Testimony of Eric Noll
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Before:

United States Senate
Committee on Banking, Housing and Urban Affairs
Subcommittee on Securities, Insurance and Investment

Thursday, May 20, 2010

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Good afternoon Chairman Reed, Ranking Member Bunning and Subcommittee members. Thank you for offering the NASDAQ OMX Group, Inc. the opportunity to share our perspective on the events of May 6th. As Executive Vice President of NASDAQ U.S. Transaction Services, I have responsibility for trading of equities and options on the NASDAQ Stock Market, as well as trading on NASDAQ's markets in Philadelphia and Boston, NASDAQ OMX PHLX and NASDAQ OMX BX.

NASDAQ understands the critical role of capital markets in the U.S. economy and the obligations of all national markets to protect U.S. investors. We have studied the events of May 6th and what they suggest about the current operation of the U.S. equities markets. It is important to learn the lessons that are available from May 6th and to prevent a repeat of those events.

To accomplish that, we have worked closely with the Securities and Exchange Commission, the CFTC, the New York Stock Exchange, and other national securities exchanges to protect investors. We have met with senior officials and staff at the SEC to identify opportunities to improve regulation and to develop a coordinated strategy to combat market instability. We support the Commission's and the CFTC's actions in four areas:

(1) Updating existing market-wide circuit breakers to include tighter parameters and a broader index reference point;

(2) Establishing new stock-by-stock circuit breakers that include an element of "velocity" or rapidity of price changes,

(3) Improving the handling of trade breaks during unusual market events to maximize consistency and rationalize moral hazard; and

(4) Changing the use of quotes and specific order types that impacted trading on May 6th.

The focus of these changes is consistency. While each individual exchange reports that its systems functioned according to design on May 6th, the changes currently being considered will improve the markets' collective ability to handle unusual trading events in the future and help to restore investor confidence in the safety of U.S. markets. Markets like consistency and predictability; they abhor uncertainty.

We believe NASDAQ is qualified to assist the Commission at times of market stress. We are the world's largest exchange company. We list over 3,700 public companies, operate twenty-two markets and ten clearinghouses world-wide, provide technology to over 70 exchanges, clearing organizations and central securities depositories in over 50 countries,

and regulate the trading and clearing of equities, options, commodities, and derivatives across the globe. We understand the role we play in serving and protecting millions of investors in the United States and around the world that rely on the safety and predictability of our markets to grow their savings and safeguard their futures.

U.S. capital markets are the deepest, fairest, most effective markets in the world. Our cash equities markets have been and remain the engine of sustainable economic growth, allowing U.S. companies to raise trillions of dollars in capital, create millions of jobs, and spur new industries around the globe. Cash equities markets functioned without interruption during the financial meltdown of 2008 and 2009, unlike the credit and derivatives markets. Our markets are strong, despite the seventeen minutes of unusual trading that occurred between 2:39 and 2:56p.m. on May 6th. In fact, the markets' rapid recovery that day confirms that our markets are resilient and strong even under extraordinary strain.

We have been studying and will continue to study the data and behaviors recorded on May 6th. To understand fully the events of May 6th, it is important to understand the information the markets were trying to process. Markets were nervous. Equity markets had experienced an unusually long and large upward price movement, with the NASDAQ Composite Index nearly doubling between March 9, 2009 and April 26, 2010. Market analysts will tell you that following such gains, it is not unusual for markets to experience a price correction.

Markets were becoming increasingly volatile. NASDAQ monitors the CBOE Volatility Index or VIX, which measures the implied volatility of the S&P 500 expected over the next 30 days. The VIX generally measures below 20. It rose during the financial crisis, reached a high of 89 on October 24, 2008, and then gradually declined throughout 2009 and early 2010. From February 26, 2010 through April 26, 2010, the VIX continuously stayed below 20, dropping below 16 on April 12th and April 20th. Volatility returned on April 27th, when the VIX once again broke above 20 and began rising steadily. By May 5th the VIX reached the upper 20s, and on May 6th and 7th it closed above 30.

This increased volatility was tied to the escalating financial crisis in Greece and the Eurozone. Although the issues in Greece had been developing for several months, the potential harm seemed to sink in to U.S. markets only within the week prior to May 6th. Credit ratings agencies had just lowered their rating of the sovereign debt of Greece, Spain and Portugal, roiling sovereign debt markets; the European Union and International Monetary Fund were working to fashion workable bailouts; and social tensions and violence escalated in Athens. The Euro had lost 15 percent of its value in the last six months, including seven percent in the prior two weeks alone.

Against this backdrop, we experienced a unique confluence of events beginning at 2:35 p.m. on the afternoon of May 6th. First, the Dow Jones Industrial Average was already trading off 272 points for the day and 500 points in the previous three days. Market conditions were already volatile.

Second, the Chicago Mercantile Exchange received an unusually large institutional order to sell futures tied to the S&P 500 Index. Futures are a forward indicator for prices of equities and options that are also tied to the S&P 500 Index. Thus, when S&P futures prices begin sinking rapidly at 2:42, this was followed closely by rapid price declines in S&P-linked equities. At 2:45:30, S&P futures trading became so negative that the Chicago Mercantile Exchange triggered a "Stop Price Logic Event" that caused an automatic 5-second pause in S&P futures trading to collect liquidity. Given CME's near-100 percent market share in S&P futures, the Stop Price Logic Event was, effectively, a market-wide halt. When trading resumed, futures prices immediately leveled off and began to climb rapidly. Shortly after, equities prices also rose rapidly. After a thorough review, the CME has announced that its systems functioned properly that day and that there was no evidence of wrongdoing or clear errors by CME or CME members.

Third, the NYSE Arca Exchange, the all-electronic market operated by NYSE, began experiencing data communication issues that hindered the electronic linkages between it and NASDAQ, the BATS Exchange, and the Chicago Board Options Exchange. When Arca became unable to communicate properly, this signaled other markets to stop sending orders to it. This is exactly what happened; NASDAQ, BATS and CBOE each stopped sending orders to Arca at a critical point in time. Again there is no evidence of inappropriate activity at Arca. Nevertheless, its liquidity became less unavailable at a critical time.

Fourth, simultaneous with events at NYSE's electronic Arca exchange, the NYSE hybrid market began reporting multiple "Liquidity Replenishing Points" and "gap quotes" that impacted the trading of individual S&P stocks in the NYSE market. Under SEC Regulation NMS, the NYSE is permitted to issue LRPs and gap quotes. What this did, in our view, was to signal other markets that NYSE was experiencing order imbalances or other difficulties. This, in turn, signaled that other markets may stop routing orders to NYSE and trade at other markets instead. This is exactly what happened; NASDAQ and other markets stopped routing orders to NYSE. Even Arca, NYSE's own all-electronic market, stopped routing orders to NYSE. NYSE was the only market to issue LRPs or gap quotes on May 6th.

This confluence of events caused a rapid drop in the markets. From 2:39 to 2:47 p.m. the Dow dropped 723 points to 9869, its low for the day and down 995 points total from the prior close. From 2:47 to 2:56 the Dow recovered just as rapidly, risings 612 points from 9862 to 9974, down 387 points for the day. From 2:56 p.m. to the close the Dow rose another 45 points, ending the day down 342 points.

How should we respond to these events? As you know, the markets and market participants are subject to multiple layers of regulation; the Securities and Exchange Commission oversees trading and markets, including regular and special examinations of markets and market participants. There was in place a market-wide circuit breaker that limits aggregate movement of market indices, but it was not triggered. NASDAQ and other markets have "collars" that limit the impact of individual market orders, but there were limited numbers of market orders entered that day. Members have obligations to

have procedures, controls, and systems in place to limit aberrant trading and control risk. The Financial Industry Regulatory Authority, acting as NASDAQ's agent, examines firms to ensure that those procedures, controls, and systems are in place and effective. Should these safeguards have prevented the rapid decline and recovery in the markets on May 6th? We have already begun to re-examine each of these safeguards in light of those events.

From a systems standpoint, NASDAQ's market operated continuously throughout the day and throughout the critical seventeen minutes. Each and every one of NASDAQ's electronic systems functioned as designed and as intended. Its execution engine, market data feeds, and surveillance systems all functioned as designed. Each exchange is reporting that its individual systems functioned as designed. That said, no market center or regulator can be satisfied with the collective performance of the markets on May 6th. As discussed earlier, the Commission and the exchanges are developing coordinated strategies to improve the exchanges' collective ability to respond to unusual trading events.

What did NASDAQ See and Do? NASDAQ operates one of the most heavily monitored exchanges in the world. NASDAQ's MarketWatch and Trading Operations departments monitor our equities markets from 6:30 a.m. to 8:00 p.m. using sophisticated technology that looks for trading anomalies, market rumors and manipulations. These departments process 17,000 phone calls in the average month and MarketWatch reviews more than 50,000 issuer press releases in the average year.

At 2:23pm NASDAQ's automated surveillance systems began issuing alerts in multiple securities exhibiting unusual price movements. In response to the alerts, NASDAQ's regulatory staff in the MarketWatch and Trading Operations departments began reviewing trading activity. NASDAQ's MarketWatch group uses high speed technology to oversee trading in the NASDAQ equity venues. On average the MarketWatch's surveillance system processes 1.9 billion equity related messages a day. On May 6 there was a large spike in surveillance alerts generated that coincided with the largest drops in the Dow Jones Industrial Average.

At 2:30 p.m. the Chicago Board Options Exchange issued a communication stating "The CBOE has declared Self Help against NYSE/ARCA as of 1:30 CT. The NYSE/ARCA is out of NBBO and unavailable for linkage. All CBOE systems are running normally." Under SEC Rule 611 under Regulation NMS, CBOE's announcement signaled that CBOE had stopped attempting to trade with NYSE's all-electronic Arca exchange pending renewed communication from that exchange

At 2:36:59 NASDAQ systems also detected a data disruption at NYSE Arca and NASDAQ also declared "Self Help" against that exchange. At 2:42 p.m., NASDAQ published a "System Status" update on its member website stating "NASDAQ has declared Self Help against NYSE ARCA (ARCA) as/of 14:36:59 E.T. All NASDAQ systems are operating normally."

At 2:43 p.m. NASDAQ issued another System Status update stating that NASDAQ OMX BX had also declared Self Help against NYSE Arca as of 14:38:40. All NASDAQ systems were operating normally.

At 2:45:30, trading in E-Mini futures became so volatile and negative that the Chicago Mercantile Exchange triggered an automatic 5-second pause in E-Mini futures trades.

At 2:48 p.m., NASDAQ MarketWatch communicated with NYSE Arca's regulatory staff about regulatory alerts being generated by NASDAQ's market surveillance systems. NYSE Arca staff confirmed that they also had detected unusual trading activity. Neither market had received any communication from members regarding system malfunctions or errant orders that might have contributed to price movements.

At 2:49 p.m. the BATS Exchange declared Self-Help against the NYSE Arca Exchange. As of 2:49 p.m. four markets had declared Self-Help against NYSE's all-electronic Arca exchange.

At 3:00, NASDAQ staff opened an internal call including key NASDAQ personnel from multiple departments. NASDAQ uses this procedure where necessary to gather knowledge quickly and to respond effectively to unusual trading activity. The call lasted until nearly 1 a.m. the following morning.

At 3:16 p.m. NASDAQ took the lead and initiated a market-wide call for the entire national market system. The triggering of a market-wide call is designed to establish communication and ensure coordination among exchanges that trade the same securities. It has become a critical procedure for exchanges to manage events such as this that involve cross-market trading activity. At 3:56 p.m. observers from the SEC's MarketWatch and Trading and Markets staff joined the market-wide call initiated by NASDAQ.

At this point, NASDAQ began focusing communication on the identification and treatment of "clearly erroneous trades", those trades that might be broken or unwound as a result of the market events. NASDAQ issued the following System Status update on its website at 3:37 p.m. "NASDAQ is currently working with other markets to review the broad market activity that occurred between 2PM and 3PM today. NASDAQ will advise when more information is known."

At approximately 4:00 p.m. the markets jointly determined to review and potentially break trades that occurred between 2:40 and 3:00 p.m. The markets briefly considered breaking trades executed between 2:30 p.m. and 3:00 p.m. but they then decided collectively upon the 2:40 p.m. start time instead. Trades outside this period were still eligible for review by individual exchanges under their own authority. At 4:24 p.m. NASDAQ issued another System Status update announcing the decision to review trades that occurred between 2:40 and 3:00 p.m.

After jointly determining which trades to review, the markets jointly continued to discuss which trades to break. There was debate among the exchanges regarding the proper

break point for trades executed between 2:40 and 3:00 p.m. After extended discussion, the exchanges each agreed on a joint market ruling to cancel trades during the review period that deviated by greater than 60 percent from the consolidated last sale price in that security at 14:40:00 or immediately prior. Each exchange communicated this information to its members; NASDAQ announced the decision to its members via a System Status update published at 6:03 p.m.

NASDAQ staff continued reviewing trades until after midnight on May 7th. NASDAQ regularly communicated rulings to its members by issuing System Status updates at 8:24 p.m., and 12:25 a.m. Additionally, at 8:28 p.m. NASDAQ issued a press release describing the market events and the decision of all markets jointly to break trades. It is important that trades be broken quickly, if at all, to avoid negative impact on clearing and settlement.

Multiple equities and options exchanges broke trades executed between 2:40 and 3:00 p.m. on May 6th. In addition to over-the-counter trades broken by FINRA, and trades broken by the BATS Exchange, NYSE's electronic Arca exchange broke over 4,000 trades, and NASDAQ broke over 10,400 trades representing 1,410,692 shares in 236 unique securities. To put this into perspective, from 2:40 to 3:00 p.m., NASDAQ executed over 2.4 million trades representing over 500 million shares traded. In other words, NASDAQ broke less than one half of one percent of trades and roughly one-quarter of one percent of shares executed during the 20-minute period from 2:40 to 3:00 p.m. on May 6th.

NYSE called LRPs or slow quotes in all 42 stocks listed on its main market in which NASDAQ broke trades. Over 90 percent of the 236 securities in which NASDAQ broke trades were listed on NYSE, NYSE Arca or NYSE Amex. Over 87 percent of the trades and 89 percent of the executed shares broken by NASDAQ were in NYSE-listed securities. NASDAQ declared no slow quotes in the 20 stocks listed on its market in which trades were broken.

Why Do The Markets Break Trades? Markets break executed trades when the price discovery process ceases to function properly and trade prices cease to reflect a true market. For such circumstances, the SEC has approved uniform clearly erroneous rules across all U.S. cash equities markets giving the exchanges the self-regulatory authority to cancel clearly erroneous trades executed by their systems. We followed those rules.

The exchanges can review trades and exercise this authority on their own initiative in response to extraordinary market conditions, or, upon the timely request of a party to a particular trade(s). Trade-break authority exists to nullify trades that take place in market conditions where errors, be they human or technological, or other unanticipated events, preclude fair and proper price-discovery. The primary topic of the market-wide call was to determine whether the exchanges would coordinate their regulatory efforts to break trades that were considered "clearly erroneous."

NASDAQ's clearly erroneous trade policies strive to maximize consistency, transparency and finality regarding trade-break decisions. NASDAQ pioneered the use of standardized numerical parameters that seek to define how far a trade must deviate from previous transactions in order to be considered erroneous. By focusing on objective numerical criteria rather than subjective criteria, NASDAQ avoids even the appearance of bias in the trade break process. These standardized criteria have now been adopted by all U.S. exchanges. It is important to remember that every trade has two parties – generally one will be happy to break the trade and avoid a loss while the other will want to keep the trade and any gain he or she has made. Therefore, it is important that NASDAQ use its authority only where necessary.

One key component to NASDAQ's approach to clearly erroneous trade processing is the belief that it is important, where possible, to allow transactions priced close to the inside market or other reference price to stand, even if the transactions directly resulted from a mistake or system error. This ensures that market participants have economic incentives to develop and maintain internal controls with a goal of preventing erroneous trading activity. NASDAQ refers market participants for investigation by the Financial Industry Regulatory Authority ("FINRA") in its capacity as NASDAQ's regulatory services provider in all circumstances where a firm's erroneous trades raise questions as to the adequacy of the firm's computer systems and internal controls.

What Lessons Can We Learn From Trading On May 6th?

NASDAQ's preliminary analysis indicates that unusual trading activity on May 6th was triggered by a confluence of unusual events, including events outside the cash equities markets. Aggressive, nervous selling of S&P 500 options and futures migrated to trading of closely correlated cash equities. Cash equity markets then experienced several challenging conditions as described above. NASDAQ experienced no system malfunctions or aberrations. No NASDAQ member has identified to NASDAQ a system error or aberration within their own systems. We have at this point in time detected no system malfunction or errant trade by a NASDAQ member interacting with the NASDAQ Stock Market. NASDAQ continues to investigate the events of May 6th, but has at present located no "smoking gun" that single-handedly caused or explains those events.

We note that although index products such as ETFs linked to the S&P 500 Index were involved in the trading events on May 6th, there is no evidence that ETFs caused those events. To the contrary, the unusual trading and subsequent trade breaks in ETFs can be explained by existing market structure and characteristics of ETF trading. ETFs are widely used as a tool for gaining exposure to the broad market, particularly during periods of high volatility. Therefore, demand for ETF liquidity was likely rising during the May 6th trading event. While ETF demand was increasing, ETF liquidity was decreasing. NYSE Arca, which lists ETFs and is a source of ETF liquidity (particularly for thinly-traded ETFs) was experiencing communications and linkage issues. Three markets had stopped routing orders to it, effectively removing Arca's liquidity from the marketplace. The resulting liquidity imbalance in ETFs exacerbated the rapid price

changes that many stocks were experiencing at that time. In other words, the events of May 6th affected ETFs more than many other securities but not differently.

NASDAQ supports the rapid and holistic response by the Securities and Exchange Commission. We support the Commission's recommendation to update market-wide circuit breakers that limit large price changes. The proposed circuit breaker would automatically halt trading in all stocks and in all markets in measured stages. As currently contemplated, trading will be halted for fifteen minutes when the S&P 500 Index declines by five percent; for one hour when the Index declines by 10 percent; and for the remainder of the trading day when the Index declines by 20 percent.

NASDAQ also supports the Commission's decision to implement cross-market single-stock trading halts. The important characteristics of these halt are initiation and resumption by the primary market, as well as consistency across all markets. The markets have taken a flexible approach that recognizes that stocks trade in different ways, rather than a one-size-fits-all approach that treats all stocks identically. These single stock circuit breakers will greatly reduce the occurrence of clearly erroneous broken trades by preventing them from executing in the first instance.

In addition to endorsing and assisting Chairman Schapiro in achieving the goal of consistency and cooperation across all markets, NASDAQ also supports regulators' decision to review practices that cause individual markets to pause or go slow. As stated in the joint SEC and CFTC report issued on May 18, 2010, "Preliminary Findings Regarding the Market Events of May 6th", while such practices are designed to dampen volatility, a determination must be made whether they also "inappropriately impede liquidity."

Finally, NASDAQ is exploring other ideas which may encourage high-quality and continuous quoting on all markets. Other options to consider that may reduce the number of disruptive trading events are: (1) requiring priced orders rather than market orders; (2) eliminating or limiting the practice of "stub quoting;" and (3) creating better incentives to provide liquidity during periods of market stress. NASDAQ has already been a leader in promoting more aggressive risk management controls for al orders entered into all market centers. NASDAQ has actively supported the Commission's proposal to improve regulation of all forms of market access that create systemic risk in our markets.

Thank you again for the opportunity to share our views. I am happy to respond to any questions you may have.