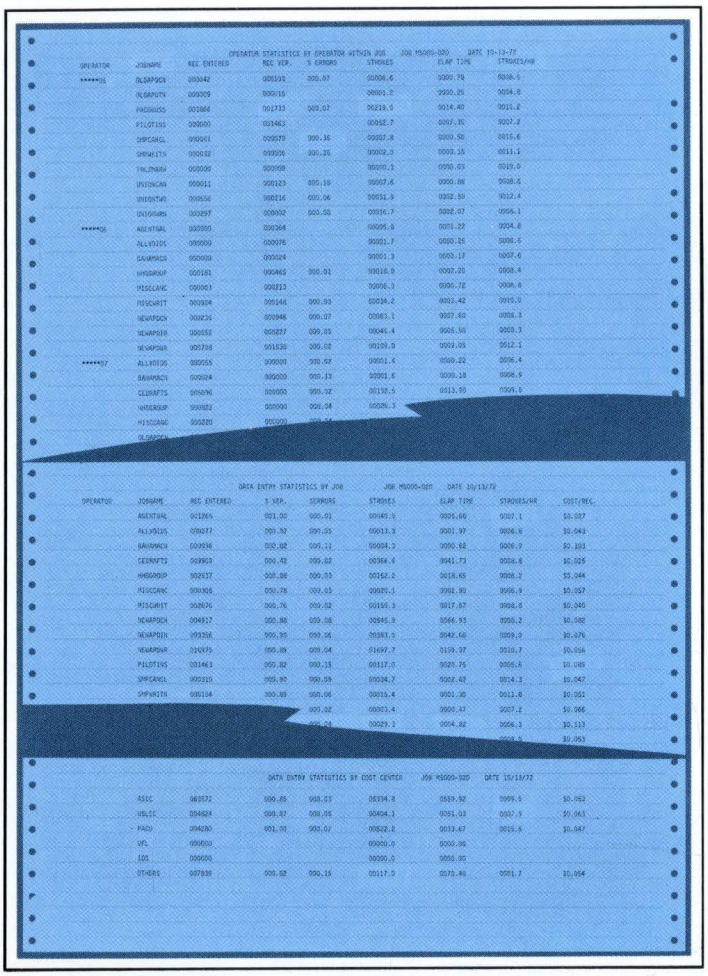

INFOREX

SYSTEMS MANAGEMENT CONTROLS

ENSURE SYSTEM, JOB AND OPERATOR MANAGEMENT BY APPLYING ANY OR ALL MANAGEMENT CONTROLS AVAILABLE WITH SYSTEMS 1301 AND 1302:

- **PROGRAM CONTROL LIBRARY**
- **JOBFILE LIBRARY**
- **KEYSTROKE COUNTER**
- **TRANSFER FILE LIBRARY**
- **JOB CONTROL STATEMENT FILE**
- **KEYSTATION COMMAND MODE**
- **OPERATOR/SYSTEM ANALYSIS SUMMARY**
- **INTERVAL TIMER**
- **MODEL 1402/MODEL 1404 PRINTERS**

Improvement in data preparation, with increased throughput at lower cost, is assured by the hardware/software capabilities of Systems 1301 and 1302. Inforex considered each aspect of user requirements in the preparation of data for computer processing . . . operator convenience; keyboard and keystation design; clear, concise, easy to understand system-generated messages; automatic pooling; error detection and correction; editing . . . all the functions of keypunch/verifying and key-to-tape equipment as well as many unique capabilities have been field proven.

System Management Controls go beyond system operation to enable management to optimize cost effectiveness by measuring operator productivity so that personnel and computer resources can be scheduled in a timely fashion. Since this is automatically accomplished by the system, operators and supervisors never need to slow down operation or concern themselves with elaborate recordkeeping methods.

Management Controls Ensure...

Program Control Library User-created program controls associated with specific applications are stored on disc in the Program Control Library... a system-maintained file of all programs stored in the system. System 1301 has a capacity of 128 four-level programs... System 1302 can store 192. Record format including field content, check digit calculations and balance accumulation are among the many parameters the user may define. Supervisors can update or modify programs easily and efficiently via the 2901 Keystation keyboard or load different sets of program controls from magnetic tape. Operators can "call" any program to their keystations as well as display on the keystation CRT the program control format currently being used. Concurrent use of one program for both data entry and verification is allowed ... so is the use of different programs for each jobtype. The system also maintains a disc-resident directory of the names of all stored programs, which is easily accessed any time.

Jobfile Library The Jobfile Library is system created, updated and maintained as an operator works on a particular job task. The supervisor can easily access the Jobfile any time to determine the current status of each batch. Information on each batch includes...

- Jobname and batch number
- Identification of data entry and verify operators
- Number of records entered and verified
- Batch status (in process, interrupted, or completed)
- Error record count
- Balance totals
- Keystrokes used in data entry and verification

And... with the Inforex Interval Timer Feature... the elapsed time in minutes for data entry and verification of a batch also appears in the record.

The Jobfile Library can be directly transferred to tape and processed on the user's mainframe for analysis of operator performance, or be simply printed as hard copy to provide a general evaluation to management.

Keystroke Counter The keystroke counts appearing in the Jobfile are generated by the Keystroke Counter. This Counter records all "meaningful" keystrokes used in data entry and verify operations... and the system disregards keystrokes having no purpose in evaluating operator skill, including Job Control Statements, depression of the RESET key, verify correction operations and those automatically generated by the system, such as duplication from the previous record. The Keystroke Counter is a powerful tool in the hands of management for determining operator proficiency, job difficulty, quality of source documents and throughput as compared to other data entry and verify methods.

Transfer File Library Inforex offers the Transfer File Library as a no-charge option with Systems 1301 and 1302. As batches and jobs are completed (entered and, if elected, verified) the supervisor can transfer them from disc to tape. When transferred, the system automatically enters the same basic information contained in the Jobfile into the Transfer File Library... and, like the Jobfile, it can be called up by the supervisor any time. The Transfer File Library is maintained for all batches written to tape and no longer needed as disc-resident files. Up to 91 Transfer File records can be stored by System 1301 and 188 by System 1302. This "history file of system use" can be written to tape and processed to provide a detailed analysis of operator performance and system throughput for any operating period.

Job Control Statement File Operation of Systems 1301 and 1302 are based on key-entered Job Control Statements. These simple statements are used for easy tasks, such as calling up a program control format by an operator, as well as more involved tasks, such as printer and communications commands which are normally issued by the supervisor. The Job Control Statement File is a system-generated account of all Job Control Statements issued at all keystations . . . it identifies the actual keystation from which a command was initiated. This beneficial, no-charge option is a simple means of accounting for assigned Job Control Statements and individual performance . . . particularly useful during training of new operators. The Job Control Statement File can also be transferred to tape or printed as hard copy to serve as a running account of system use.

Keystation Command Mode (System Control Option) In data preparation operations where a high degree of system control is required, the Inforex Keystation Command Mode can be installed. This no-charge option permits the supervisor or lead operator to designate any keystation in the system as the control or command station . . . just by entering a simple Job Control Statement from the keystation keyboard. Automatically the system prevents all other keystations from being used for the supervisor-oriented functions of initiating . . .

All tape operations
All communications commands
All printer commands
All cancel commands

Even when in control of these operations the command keystation can still initiate any task.

Operator/System Analysis Summary Inforex provides an IBM COBOL program which, when coupled with a tape containing the Transfer File, processes through the user's mainframe a complete and accurate Statistics Analysis Report for any operating period. Statistics can be obtained by operator within jobname, jobname, cost center, and balances per batch. Vital information contained in the report includes . . .

Jobname
Operator identification
Records entered
Records verified
Percentage of error rate
Total keystrokes
Elapsed time
Average keystrokes per hour
Cost per batch

This powerful no-charge option is extremely useful in measuring operator productivity and aids greatly in long-range allocation of resources. It is available in all Inforex tape configurations and is furnished with a complete documentation package, including a program listing, for easy maintenance and user-tailored program changes.

Interval Timer The Inforex Interval Timer Feature provides management with a real-time method of monitoring system and operator throughput. A clock within the system separately records data entry and verify operations in minutes for each batch and displays the actual elapsed time spent on the particular task in the Jobfile Library. If entry or verification of a batch is interrupted the clock stops but resumes timing when the task is continued. With this Feature standards can be established on an hourly, daily, weekly or monthly basis by jobtype and operator.

Model 1402/Model 1404 Printers The Inforex printers are highly reliable, economical means of producing hard-copy output, and . . .among their many applications . . .can be used to create statistics reports from the system libraries and files. Analysis of operator skill and speed, job volume and type is an invaluable tool in workload management. The supervisor can assign jobs and apportion the work in a manner that will produce the best results. Plus, typical week, month and year-end data processing peak loads can be anticipated and resources allocated accordingly.

For additional information contact your local representative or:

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INFOREX

SYSTEM ASSISTANCE FUNCTIONS

SUPERIOR DATA PREPARATION ASSURED THROUGH THE CAPABILITIES AND CHARACTERISTICS OF SYSTEMS 1301 AND 1302:

- CHECK DIGIT COMPARISON & GENERATION
- ALPHA RIGHT BOUNDARY CHECKING
- LEFT ZERO OR BLANK INSERTION
- AUTOMATIC FIELD FUNCTIONS
- AUTOMATIC FIELD CORRECTION
- BALANCING
- RECOMPUTE
- AUTOMATIC PROGRAM LEVEL SELECTION
- PACKED RECORDS
- STORED TAPE LABELS
- AUTOMATIC BATCH TRANSFER
- TAPE VALIDATION
- DISC COPY/RESTORE
- COMPATIBILITY

The System 1301 and 1302 Control Units incorporate unique, Inforex designed and manufactured processors that operate under extremely powerful software, resulting in System Data Management under predetermined control... and freeing both operating and supervisory personnel from performing complicated and time-consuming tasks.

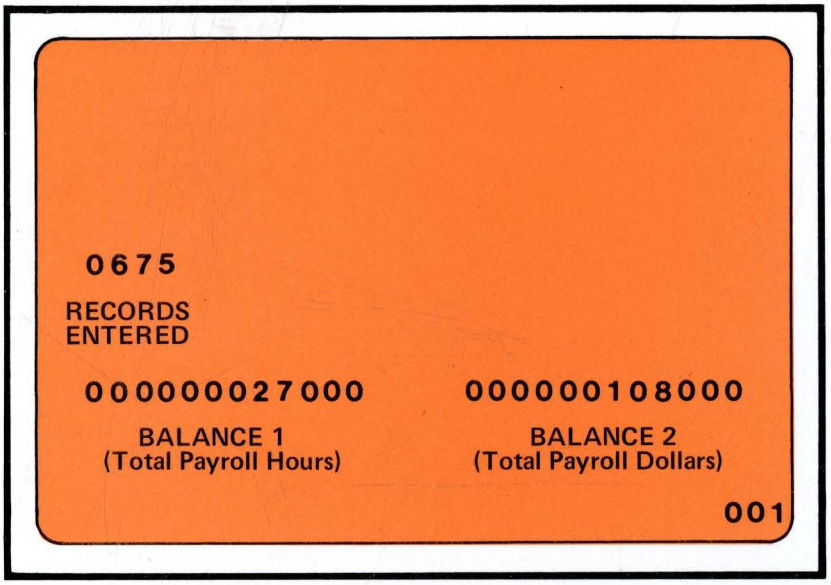
Check Digit Comparison & Generation The user may select any two of three standard check digit routines on a system... Modulus 7, 10, or 11. These can be used in a checking or comparison mode for documents incorporating check digits, or in a generating mode when creating new files, such as account numbers or parts lists.

Alpha Right Boundary Checking Overflow of alpha data from one defined field into a following field is automatically prevented by alpha right boundary checking. When the boundary is reached the operator's keyboard electronically locks, the indicator light flashes on and off, and the system-generated message "FIELD FULL" appears on the CRT display. Field information may be continued into the next field at the operator's descretion.

Left Zero or Blank Insertion Field lengths and controls can be predefined in the Program Control Format as "left zero" or "left blank" insertion fields. Only one of these functions, not both, may be enabled on a system. If the format requires a left zero fill field, the system automatically right justifies the field and inserts leading zeros... if the format requires a left blank fill field, the system inserts blanks as fillers.

Automatic Field Functions Automatic field functions are standard on Systems 1301 and 1302. They assure data integrity, reduce keystrokes and thereby increase productivity. Their names and functions are...

Auto Aux
System duplication of information from a storage area (may be under program or operator control)



END-OF-JOB BATCH TOTALS (EXAMPLE)

Auto Dup Alpha
System duplication of alpha information from the previous record
Auto Dup Numeric
System duplication of numeric information from the previous record
Auto Forward Field
Automatically advances the cursor without changing data
Auto Increment Field
Automatically increments a numeric field - counts by "one"
Auto Skip Field
Automatically inserts blanks up to the next field

Automatic Field Correction A data change or correction of an error might be necessary for part of or an entire batch. Use of the "automatic field correction" function allows designated fields to be system rewritten with an update . . . such as change a date that was incorrectly entered in the first record of a batch and automatically duplicated in the succeeding records. Automatic field correction eliminates rekeying for each record and saves a great deal of time. Correction in an automatic mode can also be made on tape if the Inforex Expanded Tape Processing Feature is installed.

Balancing Two balance accumulators are standard on Systems 1301 and 1302. . . each is 12 positions in length. Control totals are typically provided by departments within a company, along with source documents, to the data preparation area. Operators can enter the control totals as negative in header or trailer records and balance to zero as well as use the accumulation method. "Hash" totals are permitted without limit to the number of fields included in the accumulators . . . a powerful tool is assuring data integrity. Zero balancing is also allowed within a batch by a single key depression. At the end of a job, the batch totals are automatically displayed, permitting comparison of control totals not actually keyed.

Recompute The system can be used in an automatic verify mode for balance fields. By entering a simple Job Control Statement, the system is instructed to automatically recompute the balance totals for a batch. If balance totals agree, verification by rekeying isn't necessary. This procedure can be used for the entire batch or selectively by program level.

Automatic Program Level Selection Program levels can be linked together, or "cascaded," to eliminate operator switch setting or selection of the specific level by keystroke . . . and to permit record lengths of up to 488 characters. For example . . . a particular job might have a Program Control Format in which automatic cascading occurred from program level 1 to 3 to 4 to 2 and back to 1 again. The system automatically puts the keystation under control of the predetermined program level . . . thus reducing data preparation time and assuring data integrity . . . and also simplifying verification procedures.

Packed Records If the user has jobs incorporating short records . . . for example, 16, 20 or 25 characters

in length . . . the standard Inforex record length of 125 characters and the 488-character length capability available with cascading become impractical. However, logical data record storage capacity can be expanded by "packing" either 2 or 4 of these short user records into one Inforex physical record on disc. If records are less than 30 characters in length, packing is by 4 . . . allowing 20,000 records to be written on the System 1301 disc. If the user record length is 60 characters, packing is by 2 . . . the storage then being 10,000 records on the System 1301 disc. System 1302 has three times the user disc capacity of the 1301, so an equivalent increase of packed record storage over that of the 1301 is allowed on the 1302. The Inforex Reformatting Feature permits the user to "explode" packed records into computer-compatible format . . . for example, 80 characters in length.

Stored Tape Labels Systems 1301 and 1302 can store up to 16 header or trailer labels that can be called up by the supervisor when creating a tape. Labels can be from 16 to 125 characters long and are entered from the keystation and stored on the system's disc with a two-digit numeric identifier. If not stored, the supervisor may create labels by freeform keying at the time of disc-to-tape transfer. Simple modification to labels is also possible . . . typical changes being date/volume or reel identifier . . . and can be accomplished without rekeying the entire label. In addition, trailer labels can be designated for automatic insertion of record or block counts on tape.

AUTOMATIC BATCH TRANSFER COMMAND

Automatic Batch Transfer Total supervisory flexibility is offered in the method employed to transfer completed batches to tape. The supervisor may wish to refer to the Jobfile to determine which batches of a job have been entered and, if elected, verified. . . so selective transfer by batch is possible. However, use of a "keyword" in the Job Control Statement will cause the system to automatically write to tape all completed batches of a job in the order they were entered into the system. Likewise, the keyword can be used to create backup tapes and to cancel batches written to tape, thereby making that disc storage space available for additional user data. The keyword can also be used in reformatting operations if the Inforex Reformatting Feature is installed. Use of this capability significantly lowers the time spent in supervisory control and system management.

Tape Validation Data integrity is an integral requirement of properly managed data preparation operations. To insure against loss of records or data within records, tape validation is extremely valuable. This process checks each taped record for parity and computes the number of records written on tape.

Disc Copy/Restore During preventive maintenance periods, relocation of a system to another site, or for data security reasons the user may wish to clear the entire system disc storage, transferring all data sets and library records to tape. By supervisor command, all completed or interrupted jobs are written to tape along with the system-resident Jobfile, Program Directory and Program Library. An Inforex-generated tape label is written as the first record to assure data integrity in both the copy and restore operations. The identical information is written back to disc via the Inforex tape drive in the same order as taken from the system. Disc copy and restore are "stand alone" operations requiring the total capabilities of the system . . . all other system operations must be terminated but may be resumed in only a short while.

Compatibility The standard character sets of Systems 1301 and 1302 are equivalent to IBM's BCD and EBCDIC conventions. However, for users of other computers, Inforex supports options that permit compatible output tapes for . . .

Honeywell H200	UNIVAC 1004, 1100 series
Honeywell 4X3 Feature	General Electric 400
Burroughs B3500, B5500	NCR 300 and 400 series

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