Chapter Nine

THE OVER-THE-COUNTER MARKET

A. Introduction

The over-the-counter ("OTC") market is the third largest securities market in the world. 1/ This market relies on at least three critical elements for its success. First, timely and accurate displayed quotations (supplemented by real-time transaction reporting) have been the keystone of the efficient pricing and execution of transactions in OTC securities. Second, competing market makers willing to place their capital at risk have provided liquidity in the OTC market. Third, and most recently, automated execution systems, based on displayed quotations, have been an essential factor in the ability of the OTC market to process rising transaction and share volume without significant operational difficulties. Moreover, each of these elements is critical to the other. If one element breaks down, the viability of the other elements is also reduced. Ultimately, a certain level of gridlock develops and the mechanisms for order execution and pricing efficiency cease to function effectively.

During the October market break, the quotation system became inoperative due to the large number of locked and crossed markets (discussed and defined below). Market makers no longer could rely on quotations as the basis for executing customer orders, either manually or via their automated execution systems. In turn, once broker-dealers no longer could rely on quotations (and last sale reports also appear to have been delayed), an increasing number of telephone calls were made to the leading market makers in an attempt to execute agency orders and to verify actual quotations for purposes of ensuring that dealer prices provided to effect principal transactions were reasonably related to the prevailing market. In response to a rising number of telephone inquiries, market makers were increasingly unable, or unwilling, to answer the telephone and provide market prices. Indeed, even when market makers were reached, they only were willing to provide prices for a nominal amount of shares (i.e., one round lot) 2/ due to volatile market conditions and uncertainty as to those market makers' ability to obtain access to other market makers to adjust their positions. 3/ Accordingly, a perception of a reduced level of market making participation may have led other market makers, in turn, to reduce their level of market making participation

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1/ The term "OTC market" encompasses all non-exchange traded securities. As described below, however, this Chapter focuses primarily on trading of securities on the National Association of Securities Dealers Automated Quotations ("NASDAQ") System. Both the New York Stock Exchange ($1,388.8 billion) and the Tokyo Stock Exchange ($1,000.5 billion) exceeded the dollar trading volume of NASDAQ ($378.2 billion) in 1986.

2/ The standard round lot unit of trading for equity securities is 100 shares. Round lots for debt instruments, however, vary and are expressed in terms of dollar value.

3/ Such problems were compounded when leading market makers withdrew from the National Association of Securities Dealers, Inc.'s ("NASD") automated small order execution system, leaving a greatly reduced number of market makers to absorb the rising order flow and volume emanating from that system.

or withdraw from the market entirely. These problems -- unreliable quotations, delayed transaction reports, reduced market maker participation, and increased manual handling of orders coupled with greater telephonic inquiries -- all combined to reduce dramatically the liquidity and orderliness of the OTC market during the October market break.

During the market break, each of the key elements of the OTC system experienced severe strain. Thus, although the OTC market executed a record amount of transactions and volume during this period, its performance was not satisfactory. Indeed, of all the major markets, the OTC market was singled out for the most severe criticism by the respondents to the Brady Task Force's questionnaire. 4/ For purposes of the Study, we will discuss separately the adequacy of the quotation and last sale reporting systems, small order execution, and market maker performance. It is worth repeating, however, that these are artificial separations for purposes of discussion. In actuality, failures of each component part played an important role in affecting the performance of the other parts.

B. Overview of NASDAQ Trading In October

The OTC market is composed of at least two distinct sub-groups of securities, those traded on NASDAQ and those quoted in the Pink sheets. The first group, NASDAQ securities, is further divided into two separate subgroups. First, certain NASDAQ securities are designated as National Market System ("NMS") Securities ("OTC/NMS Securities"). 5/ OTC/NMS Securities are securities that are quoted on the NASDAQ System and are subject to real-time trade reporting. 6/ Quotations for such

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4/ Most respondents who commented believed the markets performed well below normal quality levels, with the OTC market being the poorest performer. Of those responding to the questionnaire, 76% rated the OTC market's performance in dissemination of price and market information for October 19 and 20 as very poor (less than 50% of normal quality); 65% rated the OTC market's performance in executing and clearing trades as very poor. See Report of the Presidential Task Force on Market Mechanisms; Surveys of Market Participants And Other Interested Parties, Study V, p. V-12, January 1988.

5/ See Rule 11Aa2-1 under the Act. Rule 11Aa2-1 recently was amended to designate as NMS Securities all OTC or exchange listed securities for which transactions are reported pursuant to an effective transaction reporting plan approved by the Commission pursuant to Rule 11Aa3-1 under the Act. This would include all securities listed on the NYSE and the Amex and sole regional exchange listings that substantially meet Amex or NYSE listing criteria as well as OTC securities that meet NMS eligibility criteria in the NASD's Transaction Reporting Plan. See Securities Exchange Act Release Nos. 24633 and 24635 (June 23, 1987); 52 FR 24234 and 24149.

6/ NASDAQ displays bid and offer quotations of competing market makers registered with the NASD. NASDAQ was developed by the NASD in the 1960s and early 1970s to facilitate trading of equity securities in the OTC market. It began operation in 1971.

securities must be firm 7/ and the price and number of shares involved in the transaction must be reported within 90 seconds of execution. 8/ As a general matter, OTC/NMS Securities represent the most highly capitalized, most actively traded OTC securities. 9/

The second group of NASDAQ securities consists of securities which, although quoted on NASDAQ, are either ineligible for designation as OTC/NMS Securities or have elected not to be so designated. These securities, while sometimes actively traded, generally are less highly capitalized than OTC/NMS Securities and less actively traded. 10/

Finally, there are the so-called "Pink sheet" stocks. These stocks are not quoted on NASDAQ and, generally, quotations only are available through daily reports compiled by the National Quotation Bureau, Inc. or similar quotation services operating on a regional basis. Pink sheet stocks are the least actively traded securities. 11/

The focus of this chapter is on the market for OTC/NMS Securities and, to a lesser extent, NASDAQ stocks in general.

During the week of October 19, 1987, the OTC market experienced unusual volatility: the NASDAQ Composite Index ("Index") 12/ declined by 19.4%, falling a total of 78 points in those 5 days (see Chart 9-1). The decline differed from that of the NYSE in that the dramatic drop occurred over a two-day period. The worst losses were sustained on Monday the 19th and Tuesday the 20th, when the Index declined,

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7/ See Rule 11Ac1-1 under the Act.

8/ See Rule 11Aa3-1 under the Act.

9/ As of December 31, 1986, the average value of the total assets of companies issuing OTC/NMS Securities was $576.7 million as compared to $180.3 million for companies issuing non-NMS NASDAQ securities. Similarly, for that same date, the average shareholders' equity for companies issuing OTC/NMS Securities was $80.1 million as compared to $49.5 million for companies issuing non-NMS NASDAQ securities. Trading in OTC/NMS Securities accounted for 69% of the total share volume of all transactions in NASDAQ securities in 1986. Dollar volume of trading in 1986 in OTC/NMS Securities was $337.1 billion, 89% of total NASDAQ dollar volume.

10/ Throughout this Chapter the term "NASDAQ securities" will be used to refer to both OTC/NMS Securities and non-NMS securities unless otherwise specifically indicated.

11/ See Burns, Over-the-Counter Market Quotations: Pink, Yellow, Green, and White Sheets -- A Gray Area in the Law of Evidence, 52 Cornell L.Q. 262, 265 (1967). On December 31, 1987, the NASD submitted a proposed rule change that would establish an electronic system of mandatory price and volume reporting for Pink sheet securities. See SR-NASD-87-55.

12/ The Index is a market capitalization weighted index of all OTC/NMS Securities, except warrants, and all other NASDAQ domestic common stocks.

respectively, 11% and 9%. The Index rose on Wednesday the 21st, gaining 7.34% of its value, although it declined again on Thursday the 22nd and Friday the 23rd by 4.47% and 2.29%, respectively. After a steep decline of 9% on Monday the 26th, the Index again declined, though not as sharply, by .86% and 1.51% on Tuesday and Wednesday, respectively. On Thursday and Friday it rose 5.2% and 5.3%, respectively, losing, on balance, only 1% of its value for the week of October 26th. An index representing the top 100 NASDAQ industrial securities -- the NASDAQ 100 -- lost 20.66% of its value during the week of October 19, then rallied during the following week, regaining 3.2% of its value.

While the OTC market was experiencing extreme volatility, reported share volume in NASDAQ securities also was extraordinarily high. For example, during 1986, NASDAQ daily share volume averaged 113.6 million shares; for the week of October 5 - 9, 1987, daily share volume averaged 151.8 million shares. 13/ In contrast, during the week of the market break, daily share volume averaged 244.3 million shares -- 113% higher than the daily average for 1986 and 61% higher than the daily average for the week of October 5.

Further, during the week of October 5, the high/low volume range was relatively small. The highest volume figure for any day during the week was 158.5 million shares on Tuesday; that figure exceeded the lowest daily volume for the week (145.3 million shares) by only 13.2 million shares. By contrast, high/low range during the week of the market break was dramatic. The range between the highest and lowest daily volume during that week was 111.1 million shares, over eight times the high/low range during the week of October 5. Volume climbed from 222.9 million shares on Monday the 19th to 288 million on Wednesday the 21st. It then dropped to 176.9 million shares on Friday (when the NASD initiated a 2:00 p.m. closing time), and stabilized throughout the following week at levels ranging from 190.5 million on Monday the 26th to 208.1 million on Friday the 30th (see Chart 9-2), still 83% greater than the 1986 average.

Daily dollar volume showed similar growth, rising from $2.97 billion on Monday to $3.52 billion on Wednesday (136% greater than the 1986 average). It then fell to $1.83 billion on Friday and did not exceed $2.09 billion the following week. 14/

13/ Reported NASDAQ figures do not include the data from the NASD's Form T reports. Form T reports contain information on transactions executed outside the trading hours of the Transaction Reporting System and last sale reports of transactions that are not required to be reported within 90 seconds after execution. The NASD extracts from the Form T data, trades of 10,000 shares or more and adds this information to the volume data for each NASDAQ security. This information is kept in the NASD's files for historical purposes on a year-to-date basis.

14/ Share volume for OTC/NMS Securities, which represented from 75% to 80% of the total volume for NASDAQ securities during the market break week, followed a similar pattern. It climbed from 171.1 million on Monday to 234.7 million on Wednesday; it then decreased to 134.8 on Friday, and stabilized during the following week, at levels ranging from 153.7 million Monday the 26th to 168.5 million on Tuesday the 27th. (By comparison, in 1986 average daily share volume in OTC/NMS Securities was 77.9 million, less than one-third the level reached on Wednesday the 21st.) Similarly, the number of trades in OTC/NMS Securities

C. OTC Market Information Systems

Information regarding trading activity in OTC/NMS Securities is available from two sources: (1) last sale reports of completed transactions, and (2) bid/ask quotations. (Last sale reports do not exist for non-NMS securities.) During the week of October 19, both systems showed tremendous strain in the OTC market.

1. Trade Reporting

Perhaps as a result of the extraordinarily high volume experienced on Monday through Wednesday of market break week, there was an unusually high percentage of transactions reported to the NASDAQ System "out of sequence," that is, later than 90 seconds after the transaction was executed. On Monday and Tuesday, 20.6% and 20.2%, respectively, of all trades in OTC/NMS Securities were designated out-of-sequence. From Wednesday to Friday, these percentages declined somewhat, ranging from 18.7% on Wednesday to 15.1% on Friday. By way of comparison, the average daily percentage of OTC/NMS trades reported out-of-sequence during the month of September 1987 was 6.2%, less than one-third the proportion experienced on Monday and Tuesday of market break week. 15/

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increased from 135,686 on Monday the 19th to 162,309 on Wednesday; it then declined to 85,094 on Friday and remained within a range of 88,825 to 109,102 during the following week. (By comparison, the average daily number of trades in OTC/NMS Securities in 1986 was 48,397, less than one-third the number of trades executed in OTC/NMS Securities on Wednesday the 21st.)

15/ In this connection, the Division notes that in general the Commission has encouraged OTC market makers and the NASD to enhance the quality of trade reporting. See, e.g., Securities Exchange Act Release No. 20902 (April 30, 1984), 49 FR 19314 (proposed rule amendments to expand NMS qualification standards). Further, in its comment on the 1984 proposed rule amendments, adopted in January 1985, which increased the number of securities for which trade reporting was required, the NASD stated that to aid in trade reporting it had developed a computer-to-computer interface to permit firms to meet NMS trade reporting obligations by entering trade details through in-house computer systems to be transmitted to the NASDAQ System. The NASD also stated that the use of SOES could significantly reduce a firm's trade reporting burden. Letter from Gordon S. Macklin, President, NASD, to George A. Fitzsimmons, Secretary, SEC, dated June 14, 1984. The Division believes, however, that the high number of late trade reports indicates that the NASD must take further steps. Several years ago the Division specifically suggested that the NASD require members to adopt appropriate internal control systems to ensure timely and accurate trade reporting, and the NASD responded that "[o]ur initial reaction to that suggestion was quite favorable and we anticipate that such would be another element in enhancing the overall quality of trade reporting." See letter from John T. Wall, Executive Vice President, NASD, to Brandon Becker, Assistant Director, Division of Market Regulation, dated February 10, 1984. Nevertheless, the extraordinarily large number of out-of-sequence reports demonstrates that further attention by the firms on those internal controls is necessary.

2. Quotations - Locked and Crossed Markets

The NASDAQ market depends to an even greater extent than other securities markets, on the availability of accurate and timely quotations for securities to ensure that trade executions fairly reflect the prevailing market price for those securities. Market makers in NASDAQ securities, therefore, are required to enter and maintain two-sided quotations for a security in which they are registered as a market maker in the NASDAQ System (unless they have obtained an excused withdrawal from the NASD) 16/ and to stand ready to buy and sell at those specific prices on a regular or continuous basis. 17/ Usually, bid prices submitted by different NASDAQ market makers in the same security approximate each other, as do asked prices quoted by those market makers. For example, if three market makers, A, B, and C were providing quotes for XYZ security, it would not be uncommon for A to quote a bid/ask spread of 10 (bid) to 10 1/4 (ask), while B and C might quote a spread of 10 1/8 to 10 3/8 and 9 7/8 to 10 1/8, respectively.

In response to a bid or an offer from another NASD member to purchase or sell, a market maker must execute a transaction for at least a "normal unit" of trading (100 shares) at its displayed quotations. Further, if the market maker provides a quotation for a particular number of shares in excess of 100, it must execute orders for that particular amount at its quoted prices in response to offers to buy or sell. 18/

A locked market in a security exists when the bid price quoted by one market maker in a security equals the ask price quoted by another market maker in the same security. For example, A bids 10 3/8 for XYZ while B is asking 10 3/8 to sell. A crossed market exists when the bid price quoted by one market maker in a security is greater than the ask price quoted by another market maker in the same security. For example, A bids 10 1/2 to buy XYZ and B is asking 10 3/8. In normal market conditions, "locked" and "crossed" markets occur only for short periods of time because if A is willing to buy at 10 3/8 and B is willing to sell at 10 3/8 (or in the case of a crossed market, a lower price), a trade should occur and new quotes should be entered. Because "locked" and "crossed" markets should be eliminated immediately, their continued existence indicates that the quotations for a security are suspect and may not provide an accurate reflection of the market for a security. 19/

16/ Schedule D, Part VI, Section 2(a), NASD Manual, paragraph 1754, at 1571.

17/ Section 3(a)(38) of the Act defines the term "market maker" as any dealer who "holds himself out . . . as being willing to buy and sell [a] security for his own account on a regular or continuous basis." Quotations may be entered into the NASDAQ System only by NASD members registered as NASDAQ market makers or otherwise approved by the NASD to function in a market-making capacity. See Schedule D to the NASD By-Laws, Part VI, Section 1(b), NASD Manual, paragraph 1754, at 1571.

18/ Schedule D, Part VI, Section 2(b), NASD Manual, paragraph 1754, at 1571. As a general matter, NASDAQ market makers only enter quotations for 100 shares.

19/ A market maker cannot lock or cross his own quotations; the NASDAQ System is programmed to reject such entries.

Because quotations submitted by NASDAQ market makers are required to be reasonably related to the prevailing market, 20/ and locked and crossed quotes lack that reasonable relationship to the prevailing market, NASD rules prohibit a market maker from entering or maintaining a quote that locks or crosses a market in a particular security, except under "extraordinary circumstances." 21/ Prior to entering a quote that would lock or cross another quote, a market maker is required to execute transactions with the market maker whose quote would be locked or crossed, in order to induce that market maker to adjust its quotes to the market. 22/

As a result of this regulatory framework, locked or crossed markets generally remain only for a short period of time. For example, on July 13, 1987, there were only 65 intra-day locked or crossed markets, 53 of which (82%) were resolved within five minutes. Nevertheless, during the market break there was an extraordinarily high number of locked and crossed markets and the duration of these locked and crossed markets was unusually long.

According to market participants, there were at least two reasons for the high number of locked and crossed markets. When a security is rapidly changing in price (either rising or falling) a market maker may not be able to take effective steps to avoid locking or crossing another market maker's quotation. Similarly, other market makers may not be able to respond to changed quotations in a timely manner. Market makers reported that during the market break the number of transactions was so high that they simply did not have the time to update all of their quotations. 23/ In addition, it was suggested that because market makers had difficulty reaching other market makers by telephone, 24/ they had no choice but to lock or cross another market maker's quote intentionally because they were simply incapable of executing a trade with the market maker whose quote they locked or crossed. Because the market maker had a customer who wanted to sell to the market maker with the highest bid and could not contact that market maker by telephone, the market maker locked the market until it effected the trade.

The significance of locked and crossed markets during the market break can be measured by comparing the number of such occurrences during the break with a prior "normal" period. According to an NASD study, for the two-week period between July 13 and July 24, 1987, there were 925 instances of locked or crossed markets in NASDAQ securities, an average of 92.5 instances per day. Of these 925 instances of locked or crossed markets, 249 (27%) existed at the opening; 56% were resolved within one minute and 82% in less than 5 minutes. In contrast, from Monday October 12 to Friday

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20/ Schedule D, Part VI, Section 2(c), NASD Manual, paragraph 1754, at 1571.

21/ Schedule D, Part VI, Section 2(e), NASD Manual, paragraph 1754, at 1571-2.

22/ Id.

23/ The average number of OTC/NMS common stocks and ADRs in which NASDAQ market makers took positions was 50.4 securities per market making firm as of September 30, 1987. According to the NASD, the average trader is responsible for 43 securities (this average figure includes Pink sheet securities).

24/ See Section E, Access to Market Makers During Market Break Week.

October 16, the daily number of locked and crossed markets in OTC/NMS Securities increased from 97 to 268 (a 176% increase). 25/ (In the 50 most actively traded OTC/NMS Securities, the daily number of locked and crossed markets increased from 28 to 83, a 196% increase.)

On October 19, the number of locked and crossed markets in NASDAQ securities rose to 5,074 (4,708 in OTC/NMS Securities), an incredible 54-fold increase from the daily average in July. (For the 50 most actively traded OTC/NMS Securities, the number rose to 967, approximately 34 times the daily average of 28.4 that prevailed during the week of September 28, 1987.) During the week of October 19, there were 15,300 intra-day locked or crossed markets in OTC/NMS Securities, 2,621 of which involved the 50 most actively traded OTC/NMS Securities. Moreover, of those 2,621 instances of locked or crossed markets in the 50 most active securities, only 62% (1,614) were resolved within 5 minutes; 93% (2,444) were resolved within 30 minutes; 2% (56) required over an hour to resolve. In all, there were 8 instances in which locked or crossed markets lasted for over 6 hours. 26/

Examination of figures for the 50 most actively traded OTC/NMS Securities reveals that the frequency and duration of locked and crossed markets were much higher on October 19th and 20th than for the rest of the week. On Wednesday, these figures dropped precipitously, then leveled off somewhat until Friday the 23rd. On Friday, they dropped again, and stayed at relatively low levels throughout the following week. For example, instances of locked and crossed markets for the 50 most active OTC/NMS Securities stood at 967 and 868 on Monday the 19th and Tuesday the 20th, respectively; on Wednesday, the figure dropped to 389 and remained close to that level (338) on Thursday. On Friday, the figure fell to 59; it did not rise above 142 for any day during the entire next week. 27/ The number of locked or crossed markets not resolved within one hour followed a similar pattern. During the week of October 19,

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25/ For all NASDAQ securities, from Monday to Wednesday of the market break week, there were an average of 1,991 NASDAQ securities per day in which markets were locked or crossed either prior to or after the opening. Of these, an average of 700 securities per day had locked or crossed quotes prior to the opening; an average of 1,291 securities per day had locked or crossed quotes during normal trading hours. During the market break week, quotations for an average NASDAQ security became locked or crossed 3.24 times a day.

26/ The number of instances per day of locked and crossed markets exceeds the number of securities in which markets are locked and crossed during the day because a market for a security can be locked or crossed many different times during the trading day.

27/ All OTC/NMS Securities reflected this same pattern of declines on Wednesday and Friday in both the number and duration of locked and crossed markets. The number of locked and crossed markets in OTC/NMS Securities reached a high of 5,509 on Tuesday the 20th. On Wednesday it fell to 3,262 and continued falling through Thursday (1,502) until it reached 319 on Friday. During the succeeding week, the figure stayed relatively low, never exceeding 639 for any one day. The number of locked and crossed markets in OTC/NMS Securities not resolved within one hour followed a similar pattern.

there were 56 instances in which locked or crossed markets in the 50 most active OTC/NMS Securities were not resolved within one hour; during the following week, there were no such cases.

On October 19, 20, and 21, the 20 market makers with the highest absolute number of locked or crossed markets constituted, with two exceptions, the same 20 firms with the highest number of market making positions 28/ in OTC/NMS Securities. 29/ All of the 20 are among the top 50 NASDAQ market makers. 30/ These 20 firms held 41% of the total number of market making positions in all NASDAQ securities, as averaged for the end-of-month trading positions for September and October 1987.

These 20 firms head both the list of those market makers who actively initiated locked or crossed markets and the list of those market makers whose quotes were passively locked or crossed by other market makers. 31/ The 20 firms represent, on average for the 3 days, 58% of the total number of instances of actively locking or crossing and 67% of the number of instances of passively locking or crossing. In general, of the 20 firms, those that could be classified as large wire houses had a higher number of locked or crossed markets than wholesale firms, small firms or block houses. 32/

28/ "Market making positions" represents the total number of positions made by each market maker in the NASDAQ System.

29/ Only 5 of the top 20 OTC/NMS market makers are among the top 20 market makers in non-NMS securities.

30/ The NASD determined the top 50 market makers by assigning to each market maker a number reflecting a combination of its trading volume, number of positions taken, and total capital.

31/ A market maker can be involved in a locked or crossed market in two ways: first, the market maker could be the firm that enters the quote that locks the market ("the locker"); second, the market maker could be the firm whose market is locked or crossed by another market maker ("the lockee"). Generally the firm entering the quote that locks or crosses the market is attempting to update its market. The firm whose market becomes locked or crossed generally has not updated its quotes.

32/ If the 20 firms are ranked according to the correlation between the number of locked or crossed markets per firm and the number of market making positions held by the firm, a different picture emerges: the firms with the highest numbers of market making positions in all NASDAQ securities had the lowest number of locked or crossed markets, among the 20 firms, relative to their total number of market making positions. For the three days, the lowest daily number of locked and crossed markets in which any one of these 20 firms was involved, either as a locker or as a lockee, was 101. This number exceeds the system-wide daily average of 92.5 for the two-week period in July of 1987. These are firms that tend to make markets in a large number of non-NMS securities relative to their OTC/NMS market making positions. Of the 20 firms, those with fewer market making positions for all NASDAQ securities had the highest number of instances

The NASD took steps during the week of October 19 to address the occurrence of locked and crossed markets. On Monday and Tuesday, the NASD monitored the number of securities in which markets were either (1) locked or crossed prior to the opening of trading, or (2) became locked or crossed during the trading day. It also attempted to contact firms with locked or crossed markets by telephone to ascertain why the locked or crossed market existed, and urge the firm to update its quote. In addition, the NASD attempted to contact market makers to advise them that other broker-dealers were trying to contact them by telephone. Because of the difficulty it experienced in reaching the trading rooms of OTC market makers, the NASD on Tuesday established direct telephone lines to the OTC trading desks of approximately eight major market makers. On Wednesday the 21st, it disseminated through the NASDAQ System an administrative message advising subscribers that the NASD intended to take action against all market makers who failed to honor their quotes or correct locked and crossed markets. On Thursday the 22nd, a similar message reported that the NASD would refer to the Market Surveillance Committee instances of market makers' failure to answer telephones, failure to maintain firm quotes, and locking and crossing markets. After the close of trading Thursday, the NASD determined to establish a dedicated telephone "hotline" to all NASDAQ market makers, to be used to advise market makers that their quotes were locking or crossing a market in a particular security, and to urge them to update their quotes and to execute transactions at the quoted prices. The "hotline" also could be used by NASD members themselves, to advise the NASD of instances of locked or crossed markets. On Friday the 23rd, the NASD disseminated a notice regarding the establishment of the hotline.

The declines both in frequency and duration of locked and crossed markets from Wednesday the 21st through Friday the 23rd correlate with the NASD's actions to correct the problem of locked and crossed markets. The NASD's announcement on Wednesday of its intention to take action against market makers for failure to honor quotes preceded Wednesday's steep decline in the number and duration of locked and crossed markets. Its establishment on Friday the 23rd of a hotline to assist in the elimination of locked and crossed quotes preceded another decline. 33/

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of locked or crossed markets relative to their total number of market making positions. (The three firms of the top 20 with the lower number of locked and crossed markets relative to the number of market making positions were wholesale firms and the four with the highest relative number of locked and crossed markets were investment banks. The other 13 firms fall between the two extremes, with the large wire houses approximately in the middle of the group of 20.)

33/ The frequency and duration of locked and crossed markets do not correlate well with NASDAQ volume figures or with figures representing gain or loss in the value of the Index (see Chart 9-3). Unlike the locked and crossed markets, volume on NASDAQ did not fall on Wednesday the 21st, but actually reached a two-week high of 288 million shares. Neither did the value of the Index correlate well with figures for locked and crossed markets. After losses in value of 11% and 9% on Monday the 19th and Tuesday the 20th, the Index rallied, then fell again by 9% on Monday the 26th. Locked and crossed markets remained at relatively low levels on the 26th, and throughout the week; the drop in the market on the 26th was not accompanied by a corresponding increase in locked and crossed markets.

The presence of this abnormal number of locked and crossed markets severely hampered the ability of OTC market makers to execute customer orders. As discussed more fully below, the existence of a large number of locked and crossed markets had a particularly debilitating effect on the NASD's Small Order Execution System ("SOES") and firms' proprietary execution systems. Such automatic execution systems do not function when the market for a security is locked or crossed.

Moreover, NASDAQ quotation problems also affected the firms' non-automated execution capability. A survey of the top 50 NASDAQ market makers 34/ (see discussion, infra) shows that, because of the high number and duration of locked and crossed markets during market break week and the resulting need to execute orders by telephone, customer orders for securities whose quotes were locked or crossed were often executed in an untimely way or not executed at all. Executions, if and when effected, were often made at prices that represented only the broker's best estimate as to the prevailing market, or at whatever price was "available" (i.e., offered by a market maker who could be contacted and was willing to execute at that price).

Specifically, the NASD asked the top 50 NASDAQ market makers how they handled retail customer orders for securities whose markets were locked or crossed during market break week. Their answers reflect that most attempted to contact, by telephone, the market maker displaying the best price ("the locked or crossed quote") in a security whose markets were locked or crossed. If the broker could execute a trade at the locked or crossed quote, it did so. If not, the broker typically canvassed several market makers, telephoning them to ascertain which was offering the best available price, or executed the trade at the next available bid or offer quotation displayed on the terminal. Brokers found that, whether they dealt with the market maker displaying the locked or crossed quote or sought another market maker, market makers were often unwilling to trade at their quoted prices.

Faced with this unwillingness, most of the brokers said that they typically negotiated with the market maker to agree on an adjusted price that, though not as favorable as the quoted price, reasonably approximated the prevailing market. The responses of both brokers and market makers reflect this bargaining process. One broker responded, "[a]gency orders, if [the] dealer could be reached, [were] offered at the bid. In most cases, the high bid was not honored but done at a price reflecting the real market" (emphasis added). Another firm admitted pricing based on the "[t]raders' discretion on stocks we make a market in. On stocks we did not make a market in--at the best possible price we would negotiate."

Poor quotation information also affected the ability of firms to execute properly their customers' orders as principal. Firms often provide their customers with executions at the inside market, irrespective of what their proprietary quote is. Unable to identify an accurate best bid or offer, firms attempted to estimate an appropriate price. One firm responded that, in making this estimate, it took three factors into account: (1) number of market makers; (2) size of order; and (3) market conditions. Another stated that it simply chose a bid price 1/8 - 3/8 below the locked price, and

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34/ The NASD performed a survey of the top 50 NASDAQ market makers in response to the data request sent to it by the Division. See letter from Richard G. Ketchum, Director, SEC, to Joseph R. Hardiman, President, NASD, dated November 12, 1987. Forty-nine out of 50 market makers responded to the questionnaire.

an ask price 1/8 - 1/4 above the locked price. Finally, the responses of some firms implied that they simply did not consider locked and crossed markets in executing customer orders. One firm said that it "ignored crossed" markets; another stated that "[Obtaining an execution] was not always possible because we were unable to get through to the market makers in some securities."

D. Small Order Handling

1. SOES

SOES, the NASD's small order execution system 35/ was established to permit small orders in NASDAQ securities to be automatically executed at the best bid or ask price (the so-called "inside" market) 36/ depending on whether the order is to buy or sell. SOES is restricted to agency orders (customer orders) of 1,000 shares or fewer in over 3,000 OTC/NMS Securities and 500 shares or fewer in approximately 2,700 non-NMS securities. 37/

Participation in SOES is voluntary. 38/ Any NASDAQ market maker in a particular security may be a SOES market maker in that security. 39/ A SOES market

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35/ The initial phase of SOES became operational in January 1985; the second phase became operational in August 1986. At the System's inception, executions were limited to orders in OTC/NMS Securities of 500 shares or fewer.

36/ The "inside" market is the best bid and ask price for a security. For example, if A, B and C are market makers in XYZ and A is quoting a bid-ask spread of 10 to 10 1/4, B is quoting 9 7/8 to 10 3/8 and C is quoting 10 1/8 to 10 3/8, then the "inside" quote is 10 1/8 to 10 1/4 (i.e., C's bid of 10 1/8 and A's ask of 10 1/4).

37/ Agency orders also include orders entered into SOES on a riskless principal basis by a SOES Order Entry Firm (see infra note 38) that is not a market maker in the SOES security. See also Rules of Practice and Procedures for SOES, Section (a) 8, NASD Manual, paragraph 2451, at 2303.

38/ There are two types of participants in SOES: (1) SOES Market Makers and (2) SOES Order Entry Firms. SOES Market Makers must be members of the NASD registered as NASDAQ market makers in a security. SOES Order Entry Firms are NASD members registered as SOES order entry firms. As such, they may enter orders for execution against SOES market makers. See Rules of Practice and Procedures for SOES, Section (a)5 & 6, NASD Manual, paragraph 2451, at 2303.

39/ Level 2 and 3 NASDAQ terminals have indicators next to the symbols of the market makers who participate in SOES. The NASD must manually remove SOES indicators from the NASDAQ System. Because of the number of market makers withdrawing from SOES during the week of October 19, SOES indicators were not always removed at the time the market maker withdrew, making it difficult for firms to determine if a particular security had a SOES market maker. Frequently, although the SOES indicators were on the NASDAQ screens, the market makers maker may withdraw from and reenter SOES at any time, without limitation during the operating hours of SOES. 40/ A SOES market maker is subject to automatic executions on a rotating basis if its quote is equal to the inside market. 41/

Orders entered into SOES generally are automatically routed to a SOES market maker for execution. The automatic execution feature of SOES eliminates the need for telephone contact with various market makers. In addition, SOES automatically reports the trade data to the clearing corporations, in contrast to non-SOES transactions where the trader must transmit the information directly to the clearing corporation. 42/ Accordingly, SOES has played a significant role in processing high volume because it not only reduces paperwork but also curtails the need for telephone contact with market makers.

During the week of October 19, a record number of transactions were executed through SOES, representing record share volume. On Monday, October 19, for example, 21,555 SOES transactions (2.7 times greater than average) accounted for a total of 8

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had withdrawn. If a firm enters an order into SOES and there is no SOES market maker for the security, the order will be rejected and must be handled manually.

40/ If, however, the firm has withdrawn from NASDAQ as a market maker on an unexcused basis, then, pursuant to Schedule D, the firm may not reenter as a NASDAQ market maker for a two-day period. Consequently, the firm would be unable to be a SOES market maker for two days. See Schedule D, Part VI, Section 7 & 8.

41/ For example, if the inside market for XYZ is 10 1/8 to 10 1/4, only market makers who were quoting either 10 1/8 bid or 10 1/4 ask would be eligible to receive orders through SOES. A dealer's quote refers to the stated price at which that dealer is willing to buy or sell 100 shares of that security. Currently, SOES orders are executed on a rotational basis against all market makers offering the "inside," or best, quotation. In addition, orders may be entered into SOES and designated for routing to a particular market maker. This type of order-entry is referred to as "preferencing." If this is done, the order is executed at the best price for that market maker's account even if its quote is not the best. Approximately 40% of the orders executed through SOES are preferenced orders. Some of the specifications outlined above will be subject to change if the NASD adopts the proposals outlined in the NASD's Notice to Members 87-77. See Section F, Analysis.

42/ Participation in SOES can be accomplished through one of two means. First, a Computer-to-Computer Interface ("CTCI"), between a firm's in-house computer system and SOES, can be elected if the firm has sufficient automation capabilities. Alternatively, SOES orders may be entered through a firm's standard NASDAQ terminal or a personal computer interface. Execution reports can be received on either the NASDAQ terminal or through a CTCI.

million shares (4 times greater than average). 43/ Despite the record volume, however, many market makers withdrew from SOES, reducing the liquidity of the SOES market. For example, the number of NASDAQ securities with at least one SOES market maker (the so-called coverage rate) 44/ declined significantly during the market break. The coverage rate on October 16, was 4,611. It dropped 16% to 3,849 on Monday, October 19, 17% to 3,196 on Tuesday, 13% to 2,771 on Wednesday; for the 3-day period, 1,840 securities (40%) were eliminated from SOES because there was no active SOES market maker prepared to execute transactions through SOES in those securities. By Friday, October 23, 831 securities had regained at least one SOES market maker. Another indication of limited liquidity in SOES is the number of SOES market making positions,45/ which stood at almost 20,000 on Friday, October 16, and declined 83% to 3,400 by Tuesday, October 20. 46/ Similarly, from October 5 to October 16, the average number of market makers per security on SOES was 4. This figure dropped 75% to as low as 1 on October 20, and stood at 3 from November 3 through the 30th. In sum, between Friday, October 16 and Wednesday October 21, the SOES coverage rate declined 40%, the number of SOES market making positions declined 83%, and the average number of SOES market makers per security declined 75%.

Thus, while volume and volatility were soaring, a significant number of SOES market makers withdrew from the SOES system each day (see Chart 9-4). Indeed, among the top 50 market makers, a significant number withdrew from market making in SOES during the week of October 19 while continuing to route orders to SOES for execution. For example, 13 of the top 50 market makers withdrew completely from SOES 47/ while continuing to route two to three times their average daily volume to SOES as order entry firms. Such action appears to be a direct violation of NASD rules. 48/ In contrast, six firms substantially increased their support of the SOES system and represented a significant portion of SOES volume. During the week of the market

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43/ On average, volume in SOES is about 2,000,000 shares representing 8,000 trades per day. During 1986, SOES accounted for 13% of all OTC/NMS transactions and 1.3% of total NASDAQ volume. (Transaction information is only available for OTC/NMS Securities.)

44/ According to the NASD, the average coverage rate for SOES is between 4,000 and 4,500.

45/ SOES market making positions refer to the total number of market makers making markets in the covered securities.

46/ Two days later, the number of market makers per security on SOES had increased almost 50% to 6,600 but was still less than 1/3 of the rate for Friday, October 16.

47/ Twelve of the top 50 market makers either do not participate in SOES or do not use SOES for order entry.

48/ SOES rules prohibit a NASDAQ market maker in a particular security that is not a SOES market maker in that security, from entering orders into SOES for that security. For example, if A is a NASDAQ market maker in XYZ security but not also a SOES market maker for XYZ security, A is not allowed to enter orders into SOES on behalf of customers for XYZ security. See Securities Exchange Act Release No. 25005 (October 8, 1987), 53 FR 462.

break, these firms executed at least 4 times their average daily volume for OTC/NMS Securities.

With a record number of SOES market makers withdrawing from some or all of their stocks, trades that normally would have been executed automatically through SOES had to be executed by contacting NASDAQ market makers by telephone. 49/ This added to the already large number of telephone calls, increasing the workload of firms. 50/

In addition to the withdrawal of market makers from SOES, the large number of locked and crossed markets discussed above contributed to problems in using SOES. 51/ Under current SOES procedures, automatic executions cease if quotations become locked or crossed, requiring orders to be handled manually. Such manual processing contributed to further pressures on market makers and order entry firms as they sought to handle the increased volume of small orders.

In order to address the high level of SOES market maker withdrawals and the unprecedented market volatility, the NASD submitted a proposed rule change providing its President with the authority from October 23, 1987, to December 31, 1987, to define the term "limited size" for SOES to mean any number of shares between 300 and 1,000.52/ Pursuant to this amendment, from October 26, 1987, to November 6, 1987, the size limit for OTC/NMS Securities was reduced from 1,000 shares to 500 shares, while non-NMS securities order limits remained at 500. 53/ The NASD believed that limiting the exposure of SOES market makers might encourage a number of market makers who had withdrawn from SOES to return to the system. After the 26th, the coverage rate and the number of market making positions rose steadily.

2. Proprietary Systems

Apart from SOES, several large brokerage firms operate their own systems that provide retail customers automatic executions of small orders for NASDAQ securities in

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49/ The withdrawal of market makers from SOES prompted the NASD to lower the maximum size of orders that could be entered and executed through SOES. See infra notes 52 and 53.

50/ See Section E, Access to Market Makers During Market Break Week.

51/ See Section C (2), Quotations - Locked and Crossed Markets.

52/ "Limited size" refers to the maximum share size of an order that may be entered and executed through SOES. See Securities Exchange Act Release No. 25064 (October 30, 1987), 52 FR 42050. See also Rules of Practice and Procedures for SOES, Section (a)7, NASD Manual, paragraph 2451, at 2303.

53/ In a subsequent rule filing by the NASD, the size limit for OTC/NMS Securities entered and executed through SOES was raised to its previous 1,000 share limit because of the diminished market volatility and trading volume. See Securities Exchange Act Release No. 25132 (November 10, 1987), 52 FR 44952.

which the firm makes a market. 54/ These systems function in much the same manner as SOES; the systems have size limits and provide automatic execution at the inside market. Generally, there are two types of in-house systems. First, a large retail wire house (e.g., Merrill Lynch, Pierce, Fenner & Smith, Inc.) may operate its own system for its own customers. Second, a wholesale OTC market maker (e.g., Troster Singer) may operate a routing and execution system for other firms who route their retail orders to the firm. As with SOES, these systems eliminate many of the manual steps involved in executing an order and provide confirmations of the trade very quickly. Similarly, these systems generally do not automatically execute trades if the market for the security is locked or crossed; therefore, the firm would have to execute the order manually.

Three of the proprietary systems, Instinet, TRAN, and INside, offer their services to a wide range of broker-dealers. 55/ These systems act as intermediaries between participating market makers and firms entering orders that are not market makers in the particular security. Each of these systems permits subscribers to enter principal and agency orders of up to 1,000 shares 56/ for automatic execution against participating market makers. In the Instinet and TRAN systems, orders are executed on either a preferenced or a rotating basis against the various broker-dealers participating as market makers in the systems. The INside system does not have such competing market makers; instead, Troster Singer and one other market maker guarantee automatic executions in different stocks. The operators of all three of these systems indicated that the great increase in trading volume had a direct impact on system operations. 57/

Instinet discontinued its automatic execution feature prior to the opening of the markets on Tuesday, October 20, 1987. Instinet undertook this action at the request of

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54/ E.g., Drexel Burnham, L.F. Rothschild, Dean Witter, Paine Webber, and Salomon Brothers.

55/ While this chapter addresses solely the OTC market, it should be noted that the Instinet system permits trading in exchange-listed as well as OTC securities, whereas the other two systems only permit trading in OTC securities.

56/ The TRAN system permits orders of up to 2,000 shares for stock selling for less than one dollar. On INside, the maximum size for automatic execution is set at a level deemed appropriate in accordance with the liquidity of a particular stock; the maximum size is 3,000 shares, while the vast majority of stocks have a maximum of 1,000 shares.

57/ During periods in which the market in a particular security is locked or crossed, the Instinet and INside systems store orders that have been entered, but cannot be executed because of the locked or crossed condition of the market. The stored orders are automatically executed by those systems later when the market has returned to normal. Unlike Instinet and INside, the TRAN system has no capacity to store orders during periods in which markets are locked or crossed. Rather, the system rejects the order and refers it to a trading desk, to be manually executed by telephone. Thus, unlike the other two systems, TRAN permits trading to occur in a security whose market is locked or crossed, subject, however, to the uncertainty of contacting by telephone the market maker offering the best bid or ask price.

the market makers on the system, because of the volatility of the markets and the large number of locked and crossed markets.

Similarly, the TRAN system also discontinued its operations, starting on Tuesday, October 20. Until that date the system operated normally, even with the increased volume. Transaction Services, Inc., the operator of the system, indicated that all of its market makers asked to be removed from the system because of the extremely volatile market conditions. The system did not function again until Monday, November 2, 1987. At first, on that day, the size limit for guaranteed execution was reduced to 500 shares, but because there appeared to be no trading problems, the limits again were increased to the 1,000 and 2,000 share levels.

Troster Singer indicated that the INside system operated normally, without significant malfunctions, except that during the high-volume days the high levels of data traffic over transmission lines slowed response times. 58/ INside never discontinued the operation of the guaranteed execution feature. Beginning at noon on Monday, October 19, however, Troster Singer reduced by 50% the maximum size of orders for which the system guaranteed execution. By about 2:00 p.m. on the same day, Troster Singer again reduced the maximum sizes, for a total reduction of 80%. 59/ The maximum sizes were adjusted back up to 50% of normal on October 20 and 21, and on October 22, the sizes again were increased to 100%.

3. Timely Executions 60/

Data submitted to the NASD by the top 50 NASDAQ market makers indicating the number of transactions in OTC/NMS Securities during normal trading hours show that, during the week of the market break, transactions with retail customers constituted a somewhat greater percentage of all transactions executed by those market makers than during a more representative week. 61/ Retail transactions, which during the week of September 28, 1987, accounted for 73% of all transactions executed by those market makers, increased to 76% of the total transactions during the week of the market break. 62/ Institutional block transactions accounted for 4% of the total OTC/NMS transactions during the week of September 28, and 3% during the market break week.

58/ Troster Singer indicated that on October 19 and 20, the INside system handled two to three times the normal number of transactions.

59/ Troster Singer attempted to contact all order-entry firms by telephone to advise them of the adjustments in the maximum sizes. Troster Singer is unaware of any resulting problems.

60/ See Chapter Seven, Section C, Automated Order Routing and Execution Systems.

61/ These transaction figures are exclusive of transactions executed through the NASD's SOES System. See Section D(1), SOES.

62/ For purposes of this Chapter, trades of 1,000 shares or less are considered retail transactions; trades of 10,000 shares or more are considered institutional block transactions.

In addition, due to the extraordinary trading volume during the week of the market break, many NASDAQ market makers were unable to execute customer orders in a timely fashion during the trading day. Accordingly, these customers received executions substantially after the 4:00 p.m. closing of the NASDAQ System. Specifically, an analysis conducted by the NASD identified 11 firms from its sample that executed substantial numbers of trades after normal trading hours. 63/ The analysis reveals that 94% of the total trades in OTC/NMS Securities executed after normal trading hours were of retail size, whereas retail trades comprised only 76% of transactions in OTC/NMS Securities executed during the trading day. Moreover, two of the 11 firms accounted for 82% of all the after-hours trades executed by the 11 firms. The survey also reveals that a significant number of trades, especially trades of retail size, were executed at prices that cannot be readily identified as being reasonably related to the market. A total of 96 after hours trades of less than 1,000 shares and 19 trades of between 1,000 and 10,000 shares were executed above the highest price or below the lowest price reached by that security on the day of the trade.

After-hours trading poses particularly serious risks for customers because during those hours, market makers have access, through their computer screens, to only a limited range of price information on which to draw in setting an appropriate price for the security traded. During normal trading hours, a market maker generally has computer access to the inside market for each NASDAQ security (see Section D(1), SOES) and to the current bid and ask quotations submitted by NASDAQ market makers in each NASDAQ security. 64/ After normal trading hours, however, a market maker has computer access only to the closing price of each NASDAQ security in which it trades; 65/ it does not have ready access to the prices at which other market makers are purchasing and selling the security at that time. The market maker has no "live" quotation information on which to make an estimate of the prevailing market in a security. Accordingly, the prices at which customers receive executions after normal trading hours may vary widely, depending upon their market makers' different, and often

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63/ The NASD compiled this information by reviewing data submitted to it on Form T by 25 market makers, covering trades executed by those market makers from Monday, October 19 to Wednesday, October 21 (see discussion, supra note 13). From that Form T data, the NASD extracted and submitted to the staff only the after-hours trades, eliminating the trades reported later than 90 seconds after execution. Of the 25 market makers submitting information on Form T, 14 reported they did not execute late trades during the three days covered by the survey. Thus, our analysis considers only the 11 market makers that reported late trades.

64/ This information is provided through NASDAQ Level 2 and Level 3 service. (Level 3 service, in addition to providing the inside quotation and the quotations of individual NASDAQ market makers, also allows NASDAQ market makers to adjust their quotations and report trades and daily volume to the NASDAQ System.) Level 1 service provides a more limited range of data and services than Levels 2 and 3. It supplies only the inside quotation for all NASDAQ securities, but does not provide individual market makers' quotations or the ability to update quotations.

65/ Moreover, the NASDAQ System disseminates this closing price information only until 6:30 p.m.

divergent, perceptions of the condition of the market. 66/ In such an environment, it is difficult for a customer to ascertain whether his order is executed at a price that is reasonably related to the prevailing market.

E. Access to Market Makers During Market Break Week

The shutdown of SOES and the proprietary systems for securities in which markets were locked or crossed, combined with the unwillingness of market makers to purchase a normal volume of NASDAQ securities, resulted in an unusually high number of telephone calls to market makers during market break week. A large number of the broker-dealers interviewed by the Division staff indicated that, during the week of October 19, they found it unusually difficult to contact market makers by telephone. Further, when those firms reached a market maker, that market maker often agreed to purchase only a relatively small number of shares, in order to limit its potential exposure. 67/ Thus, it was necessary for a broker to make several calls to execute a single order of 1,000 shares, further adding to the volume of telephone calls.

The Division has sought to determine the reason for the market makers' failure to answer telephones, by personally interviewing representatives of the OTC trading departments of seven NASD member firms that make markets in OTC stocks and execute trades as agent for retail and institutional customers. All five firms expressing a view informed the staff that they believe the market makers' failure to answer their telephones was due to a lack of sufficient staff to respond to the high volume of calls during the week, and not to any deliberate failure to answer telephones in order to avoid trading. OTC market makers had, on average, 14.3 traders per firm involved in OTC market making during the week of October 19 and 132 direct wires into their OTC trading desks during that time, of which 71 were dedicated to communication with dealers, 27 to communication with institutions, 14 to internal communication and 19 to other purposes. In normal times, the volume of calls can be handled because most of the direct lines are not in use simultaneously. During the week of October 19th, however, firms indicated that the volume of calls increased substantially.

Access appeared generally to be a greater problem for market makers than institutional customers. Money managers surveyed by the Division experienced some delays and generally indicated a mixed ability to get through to OTC market makers. On the other hand, market makers interviewed consistently indicated problems in reaching other market makers. The trade data also appear to bear out this difficulty. The proportion of interdealer trades declined from 53.4% to 43.2% during the week of

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66/ For example, the staff found that, at 6:03 p.m. on October 19, one NASDAQ market maker executed a trade in Apple Computer Inc. at a price of 41 1/4 dollars per share. On the same day at 6:00 p.m., another market maker executed a trade in Apple Computer Inc. at a price of 34 dollars per share, or 18% less than the first market maker's price and below the lowest price at which that security was sold during normal trading hours that day (35 1/2 dollars per share).

67/ During the week of the market break, the average size of trades executed through the NASDAQ System decreased significantly from the level reached in August and September, 1987. See Section E(3), Quote Spreads.

October 19, while daily share volume rose dramatically. 68/ The impact on OTC market makers of not being able to reach other market makers was substantial. Without recourse to other dealers, firms lacked the ability to lay off excessive risk positions. This inevitably reduced the willingness of market makers to provide liquid markets.

1. Market Maker Formal Withdrawal

One important element of access to market makers is the number of market makers in the NASDAQ System. While a market maker is required to enter and maintain two-sided quotes in all securities in which it makes markets, it can withdraw from NASDAQ on an excused or unexcused basis, from any or all of its market making positions. If a market maker withdraws from NASDAQ, on an excused basis, 69/ it may return to the system whenever it is able. A market maker that withdraws on an unexcused basis, however, may not re-enter quotes for the security for two business days.

As discussed above, each firm that is a market maker must commit a certain amount of capital to its market making function. The amount of capital committed by the firm is based on a number of factors and varies by firm. Among the factors related to the size of capital commitments are the size of the firm and the number and the type of securities involving market making by the firm. Market makers are free to reallocate the amount of capital committed to a particular security and might do so by committing additional amounts of capital or eliminating certain securities. This, of course, will affect the liquidity of the market for the security that the firm decides to eliminate from its market making list.

As of September 30, 1987, there were 536 firms making markets in NASDAQ, representing 45,897 market making positions (an average of 86 market making positions per firm) with an average of 7.8 market makers per security. 70/ During the week of October 19, however, the number of market making positions fell. 71/ On October 19 alone, market makers withdrew from 1,117 market making positions. On October 20, market makers withdrew from 3,234 positions (53% OTC/NMS, 47% non-NMS). On October 21, the withdrawals totaled 906 (50% OTC/NMS, 50% non-NMS). The number of positions from which market makers withdrew, compared to the number for October 5,

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68/ As discussed, daily share volume for the week of October 19, was 113% higher than the daily average for 1986.

69/ Among the reasons for which the NASD will grant an excused withdrawal are: illness, vacations, and circumstances beyond the market maker's control. In addition, a market maker may obtain an excused withdrawal based on investment banking activity or the advice of legal counsel.

70/ As of October 30, 1987, there were 515 market makers (a 4% reduction from September) in NASDAQ representing 38,964 market making positions (a 15% reduction) (an average of 76 market making positions per firm) (a 12% reduction), with an average of 7.1 market makers per security (a 9% reduction).

71/ Sixty-four percent of the withdrawals were from OTC/NMS Securities; 36% were from non-NMS securities. NMS Securities account for 53% of the approximately 5,700 NASDAQ securities.

was five times greater on October 19, 15 times greater on October 20, and 4 times greater on October 21. 72/

The system-wide total of market makers that withdrew from securities does not tell the entire story, however. As noted, a market maker that withdraws on an unexcused basis may not reenter quotes in the security for two business days and must re-register with the NASD as a market maker. 73/ This means that, if a market maker withdrew from a security on an unexcused basis on October 19, he would have to stay out as a market maker for that security until Wednesday, October 21. Therefore, the number of positions from which market makers withdrew on an unexcused basis on Monday should be added to the number of positions from which market makers withdrew on Tuesday to obtain a more realistic assessment of the number of market making positions lost on Tuesday. The adjusted figure for Tuesday would be 4,171; the figure for Wednesday would be at least 3,500.

In addition, we have reviewed the withdrawal patterns for the top 21 market makers 74/ for October 5, 19, 20 and 21. 75/ The number of the top 21 market makers that withdrew from OTC/NMS market making positions increased substantially, compared to October 5. The percentage of the total withdrawals represented by the top 21 market makers also rose. For the period from October 19 through October 21, the top 21 market makers withdrew from 1,567 OTC/NMS market making positions. Five firms, however, were responsible for 83% of these withdrawals. On October 5, the top 21 market makers represented 31% of the system-wide withdrawals from OTC/NMS Securities; this percentage rose to 42% of the system-wide withdrawals on October 19; 37% on October 20, and 48% on October 21.

With respect to non-NMS securities, the top 21 market makers represented 23% of the system-wide withdrawals on October 5. Again, the percentage of withdrawals represented by the top 21 market makers rose to 32% on October 19, 36% on October 20 and 51% on October 21.

72/ On October 5, the total number of withdrawals was 219; 56% were from OTC/NMS Securities, 44% from non-NMS securities.

73/ Of course, the market maker may decide not to make a market in the security for as long as he chooses.

74/ These are the top 21 of the top 50 NASDAQ market makers identified by the NASD. See note 30.

75/ The top 50 market makers represented 26,582 market making positions as of September 30 (an average of 532 positions per firm). For October 30, the number was 23,281 (an average of 466 positions per firm). This is a 12% drop in the number of market making positions.

2. **Market Maker Positions** 76/

In a further effort to gauge the activity of OTC market makers, the Division asked the NASD to provide information regarding the amount of capital that the top 50 market makers commit to OTC market making, the position limits observed by the firms and the extent to which the firms exceeded their position limits in October. In reply, the NASD stated that the top 50 OTC firms "normally committed an aggregate of approximately $925 million to OTC market making activity, [although] [t]he amount varied considerably by firm and type of business," and that 41 of 50 firms reported having dollar position limits. During the market break, the NASD reported that 20 of the 41 firms with dollar position limits exceeded those limits and in aggregate, the top "50 firms exceeded normal capital commitments by about $155 million [17%]." The data did not, however, indicate the performance of individual firms for individual stocks.

Accordingly, the Division sent its own inquiry directly to the 21 largest OTC market makers (as defined by number of market making positions). 77/ Specifically, the Commission requested the firms to provide their opening and closing positions in the 50 leading NASDAQ securities (by volume) for October 1987. Because review and analysis of the firms' responses to this inquiry was time-consuming and manually intensive, the discussion here is limited to the firms' responses regarding their positions in 14 of the most active stocks, specifically the 14 stocks that, cumulatively, were among the top 10 dollar volume NASDAQ stocks for either 1986 or 1987. 78/

The data on trading positions indicates that on October 19 the broker-dealers were net buyers in these 14 securities, while on October 20 they generally reduced their positions. On October 19, in the 14 sample stocks, trading positions generally increased with firms purchasing, in aggregate, a net 1,693,522 shares. Conversely, on October 20, as the implications of the market break reached the OTC market, there were significantly more decreases than increases in trading positions with firms, in aggregate, selling a net 345,698 shares.

Each of the firms generally conformed to this trend. Specifically, on October 19 the firms increased their positions (i.e., they were net buyers) 67% of the time. 79/ On October 20, the firms increased their positions only 45% of the time. 80/

76/ Market maker formal withdrawals from NASDAQ are readily measurable, but constructive withdrawals (i.e., refusal to answer the telephone, intentional widening of spreads, refusal to trade in size), are more difficult to identify. Accordingly, the Division sought to obtain information on actual trading positions.

77/ See letter of December 15, 1987, in Appendix E.

78/ The Division received 18 responses to this second request for information. Three firms did not respond to the letter, and because one firm's response covered both its principal and agency trading positions, the staff's review was limited to the responses of 17 of the firms.

79/ The firms were net buyers of the stocks 140 times and net sellers 68 times.

80/ The firms were net buyers of the stocks 91 times and net sellers 111 times.

On October 21, as the Index moved upwards 7.3%, in each of the 14 stocks the firms were net sellers, selling 2,511,861 shares. There were nearly twice as many decreases as increases in trading positions. (The firms increased their positions only 34% of the time. 81/)

In sum, although more capital may have been contributed to NASDAQ market making in general, the more specific figures regarding market making activity reflect that the firms engaged in net buying of the leading OTC stocks only on October 19 (when the Index fell 11%) while they were net sellers on October 20 and 21 (when the Index fell 9% and then rose 7.3%, respectively).

3. Quote Spreads

Another indicium of market liquidity is the size of bid-ask spreads. The Commission's Directorate of Economic and Policy Analysis ("DEPA") examined the inside bid-ask spreads that prevailed in each NASDAQ security during a two-week period in September 1987, during the week of October 12 - 16, 1987, and on Monday through Wednesday of the week of the market break. 82/ The data show that, from September 1987 through October 21, there was an appreciable widening of inside bid-ask spreads in NASDAQ securities. 83/ During the two-week period from September 8 to 18, 1987, the

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81/ The firms were net buyers of the stocks 67 times and net sellers 132 times.

82/ DEPA then selected a sample of 50 NASDAQ securities, chosen based on capitalization, average size of trades, and trading activity. These 50 securities were then divided into 5 groups of 10 securities each. The first 10 securities are the highest capitalized, most actively traded NASDAQ securities; the last 10 are among the lowest capitalized, least actively traded NASDAQ securities. The second, third, and fourth groups of 10 securities fall between those two extremes. For each group of 10 securities, DEPA averaged the inside bid-ask spreads of all 10 securities to arrive at a daily average, in cents per share, for Monday through Wednesday of the week of the market break. It also averaged the inside bid-ask spreads of all NASDAQ securities for Monday through Wednesday of the market break week. For example, on Wednesday the 21st, the average inside bid-ask spread in the top 10 NASDAQ securities was $1.82. The average inside bid-ask spread for all NASDAQ securities for the same day was $.71 DEPA also computed for each of the five groups and for all NASDAQ securities, daily averages for the week of October 12 - 16, and weekly averages for the two weeks in September (September 8 - 11 and 14 - 18). As discussed previously, the existence of a locked or crossed market in a particular security casts doubt upon the accuracy of all price information pertaining to that security. Accordingly, in computing the bid-ask spreads that prevailed in particular securities at any point during the day, DEPA did not consider periods during which markets in those securities were locked or crossed.

83/ Data drawn from the DEPA study also reveal that, though transaction volume in NASDAQ securities was unusually high during the market break week, the average trade size in shares was dramatically below normal. Specifically, on Monday and Tuesday, the average size of trades in NASDAQ securities was 22% and 10% below the August-September norm, respectively; only on Wednesday did the average trade size equal its August-September norm. These data are not surprising, average inside bid-ask spread in NASDAQ securities approximated 50 cents per share (51.5 cents during the week of September 8 - 11, and 49.2 cents during the week of September 14 - 18). During the week immediately preceding the market break (October 12 - 16), that average increased 20.2% to 60.1 cents per share. Finally, from Monday to Wednesday of the market break week, that average increased an additional 13.5%, to 68.2 cents per share. Thus, in total the average inside spread in NASDAQ securities increased by 36.4% from September to October.

From October 19 to October 21, bid-ask spreads for the top 10 NASDAQ securities were appreciably wider than those for NASDAQ securities in general. Bid-ask spreads for the top 10 ranged from an average of 107.4 cents on October 19 to 182.2 cents on October 21; spreads in all NASDAQ securities ranged from an average of 65.5 cents on October 19 to 71.3 cents on October 21 -- 39% and 61% narrower, respectively, than those for the top 10 NASDAQ securities.

F. Analysis

The NASDAQ market performance during the October market break reflects mixed results. On the one hand, the system itself performed quite well and there were no reported outages or delays. On the other hand, key elements of the system failed to provide an efficient method of pricing securities and executing transactions.

As a threshold matter, the system simply ceased to provide an effective pricing mechanism for many leading NASDAQ securities, due to the inordinate number of locked and crossed markets coupled with the large number of delayed last sale reports. Moreover, the collapse of the pricing system either led to, or was part of, the problem associated with some market makers' unwillingness to provide reliable liquidity in reasonable size. From this standpoint, we think it is irrelevant whether market makers were unreachable due to inadequate staff to cover increasing demands or consciously avoiding their market maker responsibility. The point is that not only were machine-generated quotes unreliable, it was often impossible to verify quotations by telephone, or to effect inter-dealer trades. Finally, the abandonment of small order execution systems (both the NASD's SOES and firm proprietary systems) led to increased strains on market maker capacity and order execution facilities.

In light of these concerns and the dissatisfaction expressed by market participants regarding the operation of the NASDAQ market during the October market break, the NASD concluded that NASDAQ/NMS market improvements were essential. It has proposed specific enhancements for the NASDAQ System, focusing on the role and responsibilities of NASDAQ market makers, as well as on SOES.

Specifically, in Notice to Members 87-77 (November 20, 1987), the NASD proposed amendments to its Rules of Practice and Procedures for SOES 84/ and to the requirements applicable to NASDAQ market makers encompassed in Schedule D to its

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because relatively high bid-ask spreads traditionally accompany small transaction size.

84/ NASD Manual, paragraph 2455, at 2303; see Section D (1), SOES.

By-Laws. 85/ The amendments are aimed at ensuring that investors' orders are executed in a timely manner even in a falling market with high volume, and that NASDAQ market makers fulfill their obligation to trade for their own accounts on a continuous basis, notwithstanding extraordinary market conditions.

The NASD proposed the following changes:

(1) to provide that, if a NASDAQ market maker withdraws quotes for any NASDAQ security without obtaining an excused withdrawal, it would not be permitted to re-enter as a market maker in that security for 30 days instead of the current two days; 86/

(2) to make participation in SOES mandatory for all market makers in OTC/NMS Securities; 87/

(3) to limit the conditions under which an excused withdrawal is permitted;

(4) to adjust the maximum number of shares that may comprise an order eligible to be traded through SOES, which number would vary depending on the type of security;

(5) to provide that, in any OTC/NMS Security in which quotes are locked or crossed, orders will continue to be executed through SOES against the firm causing the locked or crossed market, if its price is the best for the customer. 88/ Orders would continue to be executed against that market maker up to a certain exposure limit, at which point the NASD would contact the market maker and advise it to update and re-enter its quotes. If the market maker does not do so within a certain period of time, it would be forced to withdraw from the system on an unexcused basis, and would not

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85/ NASD Manual, paragraph 1754, at 1571.

86/ See note 40 supra. In January, the NASD approved the proposal with minor modifications, one of which reduced the 30 calendar day penalty to 20 business days.

87/ Participation for non-NMS securities would remain voluntary. Currently, out of the NASD's 540 market makers, only 210 are SOES participants.

88/ As mentioned previously, SOES does not execute orders for securities in which markets are locked or crossed, which occurred frequently during October's rapid trading.

be permitted re-entry for 30 days. 89/ The proposal would establish minimum exposure limits for all NASDAQ market makers; and

(6) to eliminate "preferencing" of certain market makers during periods in which markets in a particular security are locked or crossed, so that market makers that do not cause the locked or crossed condition are not exposed to executions at quotations that are locked or crossed.

In addition, the NASD submitted a proposed rule change to establish an Order Confirmation Transaction service ("OCT"), which is analogous to an electronic mail system. OCT will enable NASD members to communicate and confirm the execution terms of individual transactions. 90/ In addition, OCT will enable a broker-dealer to transmit an order 91/ through its NASDAQ terminal to a specific market maker that will have two minutes to respond to the order. 92/ If the market maker accepts the order in its entirety, the transaction will be consummated. If not, the rejecting market maker may make a counter-proposal.

We view the NASD's initiatives as important first steps designed to restore accurate pricing, liquidity and the ability to assess risk to the OTC market. We encourage the NASD to continue analyzing the weaknesses that were highlighted by the market break.

It would be premature for the Division to comment on the adequacy of those steps because they are still in the proposal stage before the NASD, and the Commission ultimately will be called upon to review whether the specific initiatives proposed are consistent with the Act. The Division believes, however, that the speed with which action was taken and the comprehensiveness of that action is praiseworthy.

The Division suggests two items for further NASD and Commission consideration. First, the actions of individual firms during the market break raise serious questions

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89/ At present, SOES market makers can determine the number of shares of any security that the system will execute against the firm's account each day of trading. This amount is referred to as the firm's "exposure limit." The proposal requiring all market makers in OTC/NMS Securities to be SOES participants would require a minimum limit capability in those securities. An additional grace period would be offered for NMS market makers that were removed due to their exposure limit. The NASD is also considering establishing minimum exposure limits. See proposal (4) referred to above. See also NASD Notice to Members 87-77, (November 20, 1987) at 4.

90/ See SR-NASD-87-54, approved for ninety days in Securities Exchange Act Release No. 25263 (January 11, 1988), 53 FR 1430. See also Chapter Ten, Clearance and Settlement Systems.

91/ Orders transmitted through OCT must include price and size of the order. Order executions negotiated through OCT automatically will generate transaction reports for OTC/NMS Securities and locked-in trades for both NASDAQ and OTC/NMS Securities for clearance purposes.

92/ After two minutes, the order is automatically cancelled.

regarding those firms' compliance with present NASD rules regarding market maker performance. The Division believes that the NASD should inquire into the performance of its market makers in October. 93/ Second, we believe there are a number of areas, in addition to the existing NASD proposals, which require review.

In considering future reforms, it should be recognized that the uniform practice among NASDAQ market makers is not to disseminate publicly quotations of more than 100 shares. This ongoing refusal by NASDAQ firms to provide firm quotations with size is in marked contrast to the willingness of many of those same firms to provide substantial sized quotations in London. 94/ Currently, NASDAQ market makers are required to purchase or sell only 100 shares of any security in which they make a market, in response to each offer to purchase or sell. The rules of the International Stock Exchange of the United Kingdom and the Republic of Ireland, Limited ("ISE") in London, however, specify that the minimum order size market makers may post is 1,000 shares. 95/ Thus, the Commission and the NASD should review whether OTC market makers should be required to provide U.S. investors with quotations that are at least comparable in size to those that they are apparently prepared to disseminate abroad.

In addition, the NASD'S "electronic mail" proposal, OCT, may not satisfactorily address the serious occurrences of locked and crossed markets, or concerns over access. While the NASD proposal will permit a market maker to notify electronically another market maker of its desire to trade, it does not enable the first market maker to execute automatically against the second market maker's quote. We believe the NASD and the Commission should review whether, if a firm does not respond to a message in a set amount of time, an execution should occur automatically. Such a system capability

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93/ For example, the staff believes the high number of after-hours trades, discussed supra, warrants further investigation by the NASD regarding the reasons for the high proportion of after-hours trades executed by two firms. The NASD also should investigate the possibility that the trades cited above may have violated an interpretation of the NASD rules that requires NASD members to use reasonable diligence to obtain the best execution for their customers, and the Commission and the NASD rules and relevant guidelines against excessive mark-ups, mark-downs, and commissions. An interpretation of the NASD Rules of Fair Practice deems it inconsistent with just and equitable principles of trade for a member to enter into any transaction with a customer at a price not reasonably related to the current market price of the security. See Interpretation of the Board of Governors on the NASD Mark-Up-Policy, NASD Manual, paragraph 2154, at 2055, and Interpretation of the Board of Governors regarding Execution of Retail Transactions in the OTC Market, NASD Rules of Fair Practice, Article III, Section 1, paragraph 2151.03, at 2036-37.

94/ See Chapter Eleven, The International Capital Markets.

95/ Stocks listed on the ISE are divided into several categories, primarily based on liquidity. For the most active stocks, or "alpha" stocks, and the next most actively traded, the beta stocks, a 1,000 share minimum applies. For gamma stocks, which are much less liquid stocks, market makers may input quotes for fewer than 1,000 shares. If a market maker's gamma stock quote is for 1,000 or more shares, however, it is presumed to be a firm quote, if it is for less than 1,000 shares, it is presumed to be "indicative," or only representative.

would appear to increase substantially the incentives on market makers to update their quotes in a timely manner.

Moreover, we believe that the NASD should continue to use its hotline to apprise market makers involved in locked and crossed markets that they must take remedial action. As discussed earlier, the prevalence of locked and crossed markets caused the NASD to establish, on Friday October 23, a "hotline" to the trading desks of NASDAQ market makers. 96/ Through the hotline, the NASD advised market makers in appropriate instances to update quotes, answer telephones, contact other broker-dealers that could not get through, and execute transactions in securities with locked and crossed markets. While the administrative messages disseminated by the NASD over NASDAQ, advising market makers to take action, were helpful as a warning to prospective violators, once a market for a particular security was in fact locked or crossed, the hotline was the only tool that successfully restored pricing accuracy to the system. Accordingly, we believe that the hotline should be retained as a permanent component of the NASD's regulatory tools; its interactive aspect is important and not present with electronic mail.

96/ In this connection, we note that the NASD on-line surveillance alert for locked and crossed markets was originally designed to identify pre-opening locked and crossed positions. As such, it is programmed to shut off at 9:30 a.m. During the market break, the NASD was unable to obtain intra-day locked and crossed market positions for at least one day. Because, however, locked and crossed markets are not a common intra-day occurrence during normal markets, adjusting the system to require the on-line locked and crossed surveillance report function to remain in effect throughout the day may not be necessary. The staff suggests, therefore, that the NASD consider an enhancement that would, at a minimum, provide the NASD with the ability to resume the on-line function alert at any time during the day.

CHARTS

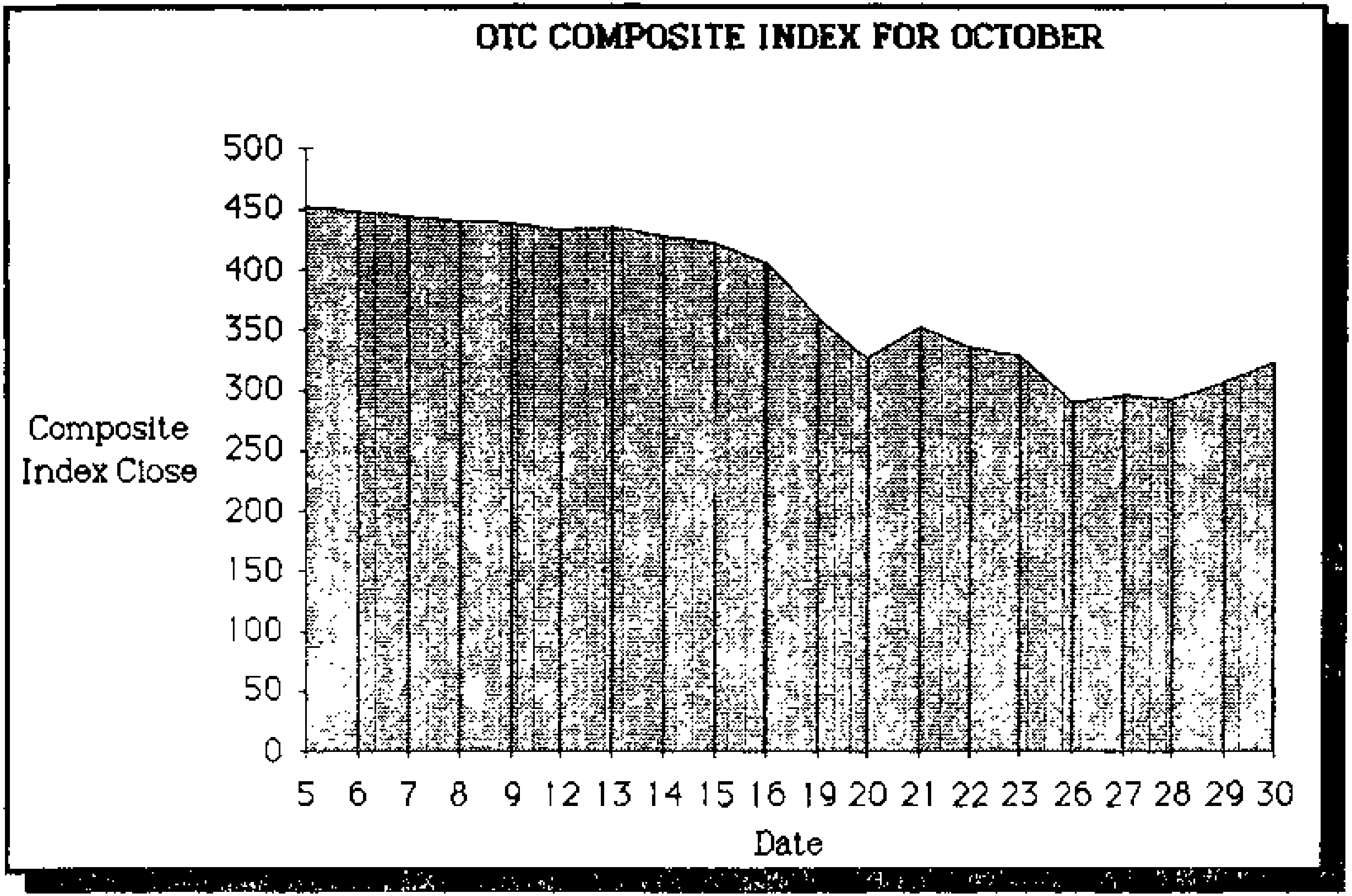

Chart 9-1. OTC Composite Index for October

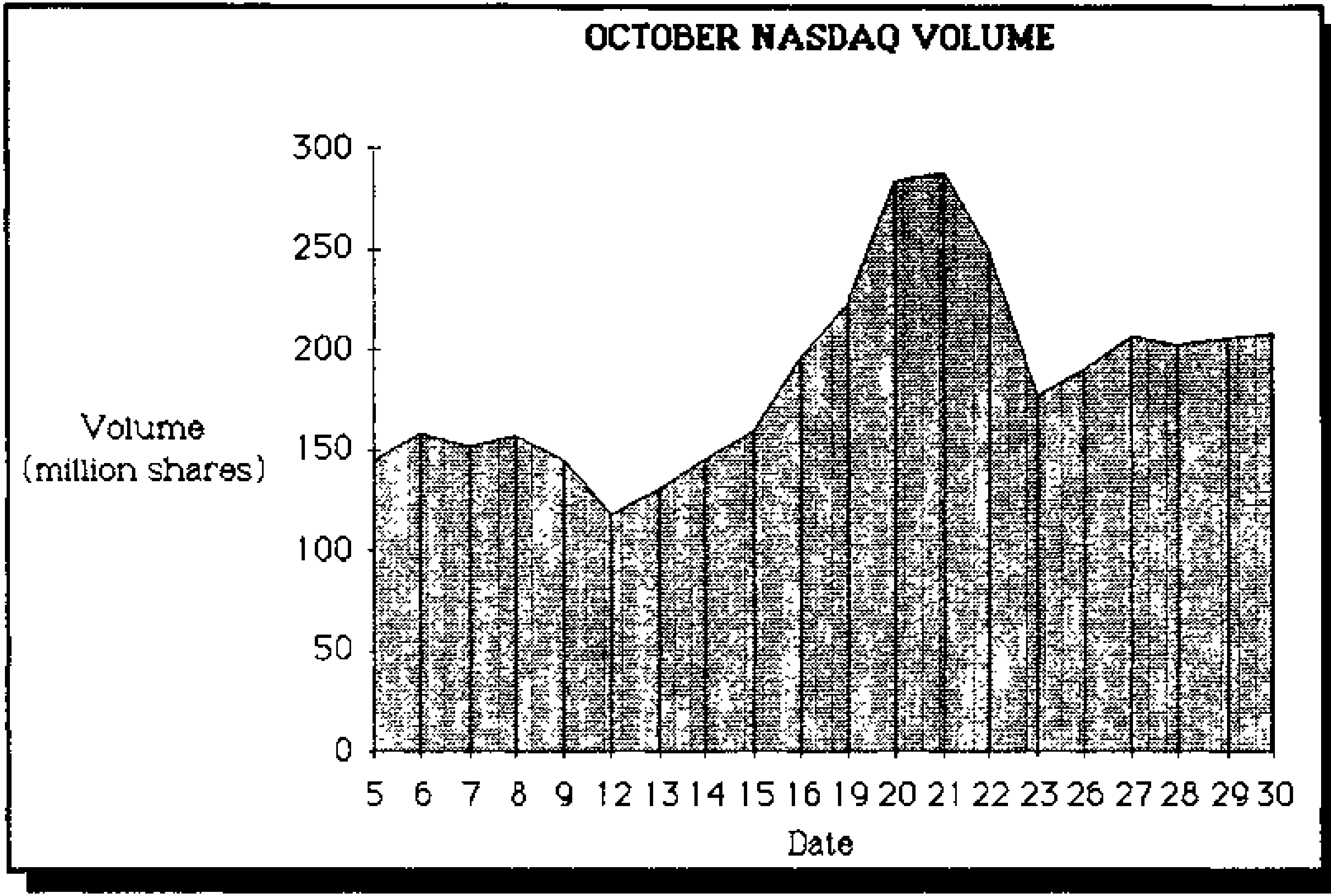

Chart 9-2. NASDAQ Volume for October

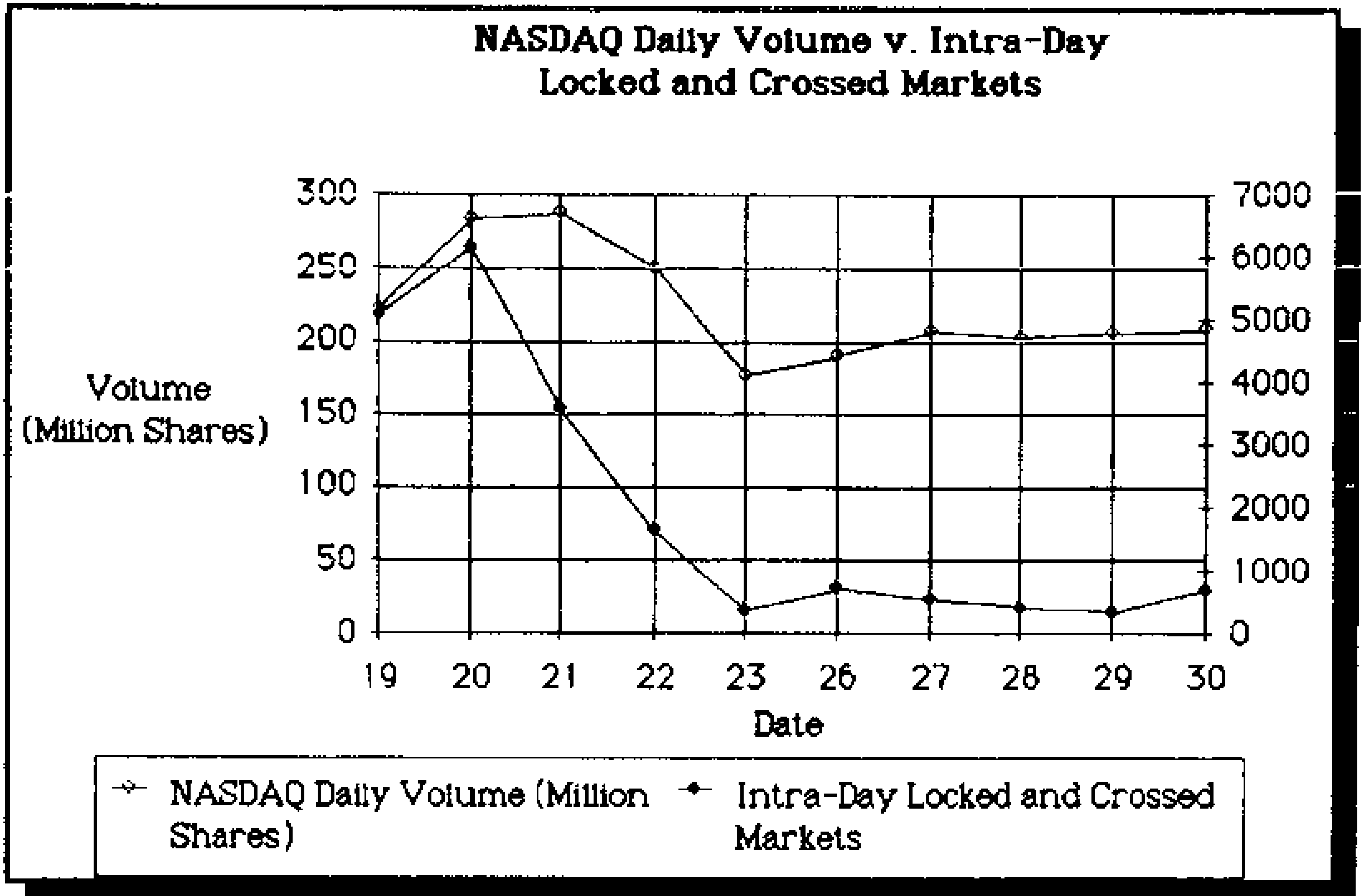

Chart 9-3. NASDAQ Daily Volume v. Intra-Day Locked
and Crossed Markets

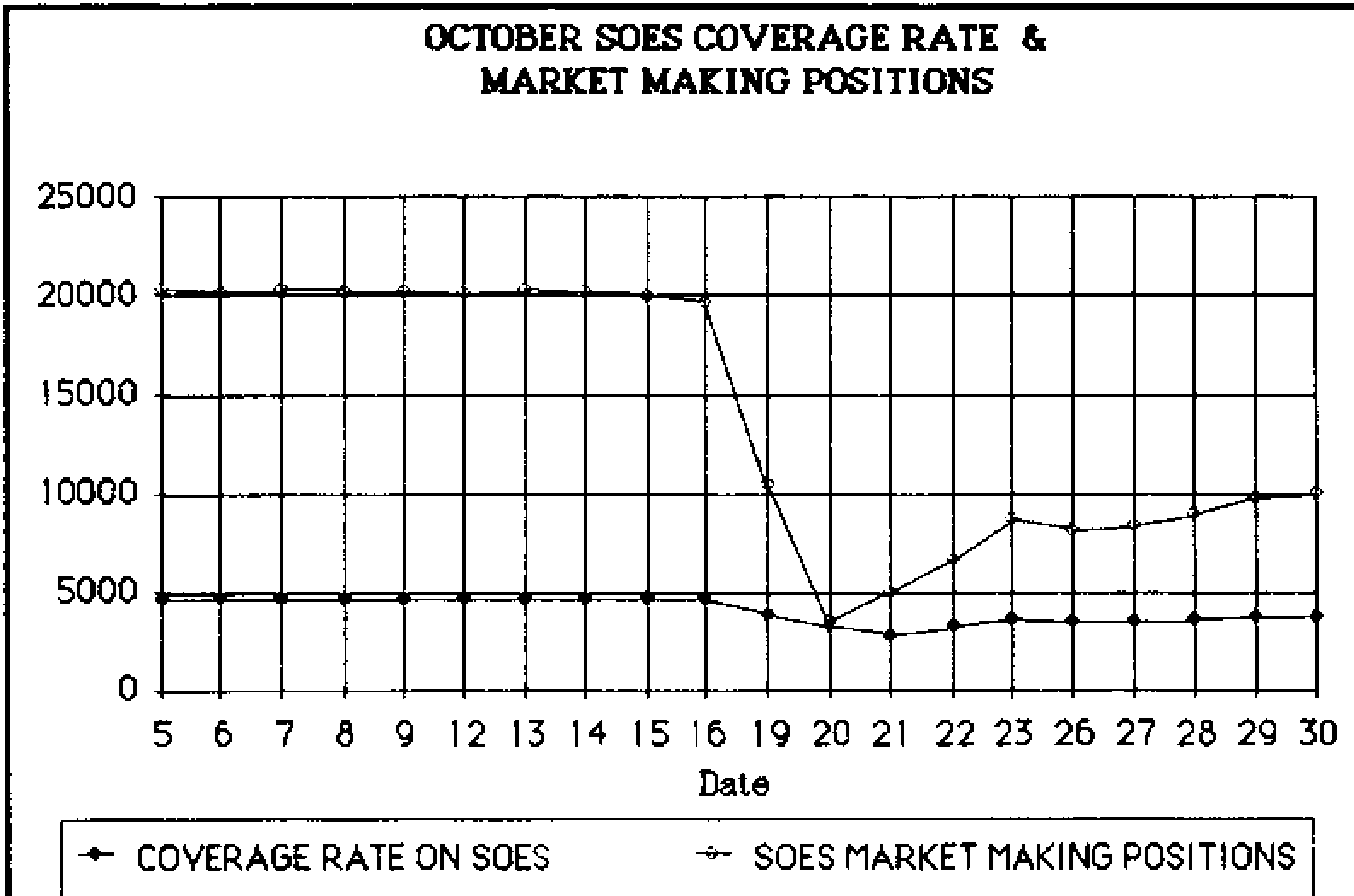

Chart 9-4. SOES Coverage Rate and Market Making Positions for October