U.S. SECURITIES AND EXCHANGE COMMISSION

MARKET OVERSIGHT SURVEILLANCE SYSTEM
Description and Justification

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INTRODUCTION

Given dramatic changes in the complexity and structure of the securities markets during the past five years, including the rapid development of new products such as exchange traded put and call options, the need to accelerate progress toward realization of a National Market System, and the need to improve oversight of the self-regulatory organizations (SRO's) in an environment of increasing trading complexity, the Commission seeks to establish and proposes to implement a national market surveillance system based upon the latest computer technology.

In addition to providing the Commission for the first time with a direct surveillance capability over trading activities on all of the nation's stock and options markets, the proposed system will facilitate many existing Commission functions such as the inspection and regulation of self-regulatory organizations and the examination of registered broker-dealers. The system is expected to be implemented over a five-year period, depending upon industry developments, the pace at which trading information can be standardized, and the availability of government funding. By building upon existing industry and self-regulatory automated systems, the system cost will be relatively modest in comparison to communications and computer systems created in recent years elsewhere in government or in private industry. The comprehensive market surveillance system, when implemented, will represent a substantial improvement in the industry's and the Commission's regulatory capabilities.

The proposed market surveillance system is not intended to replace or diminish the existing regulatory responsibilities of the various self-regulatory organizations. Rather it is contemplated that the market surveillance system will integrate existing trading information from the various markets at one location, so that the Commission may better monitor trading practices for oversight and enforcement purposes as well as for analysis of self-regulatory organization rule proposals and revision of Commission rules. In this manner, the Commission's oversight capabilities will be greatly enhanced by making possible more effective daily coordination with all of the nation's securities markets.

The proposed system also represents the first attempt ever to correlate current information from all exchanges and self-regulatory organizations in a manner designed to detect possible securities violations. The system will include among its input sources such Commission filings as: Forms 3, 4, 144, and 146; Schedules 13D, 14D, and 13G; periodic filings and reports of broker-dealers such as those contained on the Commission's FOCUS report; daily trading and clearing information; and corporate news. This information will be combined and integrated, through real time communications, computer to computer requests, tapes from SRO's and vendors of securities transaction and quotation information and tapes

from other Commission systems. Violations of the securities
laws will be detected through a set of defined and computer
monitored violation algorithms. The system will also analyze
trading and economic data for rulemaking and other regulatory
purposes. For the system to be completely successful, it is
contemplated that it will be necessary for the self-regulatory
organizations to move toward standardization of certain trading
and clearing information. 1/ Such changes, however, will be
planned in conjunction with development of the national market
system.

BACKGROUND

In order to consider the significance of the proposed market
surveillance system, it is important to view it in the context
of the Commission's overall regulatory responsibilities. The
securities of approximately 12,000 United States corporations,
who register with the Commission, are traded in one or more
marketplace. The securities of an additional 15,000 U. S.
corporations, some of which are not required to registered with
the Commission, are also traded in one or more marketplaces.
The Commission's regulation of broker-dealers includes approximately

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1/   The Commission recognizes the limitations placed upon
     the development of the proposed system unless there is
     progress in the standardization of trading information.
     To this end, Chairman Williams on August 2, 1978, called
     upon and encouraged the SRO's to cooperate on the shar-
     ing of data and systems. The Commission's Division of
     Market Regulation has also committed itself to achieving
     changes within the securities industry made necessary
     by the proposed surveillance project.

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300 SECO firms (registered with the Securities and Exchange
Commission only) and 5,700 non-SECO firms (registered with a
self-regulatory organization). The Commission also regulates
approximately 5,000 investment advisers (325 of which are
broker-dealers) and 1,300 investment companies. The Commission
has oversight responsibility for self-regulatory organizations,
including the eight securities exchanges 2/, the National Asso-
ciation of Securities Dealers (NASD), twelve clearing corpora-
tions, and five securities information processors. In addition,
the Commission is responsible for directly regulating approxi-
mately 800 transfer agents.

Congress has assigned the responsibility for overall secu-
rities industry surveillance to the Securities and Exchange
Commission as enacted by the Securities Act of 1933 and the
Securities Exchange Act of 1934. More recently, Congress has
assigned the Commission expanded national market responsibilities
under the Securities Acts Amendments of 1975. The SEC in com-
pliance with the mandate of the Securities Exchange Act of 1934,
has assumed a supervisory role, and has delegated certain aspects
of the day-to-day surveillance of the securities markets to the
self-regulatory organizations. These organizations have each
implemented programs and systems to provide varying levels of

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2/ New York Stock Exchange, American Stock Exchange, Boston
Stock Exchange, Chicago Board Options Exchange, Cincinnati
Stock Exchange, Midwest Stock Exchange, Pacific Stock Exchange,
and Philadelphia Stock Exchange.

surveillance, and they have met with varying degrees of success. In performing its oversight role over the self-regulatory organizations, the Commission seeks to ensure that proper checks and balances are in place at the SRO's with respect to adherence to their rules and regulations. These checks and balances include detection, investigation, enforcement, and follow-up on violations. In performing this oversight role, the SEC regularly inspects the operations and regulatory programs of the SRO's, performs spot checks of records on a random basis or for suspect trading conditions, and ensures generally that the SRO's are adequately performing their function. In addition, the SEC performs direct regulation of the securities industry in those areas where the SRO's do not have direct authority granted to them by the Securities Exchange Act of 1934 or do not have sufficient capability to perform the regulatory function in question.

The SRO's rely largely on their own surveillance staffs for conducting direct trading surveillance of their marketplaces and assuring member firm compliance with self-regulatory and Commission rules. The SRO's also rely heavily, however, on the broker-dealers' own compliance and internal audit departments as well as independent auditors of such broker-dealers to detect certain types of rule infractions or violations of the securities laws within individual firms. The resultant structure, therefore, is a hierarchical series of checks and balances in fulfillment of this statutory scheme of self-regulation. This structure has worked reasonably well in the past due to the rather stable number of SRO's, the types of traditional

securities traded, and the limited risks posed to private investors in trading those securities.

Today, the marketplace is rapidly changing. With the introduction of listed options, listed bonds, more interest in fixed income vehicles, mortgages, commodities, interest rate futures and the like, the product mix is fast becoming more complex and far riskier to the individual investor. Furthermore, the numbers and types of broker-dealers are changing, and a much more creative and, therefore, competitive market atmosphere is emerging. In addition, entirely new exchanges and over-the-counter marketplaces built on intensive use of computer technology have been created, the third and fourth markets are entities unto themselves, and the interrelationships between markets (such as those trading options and equities) have increased substantially.

Now, with the proposal for removing off-board trading restrictions (NYSE Rule 390) and the development of a National Market System combined with significant breakthroughs in communications and computer technology, the problem of assuring proper surveillance of the nation's securities markets is increased manifold.

Currently, the SEC staff is faced with the enormous and difficult task of fulfilling its increasing surveillance responsibilities with nonexistent or outmoded systems. The SRO's have been upgrading their systems, but mostly with respect to roles played within their own marketplaces. Future products and marketplaces will present an even greater challenge for the regulators.

CURRENT SURVEILLANCE FACILITIES

Surveillance is performed currently in four areas: the SEC over certain market participants and the securities industry in general (including the SRO's); the SRO's over their trading environment; the SRO's over their market professionals; and the broker-dealers within themselves.

The role of oversight is considered one which requires the ability to supervise effectively the activities of the SRO's, broker-dealers, investment advisers, and other related market participants. The SEC performs this role by means of two activities: market surveillance and inspections. Both activities have severely limited staffs and facilities and consequently are inadequate for their respective charters. Even though attempts are constantly made within the responsible divisions to "routinize" these functions, they are constantly competing with other program demands within the Commission.

On the other hand, the major SRO's are generally well-staffed and supported with semiautomatic computer systems. They perform stock watch and floor trading surveillance over the market using mostly manual techniques to reconstruct the trading environment with audit trails. The NYSE, for example, has several hundred people within the overall surveillance function. However, the number of possible violation conditions being monitored routinely falls short of the total number of violation conditions due to the inadequacy of information streams and market reconstruction

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methods. This is a result of the trading systems currently used
at each exchange which are being analyzed by the exchanges to
determine methods for improving and standardizing these systems.

The major SRO's perform member surveillance using a reasonably
structured (although questionably effective in terms of scope
and depth) annual inspection process to examine principally the
financial and operational stability of a firm as well as the
propriety of its sales practices. A high degree of coordination
exists so that a member of multiple SRO's can reduce overlap in
this surveillance process. In general, this involves separate
and single inspections by the major SRO's for equities and options.
Very little automation exists in the present member surveillance
environment. However, some effort is being made to computerize
certain analyses in the area of selling practices involving
registered representatives, financial conditions, and credit-
related problems.

Broker-dealer surveillance is an internal set of checks and
balances geared to emphasize supervision of registered representa-
tive activities and selling practices. In addition, there are many
internal audit categories related to assuring financial control and
record-keeping compliance. Interestingly, some smaller, well-
managed firms appear to have more effective internal surveillance
essentially due to the continued involvement of senior firm members
and their familiarity with their business base and operation.

The Commission's present surveillance program, in its broad-
est sense, is composed of four parts:

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a. Review of trading in all markets. This aspect of the pro-
gram encompasses monitoring trading activity on the exchanges, NASDAQ *
and the over-the-counter market, monitoring news and wire services
for indications of unusual trading activity, and analysis of special
trading reports provided by the self-regulatory or organizations.

b. Review of filings. This aspect of the program includes re-
view of disclosure documents filed by issuers and review of financial
and operating documents filed by registered broker-dealers.

c. Examinations. The Commission employs a staff of securities
compliance examiners, accountants and others who conduct examinations
of books and records, sales practices, and other business activities
at the offices of registered broker-dealers. In addition, the staff
examines the various activities of the self-regulatory organizations
including validation of examinations of broker-dealers done by the
self-regulatory organizations.

d. Investigations. Where information received by the Commis-
sion through its reviews and examinations or through other means
suggest the possibility of market manipulation, insider trading,
false and misleading disclosure, net capital violations or other vio-
lations of the securities laws, the Commission's staff may conduct
investigations and initiate administrative or civil court proceedings.

Current Commission systems for collecting and utilizing data
necessary for the performance of the foregoing functions are limited.
To the extent such data is now collected (by various means), each

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* National Association of Securities Dealers Automated Quotation
System

type of information is received and processed separately, and most
cross-referencing is performed manually. Complete information per-
taining to a particular person, firm or issue may often be obtained
only after a considerable delay, and there is no good means of
highlighting patterns of irregularities which result from inter-
market trading. In addition, while certain kinds of analyses
are computerized, most are not.

THE PROPOSED SYSTEM

A. Description

It is envisioned that the market oversight surveillance system
will take into consideration:

a. relationships between the equities and
    options markets and relationships between
    reported transaction and clearing data;

b. relationships between trading in the
    various market centers (including the
    over-the-counter market), the proposed
    national market system and the self-
    regulatory organizations;

c. data systems used by vendors of market
    information and generally available
    proprietary programs utilized by
    various categories of market professionals
    (e.g., brokers, market makers, traders,
    etc.) to assist them in formulating trading
    decisions and recommendations.

To the extent it is cost effective, the surveillance system
will integrate systems presently existing (or to be created) in the
Commission, the self-regulatory organizations, the broker-dealer
community and elsewhere. It will be able to interface with systems
utilized by clearing corporations and other components of the

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financial community.   Not only will the system accommodate newly
adopted routine trade-to-trade surveillance and associated surveil-
lance activities, but also it will allow comprehensive market
analysis and enhance the follow-up process.   The functions and
capabilities which are considered desirable and essential for such
a system and which are believed to be compatible with the role of
the SEC, the role of the SRO's, and the emerging National Market
System can be summarized as follows:

    (1)   Trade Watch - Provides on-line monitoring ability
         to track trading activity as measured by
         price and volume fluctuations and patterns.
         Defined deviations from the norm of any other
         usual patterns are related to news or other
         important occurrences, and will signal an
         alert for a possible trading practice violation.
         An off-line ability to analyze or focus
         on suspect trading streams including
         broker and customer data is also for use
         within the routine surveillance function.

    (2)   Audit Trail - Allows the reconstruction of
         the market environment surrounding selected
         trades and the identification of participants
         to the trade in a timely and efficient manner.
         This function requires the maintenance of an
         integrated data base which captures, edits,
         and controls multiple source input.

    (3)   Regulatory Analysis - Provides the ability
         to utilize the integrated data base for simulating
         the impact of new, modified, or eliminated rules on
         the marketplace; to determine the effectiveness of
         present rules and generally assess the condition
         of the industry; to predict the effect of new
         investment products on the marketplace; to scan
         different trading sequences in various combinations
         to detect possible new violation conditions or
         to test hypotheses about suspect trading activities;
         and to scan the overall trading environment for
         trend changes that may influence the development
         or refinement of the regulatory structure.

(4) Investigation Coordination Tracking - Supplies the ability to effectively surround the results of surveillance with an efficient tracking and follow-up system that will flag problems or bottlenecks in case processing, and generally provide the SEC with meaningful feedback useful in increasing investigative efficiency. Such a facility will require tying together SRO data on registered representatives and member firms since the overall sanction environment consisting of case results involves an overlap of organizations and personnel.

(5) Inspection Enhancement - Provides the means to coordinate the scheduling of broker/dealer inspections with those done by the SRO's and to streamline the processing of mutually obtained and utilized information. It provides the ability to schedule, conduct, and control inspections of SRO's, SECO broker/dealers, investment advisers, investment companies, transfer agents, and clearing corporations. Accommodations must be made for processing the results of inspections and for coordinating these results with SRO's and future inspections.

These functions will serve the various Commission divisions and regional offices as follows:

	Enforce. Div.	Market Reg. Div.	Inv. Mgmt. Div.	Corp. Fin. Div.	Regional Offices
Trade Watch	x	-	-	-	-
Audit Trail	x	-	-	-	x
Regulatory Analysis	x	x	x	x	x
Investigation Coordination and Tracking	x	x	x	-	x
Inspection	-	x	x	-	x

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Specifically, these functions will allow trading analyses
to be continuously performed using different predetermined sets
of acceptable price, volume, and broker-dealer trading concentration
limits and ranges established so that irregular trading patterns
can be brought immediately to the attention of the staff and
so that special situations (e.g., tender offers, distributions,
etc.) can be studied.

In addition, the system will be able to integrate information
from SEC filings, SRO filings, inspection reports, SRO broker-
dealer compliance and market surveillance systems, and major
news events to detect over-the-counter (NASDAQ and non-NASDAQ)
and exchange manipulations and other violations of the securities
laws. For example, the system will be able to automatically
monitor information contained on Forms 3, 4 and 144 as well
as annual and quarterly reports, and Schedules 13D and 14D might
be monitored automatically to highlight possible irregularities.

With respect to exchange and over-the-counter trading,
relevant data from the following will be input into the system
and analyzed for use in detecting irregular trading patterns
on a real-time basis: (i) corporate news items (ii) clearing
information for all equity securities and options (iii) comprehensive
bid/ask, price and volume information, including executing firm
and market identification; (iv) relevant Commission filings, in-
cluding delinquencies; (v) broker-dealer concentration information;

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(vi) Regulation T credit extension information; and (vii) complete
analysis of distributions where stabilization and other market
activity by participants has occurred.

Regarding options transactions on the various exchanges,
the system will monitor the following additional items on a
prompt recall or real-time basis in conjunction with an analysis
of trading in the underlying securities (i) transaction data
(including type of transaction, identity of the participant
and market of execution), transaction exercise information (including
date of the option purchase, identity of the option exerciser and
the disposition of the stock acquired through exercise) and
collateral information as to transactions in related series of
options underlying securities and equivalents thereto; and
(ii) assignment information (including the date of assignment
to the firm and date of notice to customer, the method by which
the assignment obligation was met and the identity of the
option assignee).

The system has been designed to include the following
characteristics:

(1) Basic system is state-of-the-art.

(2) The blend of hardware and software is
     flexible, cost-effective, and modular
     to permit easy operation, maintenance,
     and upgrading.

(3) Information obtained for the data base
     and access to this information will
     be relatively transparent. Its use and
     access by the SEC will be simplified by
     using the most advanced communications
     and data base management techniques
     available.

(4) Data base organization is flexible enough
to accommodate both on-line and off-line access,
and any changes that may be required in data
form or content.

(5) System use is simple and will allow non-EDP
users to interact quickly and easily.

(6) A high degree of exception reporting is
possible to minimize the volume of
conditions that SEC personnel must review.

(7) Alert sensitivity will be easily modifiable
for changes in the oversight or observation
grid depending on the desired level of
surveillance detail.

(8) The entire system will easily accommodate
adding, changing, or deleting violation
condition monitoring or any other analytical
or management techniques without requiring
significant lead time or interfering with
the basic surveillance process.

B. Implementation

The system will be implemented over five years in three
levels.

1. Level 1 - This implementation phase will require
approximately one year and will involve tasks relatively trans-
parent to the industry, i.e., they will have virtually no
industry impact. The tasks to be accomplished are the following:

a. Consolidate existing ticker, quote, price-
reporting, and broker identification data into a single data
base. To the extent that customer or trade information is
available, e.g., options trade processing data, this informa-
tion should also be included. This consolidation should not
require the development of any new systems outside of the SEC.

b. Begin implementing within the routine sur-
veillance operation a trade/transaction watch function using
violation alert algorithms and employing new techniques such
as measurements against float and volatility modules. This
function should utilize available information in the data base
and should broadly monitor many of the same types of trading
situations being monitored by the SRO's. The additional
situations monitored will be intermarket activity such as
options with underlying securities and dually listed securi-
ties.

c. Integrate other market-sensitive data into
the data base. Such information as SEC filings or actions,
news relating to corporate activity, insider trading, etc.,
can be coded and entered into the data base and related to
exceptional trading patterns via violation condition modules.

d. Evaluate existing SEC data bases for accuracy
and make necessary adjustments. Control procedures should be
implemented to enhance the usefulness of programs accessing
and/or analyzing the data bases.

e. Initiate a pre-inspection process for SEC
examination of SRO's and broker-dealers. Such a process will
involve the development of an additional section to the FOCUS
Report (FOCUS, Part III) which requires certain financial data
such as operational and marketing data and procedural informa-
tion. A quasi-standard screening procedure will then highlight

any aberrations in status which may warrant special inquiries. In any event, a review will be performed and recommendations will be made on the frequency and effectiveness of the routine inspection program.

  f. Augment the present in-house SECO Registered Representative (RR) File with data on non-SEC RR's to form a consolidated Registered Representative File to be expanded in Level 2. (SRO's could assume responsibility for implementing this file.) Also, the definition of a basic broker-dealer file will be done.

  g. Integrate the existing SEC Complaint System data into the data base and refine this application so that it is more selective in providing alerts to possible violation conditions.

  2. <u>Level 2</u> - This next implementation phase will require approximately two years and will involve tasks considered to have a minor impact on the industry. The tasks to be accomplished are dependent on several SEC actions related to rule and procedural changes, and are expected to be the following:

  a. Establish mechanisms to enhance the data base by incorporating research, tender offer, customer tenders and expanded trading information into the data base. In addition, information on automated trading systems such as ITS (Intermarket Trading System) and DOT (Designated Order Turnaround System of the New York Stock Exchange) will be consolidated and linkage to the new surveillance system will be developed.

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       b.   Define and develop standards for data such as security, broker, and customer information, and incorporate these standards in the data base. The possibility of expanding the quote data for non-NASDAQ securities and incorporating this into the data base will be considered.

       c.   Define single source input media to be implemented in Level 3 and support the capture of all codes and related information for both trade processing/clearing and surveillance purposes.

       d.   Implement the FOCUS, Part III developed in Level 1 for broker-dealers.

       e.   Expand the Registered Representative File and install violation and tracking procedures.

       f.   Implement the investigation coordination and tracking function and initial reporting stages.

       g.   Expand the set of violation alert algorithms implemented in Level 1 to include those whose installation is now possible due to the availability and reliability of certain key data elements.

       3.   Level 3 - The final implementation phase will require approximately two years and will have a major impact on the industry as the following broadly described tasks are executed:

       a.   Complete the integrated data base by incorporating on a timely basis all remaining trade and customer data news, and other pertinent information.

b. Complete and refine the installation of remaining violation alert algorithms. As Level 3 is implemented, it is expected that a considerable amount of fine-tuning and modification, and even some elimination, will take place.

c. Implement a pending order file to extend the SEC surveillance capability into the pretrading environment which, for a certain class of securities, is considered market sensitive.

d. Expand and complete the Analysis and MIS (Manage-Information System) and Inspection Enhancement subsystems which will increase the management effectiveness of the key divisions. These subsystems will provide management with macro and micro analytical tools, and the ability to evaluate rule effectiveness and to fully understand the impact of new products and tracking techniques as well as enhanced capability to inspect broker-dealers. This is considered the final state of implementation, and the installation of these subsystems will substantially enhance the SEC's analytical and managerial capabilities in the areas of surveillance and regulation.

The following table portrays the projected completion times for the five principal functions of the Market Surveillance System described on pages 11 and 12.

Function	Total % of Project	Year of Implementation				
		1	2	3	4	5
Trade/transaction watch	45%	15	15	5	5	5
Audit trail/trade reconstruction	35%	5	5	10	10	5
Regulatory & trade pattern analysis and MIS	4%	neg.	neg.	1	2	1
Investigation coordination and tracking	1%	neg.	neg.	1	-	-
Inspection enhancement	15%	neg.	neg.	3	3	9
	100%	20%	20%	20%	20%	20%

In order to support the functions, five subsystems have been defined for the purpose of logically sub-dividing system development responsibility. These subsystems are:

1. The Transaction Collection Subsystem - Captures market and other appropriate data via both automated and manual means, ensures validity of the information, and passes the validated information to the Data Base Subsystem.

2. The Data Base Subsystem - Stores the information described in item (1) in appropriate formats for utilization by subsequent subsystem processing. It is intended that some portions of this data base will be updated on an on-going, real-time basis (i.e., market prices, volume, and news); others on a batch (set-

time) basis; and the remaining portions on an as-needed/as-received basis.

The variety of user-originated maintenance of the data base ranges from none (obtained from another computer system, no edits required) to exception processing (automatic reception of data, errors and omissions processed by user), to total (all maintenance done by user).

The system objective is to rely, to the extent practical, on existing automated data and minimize the requirement for user orignated input.

3. The Violation Alert Subsystem - Analyzes the data base to detect specific violations to existing rules; monitors the marketplace activity and incorporates relationships introduced from other data within the data base to highlight possible violations that may not be apparent from transaction analysis only. This subsystem will be designed on a modular basis to allow for the introduction of additional violation condition modules as the marketplace and/or existing laws change.

4. Inspection Support Subsystem - Stores appropriate filing and inspection data on brokers, SRO's, investment companies, investment advisers, and transfer agents. Monitoring for violation activities by analysis of filing data is performed for the purpose of inspection targeting and inspection support. Past inspection results and violations detected are stored for

follow-up inspection enhancement. Other supportive data files such as Registrations, Reg T credit extension requests, and rule interpretations are consolidated or maintained by this subsystem in order to aid the inspection programs.

    5.   <u>The Analysis and MIS Subsystem</u> - The Analysis portion draws on the data base to analyze trends and changing conditions, to allow the SEC to conduct "what if" types of analyses, and to model new algorithms for violations that cannot be readily ascertained by the Violation Alert Subsystem.

    The MIS portion contains appropriate data at various levels of detail consistent with responsibilities within the SEC. Violation alerts, stages of follow-up, and various inspections are reported monthly and year-to-date projections are compared with anticipated goals.

    The relationship between the functions and subsystems is shown below:

	Transaction Collection	Data Base	Violation Alert	Analysis & MIS	Inspection Support
Trade Watch	x	x	x		
Audit Trail	x	x	x		
Regulatory Analysis	x	x		x	
Investigation Coordination and Tracking		x		x	x
Inspection Enhancement		x	x	x	x

INDUSTRY IMPACT

. . Level I will have negligible industry-wide impact and therefore will cause no major cost increases or decreases. This level is designed to take advantage of current information sources and technology thereby immediately upgrading the SEC's surveillance capability.

Level 2 by definition has moderate industry impact. The plan calls for implementing certain pilot programs to support the system which although difficult can be achieved within a two-year time frame. These programs include a new inspection procedure for SRO's and broker-dealers, a registered representative and broker-dealer master file, a more streamlined trade inquiry/audit system (blue sheets), and several new source data requirements. These programs will provide a number of system features with the necessary surveillance input. For these pilot programs to be considered successful, the overall program must prove to be cost effective; certain SRO programs must be coordinated with those of the SEC; undue redundancies must be eliminated; and a qualitative improvement must be achieved within each category of change independent of the system.

If the pilot programs meet these criteria, they can be implemented throughout the entire industry within a reasonably short time frame. The determination of feasibility is an integral component of the Level 2 effort.

Level 3 implementation will require instituting programs

and capabilities within the industry that will have major impact.
The changes include programs such as enhancements to equity
clearing systems; a single source for trade entry (i.e., price
reporting, clearing, surveillance); new data flows to the SEC
(e.g., research news, order data, etc.,); and standard customer
identification. In the event that these programs are only partially
instituted during the fourth and fifth years, certain reductions
in development costs must be made to reflect the changed require-
ments and re-allocations made to subsequent years when the data
becomes available.

COSTS

The costs have been broken into the following two basic
categories:

One-time Costs which are non-recurring amounts to develop
and implement the system contain the following:

Computing Equipment. - The state-of-the-art in mini-
computers is and will continue to be such that the available
computing power is adequate for the implementation of both
the transaction collection subsystem and all other subsystems
using two backed-up mini facilities. The major components of
the equipment are estimated to be required during Level 1, and
upgrades to increase capacity and enhance back-up are estimated
to be required in Levels 2 and 3.

Software Development - Using well-defined module
specifications, file layouts, and report screen formats and

associated system software, the Commission will arrange for
the development of computer programs and perform program testing,
volume testing, and systems testing tasks using the aforementioned
computing equipment. These one-time costs are estimated to be
incurred approximately evenly over the five years.

Implementation, Training, Documentation and Project Expenses -
In addition to the execution of a well-planned and controlled
system implementation plan discussed previously, a significant
amount of procedure development and training must take place for
the system to be successful. In addition to the normal systems
and program maintenance manuals, documentation includes computer
operations and user manuals. These must be written in simple-to-
use form and complemented by a comprehensive training program.
This task is often underestimated and its importance underrated,
although it is essential for the success of such a comprehensive
project. Contractor project expenses are estimated to be 10% of
all non-equipment costs but will vary considerably as a function
of contractor location. The costs of this activity are estimated
to be approximately the same for each of the five years.

Operating Costs which are annually recurring amounts to operate
the system and contain the following:

Personnel - There are basically three categories of personnel
requirements: user personnel resident in the various divisions and
regional offices, administrative and liaison personnel to assist with
implementation and management of the system, and system operation per-

sonnel to run the computing equipment and service the user environment.
Some of the personnel requirements can be met within allotted posi-
tions presently available in the Commission. Other positions are new
and must be provided.

The following schedule breaks out the estimated requirements by
category by year and contains anticipated new positions in parentheses:

	Year				
	1	2	3	4	5
Users	16(0)	23(7)	28(12)	38(14)	42(14)
Liaison	2(0)	2(0)	2(0)	3(1)	3(1)
System Operation	8(0)	9(1)	10(2)	11(3)	12(4)
	26(0)	34(8)	40(14)	52(18)	57(19)
Added Positions by Year	0	+8	+6	+4	+1

The President's 1981 budget for the Commission is based on the
assumption that no new positions are required in the first year . The
Commission estimates an additional 8 personnel will be required in the
second year, 6 in the third year, 4 in the fourth year, and 1 in the
fifth year. The costs related to the new positions have been estimated
by averaging first year GS-11/12 for users, GS-12/13 for liaison, and
GS-9/10 for system operation.

Other Operating Costs – These costs are broken into outside
services (such as consolidated ticker, pricing, corporate action,
security statistics), hardware/software maintenance by a vendor,
and utilities/supplies/miscellaneous.

The following chart provides estimates by year for the implementation and operation of the new market surveillance system. Additionally, an annual breakdown by function by year is given for one-time costs using the percentage estimates previously stated.

COST ESTIMATES FOR IMPLEMENTING AND OPERATING THE
NEW MARKET SURVEILLANCE SYSTEM
5 YEAR PERIOD

Note: Costs do not include space, or depreciation and assume annual CPI increase of 9% from 1979 dollars ($000's).

	Level 1	Level 2		Level 3		Totals for 5-Years
	Year 1	Year 2	Year 3	Year 4	Year 5	
One-time Costs:						
Computing Equipment:						
– Transaction Collection	250	110	120	130	140	750
– Data Base/Batch Processor	350	220	240	260	280	1350
Software Development	600	1200	1290	1400	1410	5900
Implementation, Training, Documentation, Project Expenses	500	770	830	900	970	3970
Total One-time Costs	1700	2300	2480	2690	2800	11970
Operating Costs (Annual):						
Personnel (New Positions)						
– Users @ GS 11-12	0	(7) 162	(12)302	(14)384	(14)419	
– Liaison @ GS 12-13	0	0	0	(1) 33	(1) 36	
– System Operation @ GS 9-10	0	(1) 18	(2) 40	(3) 65	(4) 94	
Non-Personnel:						
– Outside Services	250	190	210	260	280	
– Hardware/Software Maint.	30	30	40	50	60	
– Utilities, Supplies, Misc.	20	20	30	30	40	
Total Operating Costs	300	420	622	822	929	
Total One-time & Operating Costs	2000	2720	3102	3512	3729	

This schedule is intended to break down one-time costs presented above by new system functions by year.

	Level 1	Level 2		Level 3		Totals for 5-Years
	Year 1	Year 2	Year 3	Year 4	Year 5	
One-time Costs by Function:						
Trade/Transaction Watch	1280	1700	680	730	690	5080
Audit Trail/Trade Reconstruction	350	540	1220	1330	740	4180
Analysis and MIS	50	20	120	250	140	580
Investigation Coordination and Tracking	0	10	110	0	0	120
Inspection Enhancement	20	30	350	380	1230	2010
Total One-time Costs (as previously stated)	1700	2300	2480	2690	2800	11970

THE ROLE OF THE PILOT PROJECT

As an initial step in implementing the proposed market surveillance system, the Commission is undertaking a pilot project in order to begin creating the data base and testing certain basic components required for the trade/transaction watch and market reconstruction functions. This pilot project is being undertaken through a service contract with a contractor.

The arrangement has been structured to provide immediate surveillance-related benefits to the Commission using contractor hardware systems and contractor-developed software, some of which can be transplanted to the final system operation at the Commission. The initial operation of the pilot

system will be done by the contractor.

A summary of the salient features of the pilot are as follows:

- All trades and NASDAQ quotes will be received and stored on computer files in real-time, i.e., as they occur;

- Trade and option clearing data will be received and stored on computer files;

- A set of off-line alert tests will be made on a daily basis resulting in certain exception reports being produced and transmitted to the SEC in Washington. These reports will flag aberrations in price, plus/minus ticks, closing transactions, OTC bids, block trades, and certain option trading patterns; and

- To support the preliminary analysis work done to qualify an alert, an off-line print capability will be provided to list selected single transaction streams on a request basis.

This is a particularly critical time in the surveillance activities of the Commission. With the eminent rescission of the options moratorium which will undoubtedly result in heavier trading across options and equities markets, the need for more sophisticated monitoring methods is immediate. No single self-regulatory organization (SRO) is responsible for, nor has the information necessary for, cross-market surveillance. The recent

Commission Options Study Report highlighted deficiencies in present surveillance methods and made recommendations for SRO procedural changes to enhance both SRO and the Commission's role of oversight and regulation of various market participants. The Commission must continue to work in concert with the implementation of these improved procedures by utilizing advanced communication and computer techniques to effectively keep abreast of the changing state of trading technology.

Market surveillance is very complex in today's securities environment and requires the conduct of a multi-million dollar, multi-year project to obtain the level of sophistication necessary to meet increasing regulatory demands. In anticipation of a lengthy budget approval, RFP (Request for Proposal), and procurement cycle, the Commission elected to proceed with the pilot project to begin collecting and analyzing data on a limited scale. Such activities are felt to be worthwhile in terms of producing short-range benefits while laying the basic foundation of the final system. The pilot project is expected to achieve in the short-term, at least as perceived by the industry, what the full system will achieve in the long-term, and its month-to-month remote operation will easily and directly dovetail into the first level of full system implementation.

SUMMARY OF FIRST-YEAR PROGRAM

The Commission is requesting $1,700,000 in one-time development costs in 1981 for the first year of the system's life, consisting of:

Computing Equipment	$600,000
Software Development	600,000
Implementation, Training and Project Expenses	500,000
Total One-time Costs	$1,700,000

During the first year, the Commission will relocate approximately $200,000 worth of software components developed and implemented by the contractor during the pilot project. This software will provide the basis upon which additional development will be performed creating the schedule of benefits mentioned previously for Level 1 of the overall project.

At the completion of the first year, the Commission will have in place the principal hardware components and essential software ingredients to sustain the initial thrust of in-house surveillance. Additionally, the internal organization necessary to operate the system and utilize the early system outputs will be trained and operative with over a year's experience in dealing with the more sophisticated surveillance methods.