

NEW YORK STOCK EXCHANGE
New York, NY

August 8, 1966

Mr. Irving Pollack, Director
Division of Trading and Markets
Securities and Exchange Commission
500 North Capitol Street, N. W.
Washington, D. C. 20549

Dear Mr. Pollack:

Thank you for your letter of June 30, 1966 requesting information on the status of the Exchange's automation programs. It would be helpful if a general clarification of our position relative to surveillance were stated, in the hope of creating, better understanding between the Commission and the Exchange on the current status of these programs and the outlook for the future.

Before, turning to the specific questions raised in your letter, I would like to comment briefly on our automated, surveillance program as it was originally envisioned and as it has worked out in practice.

The Exchange's position concerning automated surveillance has not changed materially from the statements contained in Mr. Funston's letter to Ralph Saul in December, 1963 and to Chairman Cary in February, 1964. Furthermore, this position has been reaffirmed in several letters from the staff and during numerous conferences held during the ensuing three years. It was pointed out from the very beginning that the original automation program, which predated the Special Study, did not contemplate capturing the information suggested in Ralph Saul's letter, but that the Exchange would maintain an open mind as to the future development of additional systems which may be able to capture such information.

From the outset, we have stressed that the subsequent development of any automated surveillance system must be tied to the contingencies of cost, possible technical difficulties, and the major problem of capturing data without undue interference with the auction market. We have tried to make it clear that any system to be developed would have to follow a building-block approach initially utilizing our current Market Data System as a test vehicle for registered trader surveillance.

In your letter, you indicate that the Commission staff has been led to believe that new methods of inputting data into processing equipment would take time to perfect. Major systems innovations of the nature required to perform automated surveillance of our floor activities have proven to be time-consuming tasks historically.

However, the assumption on the part of your staff that the Exchange would develop and put into operation a system reflecting the numerous identities listed in your letter is an unfortunate misunderstanding. The Exchange staff is indeed hopeful that the systems solution sought for in some of these areas will be found as we discussed with you at the December, 1965 meeting and reiterated again at the May, 1966 meeting. We are in agreement with you that the registered traders surveillance program must prove itself before any decision can be made as to the practicality or feasibility of extending the present program so as to capture additional data.

In answering the specific questions on page 5 of your letter, it is assumed that by "requested information" you are undoubtedly referring to the necessary information used to identify floor brokers participating in a trade and the type of trade involved as set forth in Ralph Saul's December, 1963 letter.

Question 1 "The Status of the Development of a Procedure to Obtain the Requested Information" -- The following projects are at the stage of development noted:

a) Real-Time Stock Watching -- This is an active function of our present on-line Market Data System. It involves a special print-out, on a printer located in our Floor Department, of any stock having a significant price movement during the trading day. The print-out occurs at the instant the trade is reported, that is to say, in real time.

b) Market Study -- This procedure operates as follows: For each 100 share unit common" stock traded on the Exchange, a list is prepared showing a summary of the size of the variations between sales and the size of the spread between the bid and offer prices in the quotations. Also listed are the number of times each stock moved outside a predetermined range per 500 shares and per 1,000 shares. This formula is based on the price of the stock. The computer "flags" for examination by the staff about 200 stocks per month. However, we can compile studies for longer periods or get the same information for one day. This system of surveillance has been operational since November, 1965.

c) Identification of Registered Traders - We have attempted to identify Registered Traders' transactions, including the "calling card" experiments performed on the Floor of the Exchange and previously reviewed by the SEC. We found through

these experiments that there are many inherent weaknesses in having a reporter maintain his reporting function and handle more than one document. We have been advised by Dr. Richard S. Hirsch, Manager of Programming, Simulations and Human Factors for IBM, that he is of the opinion that a reporter cannot efficiently and accurately record sales and perform any additional task. We are now experimenting with a method whereby the reporter, using a regular trades card, will attempt to report the trading activities of a Registered Trader. This test procedure is still in the early stages and it is impossible to draw conclusions as to its feasibility at this time.

d) Odd-Lot Switching -- When the odd-lot switching program becomes fully operational, there will be automatic execution of odd-lot orders. Automatic surveillance of round-lot offsets by the odd-lot dealers will not be undertaken until the input and collection problems are resolved.

e) Miscellaneous Projects -- A number of projects involving our surveillance, program are currently under long range planning consideration. In this area, we expect to give attention to surveillance capability in such projects as: the study of a possible Specialist's Electronic Book, investigations of new input methods to replace floor readers, and the exploration of more versatile brokerage office terminals.

Question 2 "The Problems, if any, in Proceeding Further" -- The problems facing the Exchange in providing the surveillance information requested by the Commission fall into three general categories:

a) Computer Capability -- Data Processing hardware currently available to the Exchange was not designed to handle the extensive surveillance program suggested by the Commission and at the same time accomplish its originally intended functions. Aside from the related problems listed below, extension of the present off-line surveillance program beyond Registered Traders and Specialists will require the development of a completely new market data system and new methods of data collection.

b) Capturing Information -- From the beginning, we have encountered serious problems in capturing data. As you will recall, this matter too has been discussed at some length with the Commission staff. The limitations of the mark sense card system have been noted and the institution of any new system on the current trading 'floor and with present computer capacity appears to be virtually impossible. Any system for capturing surveillance data must, of course, be designed to operate with minimum interference with auction market operations. Data capturing has been the problem in perfecting the registered trader surveillance program and will very likely continue to be troublesome, but we are continuing to investigate input techniques to solve this very basic problem.

c) Cost Factor -- From the first, of our many discussions concerning the Exchange's automation program we have emphasized that technical feasibility on one hand must be balanced against reasonable cost on the other. Despite the admitted desirability of a highly-automated surveillance system, the Exchange does not believe it would be proper to sacrifice the development of other important aspects of our electronic systems program to this single area in the automation field. From a practical, as well as the cost standpoint, we feel that the wisest course of action is to plan for incorporation of reasonable surveillance techniques as a part of our entire long-range automation program as it expands and is approved by the Board of Governors.

Question 3 "Plans in the Future to Obtain Such Information" -- In April 1964, we agreed with the Commission to retain two men whose primary responsibility would be future surveillance planning in the automation area. These men and others have been hard at work attempting to solve the many and complex problems which future automation planning presents.

Question 4 "Proposed Time Schedule with Respect to Further Implementing Such Program" -- Experience has taught us that attempting to establish a rigid time schedule when developing new and highly complex data processing systems is not practical. This has been particularly true in the case of automated surveillance, where virtually all concepts are new and untested. As pointed out previously, a new market data system, as well as new data capturing techniques, must be developed before any surveillance program in-depth can become a reality. We are not at this time prepared to reduce to years or months the hardware, software, economic and human element type problems we will encounter in our attempt, to perfect a more sophisticated surveillance system. Naturally, as future plans in these areas become firm, time goals will be established. However, such goals when decided, upon must be sufficiently elastic to permit us to cope with the potential problems I have mentioned.

The problems of designing, programming and installing the present Market Data System are, for the most part, behind us. From this effort of more than one hundred man years, the Exchange has benefited through the development of a wealth of systems know-how and experience. This capability is being utilized in the implementation of a joint research agreement with the international Business Machines Corporation to seek out on a broader base some possible solutions to the problems surrounding the identification of participating brokers.

We have also, just recently, formed a standardization committee which will serve as an advisory group to the Exchange in the development of uniform practices, procedures, forms, numbering, etc.

In connection with the present Market Data System, you inquire as to whether last-sale information can be made available to more than a limited number of firms should it develop that additional firms wish to enter the odd-lot business.

Any Exchange member firm could, in principle, be furnished last-sale information via equipment attached to the Post Printer lines from the Market Data System. Any number of member firms could tap the Post Printer lines using line repeater circuits for this purpose.

You also solicit our views concerning the feasibility of avoiding duplication of equipment and other facilities between the New York Stock Exchange and other exchanges. Our view is that the New York Stock Exchange has the responsibility to acquire and utilize the equipment and facilities necessary to provide all of the services needed or desired by our member organizations for the conduct of the business of the Exchange and its members.

You have further requested that we furnish our views, "assuring that the systems developed by other exchanges and the New York Stock Exchange are compatible." I assume you are referring to certain of the Exchange's automated operations, e.g., Central Computer Accounting, to which there is a counterpart planned or in operation at some other exchange. It is our view that all exchanges have the responsibility for developing systems and procedures which meet their individual needs' and are in compliance with applicable rules and regulations of the exchanges and the Commission. To the extent that the end products meet such requirements, it appears to us the exchange respective responsibilities have been met. The details of the systems and procedures developed by an exchange must be those which best perform the operations which are compatible with other internal operating procedures and which most effectively utilize the equipment available to that particular exchange.

I sincerely hope this letter will serve to answer your questions concerning the Exchange's automation program, particularly, with reference to our surveillance problem. We will, of course, continue to work closely with your staff in an attempt to solve the many problems that face us in this area.

Sincerely,

John R. Birmingham
Vice President
Director, Electronic Systems Center