

Remarks of

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Chairman

Securities and Exchange Commission

"The SEC Views Computer Developments"

Portland, Oregon

July 23, 1970

Thank you for your kind invitation to participate in these proceedings. I am glad that my schedule could be changed to enable me to fulfill this commitment as I had originally intended. I assure you the change was not motivated by some sudden impulse to put as many miles as possible between me and Washington, although I must confess that the Commission has been confronted with more complex problems and decisions these past several months than at any time in its thirty-five year history.

We are not at all sure why modern decision-making is so much more complex now than it apparently was in the past. But I suspect that the computer has a great deal to do with it in that we make decisions now with vastly more data available to us than at any other time.

Unquestionably the modern computer has changed our environment at an unprecedented rate and its impact has been necessarily felt within the SEC as well as the securities industry generally. Computers, computer technology and the multiple applications of computers are not subjects with which I deal on any consistent, daily basis. This does not lessen, however, my respect and appreciation of the basic utility of computer equipment as an indispensable business aid. I personally would like to see computer technology employed to the fullest extent possible consistent with our needs. I am also concerned that those whom we regulate, principally the exchanges and broker-dealer organizations, adapt their business practices to take fullest advantage of computer technology. These are the general areas of my discussion today.

Each Commissioner possesses some knowledge of computer concepts which he obtains in formal sessions, but our in-depth computer knowledge is located in the Office of Management and in the Office of Data Processing, and their respec-

tive duties and responsibilities are closely allied with their counterparts in the private sector. Each of the operating divisions has at least one person who maintains liaison with our computer people. The level of experience of the liaison group varies, but all are sufficiently informed to participate in planning and conversion of their division's work to computer technology. In the belief that the Commission's computer utilization can only expand, I have under consideration a plan to increase the efficient conversion to computers of as much of our operations as possible.

Incidentally, the staff of our Office of Policy Research -- which is principally concerned with the collection and analysis of economic data -- has a high degree of computer expertise on its own. Their computer requirements are substantially different from the collection, storage and retrieval requirements of our other divisions and their functions require faster equipment utilizing sophisticated programming.

This gives you a broad picture of the administration of our computer organization, and I would like to deal with some specifics of our equipment and how it serves the regulatory function.

The Commission's computer was installed in May 1966, following more than two years of study and preparatory work. During the past several years we have upgraded various components and our equipment now consists of an IBM System 360/Model 40 Central processing unit with 64,000 positions of core storage, five tape drives, three disc drives, a card read-punch, an 1100 line per minute printer, a console typewriter and related control units. The computer is used 24 hours a day, Monday through Friday, and about 16 hours each weekend. Until June 30, this included approximately one eight-hour shift per day used by another government agency under a sharing agreement. That agency

recently decided to use one of its own computers on which time had become available, and we are now actively seeking another federal "client" to share our equipment.

We have applied computer technology to a wide variety of regulatory, enforcement, statistical and administrative functions. For example, our computer serves as an important tool in our surveillance of securities traded in the over-the-counter market. Quotations for about 8,000 securities and the identity of the market-makers are published each day by the National Daily Quotation Service, in what is commonly called the "sheets". We obtain this data in machine-readable form from the National Quotation Bureau and compare it with our historic over-the-counter market data files. The computer is programmed to identify the following:

- a) those securities whose price movements exceeded specified limits;
- b) those securities in which dealer interest moved beyond specified limits;
- c) those securities which had not been quoted in the sheets for lengthy periods of time; and
- d) those securities in which there are, among broker-dealers, "special arrangements".

If a security is identified for any of those reasons, the computer prints out:

- the name of the market-maker with highest bid;
- the city from which the market-maker traded the security;
- the current and previous bid prices;
- the number of dealers currently in the sheets and the number in the sheets as of pre-determined previous dates;

- the existence of special arrangements, if any;
and
- a designation as to whether the security is
being publicly quoted for the first time.

Finally, for any security which is so identified, the computer also prints a six-month history of previous exceptions. These data, combined with other available information, are collated and analyzed, to select those securities whose activity indicates a need for further inquiry or referral to the Commission's enforcement staff.

In addition to the reports which I have just described, the computer is programmed to produce comprehensive cumulative surveillance charts regarding suspect dealers and issuers.

The Commission is also responsible for surveillance over listed securities and in this respect its activities are closely coordinated with the stock watch operations of the exchanges. The staff reviews summaries of computer-generated stock watch reports prepared by the exchanges and conducts studies and analyses based on information developed by the exchanges which may involve violations of the securities laws.

Our computer also is used for the processing of data contained in Form N-IR, an annual report, and Form N-IQ, a quarterly report, both required to be filed by registered management investment companies. Form N-IR prescribes so-called EDP attachments, designed to provide specific answers set forth in figure, or other concise form, the information required or indicate affirmative or negative responses to such items.

The computer "examines" the reports by applying predetermined criteria to the data contained therein, and prints out inconsistencies for attention by the staff. In addition, computer analysis of the data assists the Commission in ascertaining the areas and companies in which problems exist.

Form N-IQ requires investment companies managers to report the number of shares or principal amount of securities acquired for, or eliminated from, their portfolios each calendar quarter. Here, too, we use the computer to "examine" the reports as well as for analyses and studies of the transactions and holdings of investment companies and the impact of these transactions in the marketplace.

Another important function performed by the computer is the checking of names in incoming documents such as registration statements, applications and other filings with information already on file with the Commission. Each day an average of about 700 names of organizations and individuals are checked against the 1.6 million-name data file which contains file references to related names, relationships of persons to prior filings or cases, and the period of such relationships. For persons who have been involved in investigations, administrative proceedings, civil actions or criminal actions, the data files also contain information such as opening dates of cases, types of violations, courts of record, litigation release numbers, disposition of cases and closing dates. The computer simultaneously searches and updates the data files, and prints out the information which is then sent to the attorney or examiner to whom the matter has been assigned.

The Commission's staff recently completed a system for the analysis of broker-dealer financial reports. Rule 17a-10 under the Securities Exchange Act requires members of national securities exchanges and registered brokers or dealers to file annual reports with the Commission or with a registered self-regulatory organization. The first reports under the rule cover the calendar year 1969 and were required to be filed by May 30, 1970. The form accompanying the rule contains three major parts, each requiring income and expense data and information on the firm's capital funds and financial condition. Broker-dealers are required to complete only that part of the form which is appropriate to the size and type of their business.

The data contained in reports filed with the self-regulatory organizations is edited by them and transmitted to the SEC in machine-readable form in conformance with standards and characteristics prescribed by the Commission. The 17a-10 reports coupled with computer technology will meet the informational needs of the Commission and the self-regulatory agencies for a continued flow of reliable and current data concerning the operations of and changes in the industry.

The examination of investment company reports, analysis of broker-dealer financial reports, surveillance of the over-the-counter market and information retrieval represents only a few of our regulatory and enforcement applications of EDP.

In the statistical area, for example, we use the computer for the compilation of data for the "Quarterly Financial Reports" study. This study is conducted jointly with the Federal Trade Commission and presents quarterly balance sheet and income account data of U. S. manufacturing companies.

Use of the computer for administrative purposes includes a system which provides our operating officials with workload information concerning the twelve to fifteen thousand statements, applications and reports which are under examination or pending clearance at any given time. This system is tied into our payroll and manpower reporting system to provide our managers with information as to how much time and money each organizational unit spends in processing each kind of filing. We are in the process of perfecting an expansion of the workload reporting system to keep track of compliance with annual and other periodic filing requirements by organizations subject to the Commission's jurisdiction.

Before I move on to computer developments in the securities markets, I should tell you that the Commission continually reviews the practicality of achieving greater

utilization of computer technology. Right now we are considering requiring that reports filed with us contain CUSIP numbers. CUSIP, as you may be aware, is a uniform system of numbering securities and issuers for identification purposes. In addition, we have under consideration the possibility of having our computer undertake some of the procedures followed by our professional staff in their review of forms S-1, which is the basic registration form, and 10-K which incorporates an annual updating of the material in the original registration statement. The staff has received excellent cooperation from the CUSIP Service Bureau and Financial Dynamics which made available their experience.

How both the SEC and the securities industry respond to the increasing technological demands of the future will determine their ability to cope with anticipated levels of business activity. Let me illustrate this with some key figures.

The securities markets of the Sixties experienced a period of unprecedented growth. Going back to 1959, for example, there were about 12-1/2 million individual shareowners; by 1965 this figure had reached 20 million, and as of last year there were an estimated 29 million shareowners. We have an additional 100 million who participate indirectly through their savings, insurance policies, and mutual funds.

In addition, trading volume exceeded every expectation. The volume of shares traded on all registered stock exchanges rose 159 percent between 1964 and 1968, but has since declined to where volume during the first five months of this year was 18 percent less than during the comparable 1968 period. The volume decline has accompanied an 18-month period of declining stock prices, during which time prices of stock listed on the New York and American Stock Exchanges declined 38 and 43 percent respectively. Industry, of course, had not anticipated this spurt in trading; in fact at the beginning of the last decade, the NYSE predicted that volume might reach eight to ten million shares a day by 1980.1/

1/ NYSE Projection of Share Volume, Sept. 24, 1959

As the volume of trading rose spectacularly, then declined, the mix of volume was significantly changing. While we have seen block volume (trades of 10,000 shares or more) on the New York Stock Exchange rise from less than three percent of total volume in 1964 to sixteen percent today, the number of transactions on the NYSE tape was 3.0 million transactions in the first five months of this year compared with 4.3 million in the comparable period of 1968, a drop of 28 percent. In the last two years, the one-hundred share round-lots are down 35 percent and the odd-lot volume is down 36 percent. On the other hand, transactions of 10,000 shares and over have more than doubled during this same two-year period.

During the past several years, the market for stocks has become increasingly more institutionalized to where institutions now account for over 60 percent of the dollar value of public trading on the NYSE. The size of institutional orders has also risen substantially, and over 70 percent of them are for over 1,000 shares. This indicates why the number of trades has declined more than share volume over the last two years.

We have also noted the portfolio turnover of the institutions continued to increase until the first quarter of this year. Leading that increased portfolio activity were mutual funds, whose turnover rate increased from 22 percent in 1964 to 56 percent a year ago, and is at a current rate of 44 percent.

The aggregate of all this activity, of course, resulted in a back-office problem of monumental proportions. As the paperwork backlog became unmanageable, the exchanges took some emergency steps. In January 1968 they cut trading hours by 90 minutes a day. In June of that year they went back to a full trading day, but closed the exchanges one day a week. In January 1969, they returned to a five-day week but again shortened the trading hours. In addition to these measures they altered some of their

rules, and instituted rules for compulsory buy-ins to aid in reducing fails. While such steps alleviated the problem a bit, it became clear to everyone that the methods of the past for handling securities transactions could not cope with the present or the future. The changes that were needed were basic, involving not new manpower, but new methods and new systems. So the industry began, albeit belatedly, to attack the problem on two fronts.

First, they sponsored a number of studies to chart the long-range direction of their industry. Among these studies was the North American Rockwell report, which concluded that "probably the most important specific action that the securities industry can take now is to begin development of an integrated viable clearance/settlement depository system." It also recommended as a necessary step the development of "locked-in" trades. The locked-in trade is a system whereby as the transaction is completed on the floor of an exchange and fed into the computer to be reported over the tape, the facts of the transaction such as the names of the brokers, number of shares, name of the stock, etc., are recorded and retained by the computer, thus eliminating the possibility of having an "uncomparable" trade. Both the New York Stock Exchange and the AMEX are working in this area.

The Lybrand report placed its emphasis on the elimination of the stock certificate as the logical solution to the paperwork jam.

The American Bankers Association recommended immediate implementation of the already developed CUSIP numbers, which I mentioned earlier, as well as the development of standardized, man-machine readable transfer and trade comparison forms and stock certificates. The present CUSIP list contains about one million issues. Such a system is, of course, primary to most further steps, and until securities can be rapidly and surely identified in a standardized fashion, industry-wide computer systems are not possible.

Finally, the Rand Corporation has prepared a major study which was presented to the Commission last week. It concludes that the completion of trades costs to the industry can and should be drastically reduced, and suggests they may be three or four times as high as is necessary.

These studies, whatever their difference in emphasis and concept, have a common denominator; they recommend and require the immediate and extensive use of computers.

While these studies were taking place, the industry began to implement some automation techniques using present technology.

The National Clearing Corporation, a wholly-owned subsidiary of the NASD, is in the process of developing a nationwide net-by-net clearing system for the over-the-counter market. Net-by-net is a method of accounting for, clearing and settling securities transactions. In nationwide operation, such a system has obvious advantages; a broker using the system has only one net position in each security each day and only one money position. Moreover, all securities are left in the system, eliminating movement and vastly reducing paperwork. It has used technology developed by the Midwest and Pacific Coast Stock Exchanges in their clearing operations as well as evolving many new ideas. This system will begin operation with a pilot program late this year.

The New York Stock Exchange started Central Certificate Service ("CCS") in 1967 and phased in computerized delivery in mid-1968. In May of this year, 72 percent of all transactions on the exchanges were processed by the computer and more than 520 million shares are on deposit. The Midwest and Pacific Coast Exchanges also have computerized clearing and settlement systems.

Computerization has or is in the process of taking over many other functions on the exchanges. Computers now drive the transaction tapes; they control the post display

units showing last sale, bid and asked and the tick. They report activity in the bond market, maintain stock watch surveillance and provide more extensive market data function on a real time basis.

In the near future, the specialist "book" may be a cathode ray tube display with entries and deletions done by the touch of a button. Computers will automatically differentiate market and away-from-the-market orders and route the former to the proper floor broker and the latter to the specialist. Computers have already begun to execute odd lots automatically on several exchanges, and certain individual brokerage houses have installed computers or utilized service bureaus to route in-house messages and do most of the bookkeeping.

In the over-the-counter market, the NASD is in the final stages of preparation of their NASDAQ system. NASDAQ will initially list 2,500 securities and by automating on a real time basis the quotes of market-makers, the system will provide for the first time an instant overview of the OTC "market". It will provide the public and the industry with more price and volume data and quicker access to this market.

Computers, however, have not been limited to merely doing old jobs faster and better. They have also created an entirely new service. The automated trading information systems are computer driven systems to aid the block trader in finding matches for large blocks which cannot be taken to the floor of the exchange without a pre-arranged match. There are three such systems presently in operation -- Instinet, Autex, and BAS, the New York Stock Exchange's Block Automation System. The first of these operates without the services of a broker as intermediary, and negotiations are conducted via the computer. The other two rely on the services of brokers and provide information as to the available markets.

The securities industry of the future will not be able to function without the computer and the computer cannot work without people. The immediate future of this industry is not difficult to conceive. From the moment a customer walks into a brokerage house, the computer will be working for him as well as for the broker. It will aid the investment advisor by giving him trends, averages and background data. When an order is placed it will do the in-house bookkeeping and route the order to the proper market. If it is an odd-lot, the computer will execute it; if away from the market, it will place it on the specialist's book; if a market order, it will be routed to a floor broker. The computer will clear and settle the transaction, route it back to the broker's office, place it in the proper margin or cash account and send out the confirmation slip. And the computer will help maintain general surveillance over the industry.

I for one welcome these changes and sincerely believe they will contribute significantly to the stability of an industry that has grown increasingly complex and interdependent.

Recently the New York and American Stock Exchanges announced that they were joining in a far-reaching program to combine their key computer and service facilities. Such cooperation is beneficial in that it reduces the massive cost of computers and eliminates duplication. Other such commendable cooperation can be seen in the efforts of the exchanges and the NASD to implement the use of CUSIP numbering; in the formation of the Banking and Securities Industry Committee or BASIC to focus on common problems and solutions; and in the efforts of the Pacif Coast and Midwest Exchanges to aid in the development of the National Clearing Corporation.

We must move forward quickly with industry-wide cooperation. We must implement new technology and we must attack outmoded rules. As the industry becomes more dependent upon the computer, however, we must be careful at the same time to fully understand the economics of stock brokerage

data processing. We must develop new techniques of surveillance, safeguards against manipulation, protection against failure, and most of all, we must retain the flexibility to deal with new situations as they arise.

If we have learned anything from the experience of the past decade, it is that we cannot depend on the methods of yesterday to provide for the industry of tomorrow. The changes I have mentioned are a beginning, but they must be refined and new ideas must be developed if this industry is to continue to grow. As surely as the industry outgrew the buttonwood tree, it will outgrow the technology of today.

Needless to say, each of the topics I mentioned could be discussed in greater detail; but, as I said at the outset, I had intended only to convey to you the Commission's awareness of the present and potential use of computer technology. If, during the course of your work, you discover other areas wherein computers might facilitate the work of the securities industry, I would hope that you would make such information available to us. You can be assured of a responsive audience for your findings.