Bryan T. Durkin
Chief Operating Officer
Office of the COO

December 11, 2013

Via Electronic Submission

Melissa D. Jurgens,
Secretary of the Commission,
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street NW
Washington, DC 20581

Re: Concept Release on Risks Controls and System Safeguards for Automated Trading Environments – RIN # 3038-AD52

Dear Ms. Jurgens,

CME Group Inc. ("CME Group") appreciates the opportunity to comment on the Commodity Futures Trading Commission's (the "CFTC" or "Commission") Concept Release on Risk Controls and System Safeguards for Automated Trading Environments ("Concept Release").

CME Group is the world's largest and most diverse derivatives marketplace. CME Group includes five separate Exchanges, including Chicago Mercantile Exchange Inc. ("CME"), the Board of Trade of the City of Chicago, Inc. ("CBOT"), the Kansas City Board of Trade ("KCBT"), the New York Mercantile Exchange, Inc. ("NYMEX") and the Commodity Exchange, Inc. ("COMEX"). The CME Group Exchanges offer the widest range of benchmark products available across all major asset classes, including futures and options based on interest rates, equity indexes, foreign exchange, energy, metals, agricultural commodities, and alternative investment products.

CME includes CME Clearing, one of the largest central counterparty clearing services in the world, which provides clearing and settlement services for exchange-traded contracts, as well as for over-the-counter derivatives. Further, CME Group has received temporary registration as a swap execution facility ("SEF") pursuant to section 37.3(c) of the CFTC's regulations, which will be accessible via CME Direct, a platform providing access to both CME Group futures and OTC markets.

The CME Group Exchanges serve the hedging, risk management and trading needs of our global customer base by facilitating transactions through the CME Globex® electronic trading platform, our open outcry trading facilities in New York and Chicago, as well as through privately negotiated transactions.

Introduction

CME Group has been a leader in promoting the integrity, efficiency and transparency of global financial markets and appreciates the importance of ensuring that risk management and regulatory frameworks keep pace with the rapid technological advancements that have characterized the evolution of markets in recent years. That technological change has been the catalyst for the development of more competitive, more efficient, and more transparent markets, as well as substantial improvements and innovation in risk management and regulatory capabilities.

CME Group shares the Commission's objective of promoting transparency and integrity in financial markets, and doing so in a manner that preserves the vibrancy and competitiveness of global markets. Market integrity is one of the cornerstones of CME Group's business model, and the company employs substantial human resources and technological capabilities to protect and continually enhance the reliability of its markets and to mitigate the potential for market disruptions through use of its risk controls and system safeguards. We recognize that our customers' confidence in that commitment is essential to our ability to draw participants and liquidity to our markets and allows us to effectively serve the risk management and price discovery needs of users around the globe.

At CME Group, algorithmic and high frequency trading are products of the evolution of markets from a floor-based model to an electronic model. In CME Group's electronic market model, price and book data is disseminated in real-time to all participants simultaneously, trading in the central limit order book is fast, competitive and fully transparent, and cross-product spreading and cross-market arbitrage are easily facilitated. Given this market model and the corresponding advancements in technology, it is not at all surprising that traders have increasingly turned to automation to optimize trade execution, increase operational efficiency, and enhance risk management. As a result, algorithmic and high frequency trading has grown, contributing to significant volume growth across all asset classes and providing greater liquidity and tighter bid/ask spreads. The liquidity generated by these traders is, in turn, relied upon by all types of market participants to achieve their risk management and investment objectives and allows them to do so at lower cost. The considerable growth in volume and open interest that has occurred on CME Group's centralized market as electronic trading has evolved reflects that the technological developments in financial markets have led to broadly increased participation in the markets.

Algorithmic trading techniques are presently widely used not only by sell-side market participants, but also increasingly by buy-side (institutional) participants to manage their order execution processes to enhance the quality of their executions. These users employ a wide variety of increasingly sophisticated algorithms to systematically place orders to achieve desired execution benchmarks such as a volume weighted average price or time weighted average price, relying on intelligent analytics to optimize trade execution while also achieving operational efficiencies.

It is also important to recognize that algorithmic traders, like non-automated traders, engage in varied activities such as market-making, arbitrage, and hedging and employ diverse strategies in each of these contexts to achieve their objectives. A significant proportion of high frequency traders active on CME Group markets contribute substantial liquidity by providing continuous markets in our products and that liquidity, in turn, often supports enhanced liquidity on other market venues trading related products. Other high frequency traders engage in various forms of inter-market arbitrage, promoting efficient trading by improving the linkages among related instruments across asset classes. Algorithmic and high frequency traders take market risk and have exposure to market movements notwithstanding the fact that their holding periods may be short in duration. They employ multi-factor models in order to forecast "micro-price" movements and identify market inefficiencies, and their participation thus not only contributes to liquidity, but also to very efficient and transparent price discovery.

High frequency trading ("HFT"), a legitimate trading style supported by technology, has been maligned by some who assert that its presence is disruptive to markets. CME Group does not believe that assertion is supported by the evidence. Most recently, HFT was found to improve market fairness by significantly mitigating the frequency and severity of end of day price dislocation.[1] In fact, numerous

[1] Michael Aitken, Douglas Cummings, & Feng Zahn, *High Frequency Trading and End-of-Day Price Dislocation*, the Capital Markets Cooperative Research Centre (2013).

academic studies have broadly concluded that HFT enhances price discovery and market efficiency, as well as contributes significantly to liquidity, thereby mitigating market volatility. Liquidity is clearly the most effective defense against disorderly markets and given the substantial liquidity provided by high frequency traders, it would be counterproductive for the Commission to promote regulation that impairs their participation and compromises market efficiency and stability.

CME Group believes that automated trading, which includes high frequency trading strategies, is not abusive by nature and is subject to the Commission's current rules and regulations concerning market abuses. It is important to make the distinction between HFT and conduct involving abusive or fraudulent trading strategies and/or behaviors. Thus, we believe that rather than adopting a regulatory approach that seeks to address the particular trading strategy a market participant employs, the Commission would be better focused on regulating the specific conduct of that market participant to the extent that conduct violates well established trade practice rules. For instance, the Commission's disruptive trading practices rules give guidance to the market of the type of conduct that could be indicative of intentional bad acts such as spoofing and thus provide the tools necessary for the Commission to pursue nefarious conduct that might otherwise lead to disrupting an orderly market.

CME Group supports adopting principles-based rules that require effective supervision and risk management programs, consistent with the nature of the business being conducted and cautions the Commission against the implementation of overly prescriptive and inflexible "one-size-fits-all" regulation in the areas addressed in the Concept Release. The principles based regime we envision is one that uses pragmatic and information based mechanisms to gather, distill, and leverage industry learning in the service of a still-robust but better designed, that is, more effective and less burdensome, public regulatory mandate.[2] Effective risk management programs should feature robust pre- and post-trade risk management protocols and supervisory procedures that are reasonably designed to control access, effectively monitor trading, and prevent errors as well as other inappropriate activity that poses a material risk of causing a significant market disruption. As discussed further in this response, and acknowledged by the Commission in the Concept Release, derivatives market participants, DCMs, FCMs, clearing members and others have made material advancements in these areas as market structures and technology have evolved, reflecting the industry's strong collective interest in fair, well-regulated, and orderly markets. If the risk and regulatory frameworks are sensibly and responsibly applied, and if continued innovation is not stymied by overly prescriptive regulation, the demonstrated benefits of algorithmic and high frequency trading will continue to contribute to the liquidity, efficiency, and growth of global financial markets, while simultaneously strengthening market integrity, stability, and investor confidence.

CME Group has long been a leader in the innovation, design, and implementation of a variety of novel risk management and volatility mitigation functionality on its Globex platform that applies to all orders entered into its electronic futures markets. For instance, CME Group's Stop Logic functionality, Price Banding, Maximum Order Size Protection, Protection Points for Market and Stop Orders, Daily Price Limits, Circuit Breakers, FirmSoft Order Management Tool, error trade policy, and Messaging Efficiency Program were all groundbreaking industry market protection tools independently implemented by CME Group well before 2008 and not at the behest of regulators or regulation. We believe that these controls have contributed to the resiliency of futures market trading systems when compared to the resiliency of trading systems outside of the futures industry. CME Group's leadership and commitment to protecting the integrity of its markets is reflected in the continuous evolution of its risk management capabilities

[2] Cristie L. Ford, *New Governance, Compliance, and Principles-Based Securities Regulation*, 45 AMBLJ 1, (Spring 2008).

and services and its success in identifying innovative solutions to the risk management challenges arising from the dynamic changes in our industry. **Appendix A** provides a high level description of many of the risk management assets CME Group employs to protect against market disruptions that will be referred to throughout our response below.

High Frequency Trading

1. In any rulemaking arising from this Concept Release, should the Commission adopt a formal definition of HFT? If so, what should that definition be, and how should it be applied for regulatory purposes?

CME Group commends the Technology Advisory Committee for its important work analyzing regulatory issues relating to "high frequency" trading. The Commission's approach to these issues certainly warrants careful study and review. However, we believe HFT is best viewed as simply one particular style of many different types of automated trading methods. As such, we see little regulatory value in simply adopting a formal definition of this particular trading style. Our overall perspective is that the Commission would be better suited to focus on the already established trade practice rules that apply to *all* market participants, regardless of the means or frequency of order entry and ensuring that all manners of trading are subjected to effective principles-based risk control obligations.

We urge the Commission not to start with the premise that additional rulemaking is necessary in this area, but rather focus on whether there are any actual gaps in its current regulatory framework in light of these existing practices. As described in detail throughout this letter, there are a number of effective risk mitigation mechanisms and controls already in place in futures markets. We think an honest appraisal of the current toolkit would lead to the conclusion that additional rulemaking in this area would be largely redundant. Further, we caution that nomatter how carefully crafted, any definition developed for HFT will likely fall short of the Commission's intent by being either overly broad or underinclusive.

Our view is that the tried and true regulatory approach of vigorous enforcement of a principles-based regime focused on conduct is the best course forward. Principles transcend different business models and can be applied equally. Undesirable conduct can be intentionally structured to comply with detailed rules but cannot avoid general principles. Requiring adherence with detailed rules-based mandates has potential to stifle the innovation that proliferates under principles-based regimes. The Commodity Exchange Act ("CEA") and its accompanying regulatory framework already contain the principles necessary to utilize this approach. We believe the U.S. futures markets have achieved a higher quality in almost all metrics relative to other similar markets in large part because of the Commission's traditional principles-based regulatory stance. Thus, the Commission should avoid placing regulating a single type of trading strategy with new and redundant regulations and should seek to enforce existing rules it has at its disposal vis-à-vis the CEA through effective oversight.

2. What are the strengths and weaknesses of the TAC working group definition of HFT provided above [see section II.A.1]? How should that definition be amended, if at all?

CME Group commends the CFTC's Technology Advisory Committee's ("TAC") working group on its efforts to define HFT that is deliberately neutral regarding types of trading strategies and focuses on the mechanical attributes associated with HFT in a manner that only a trading system that meets all four

criteria would be defined as "high frequency".[3] Further, we agree with the proposition that there are many types of market activities that can potentially be labeled HFT and that a narrow definition may lead to regulatory arbitrage.[4] However, it is important to note that a market participant may trade a high frequency style strategy one day, but then change their approach to the market the next day. Similarly, they could change hour to hour. Placing a label on the participant based on a host of factors such as how they are connected, message ratios, or the level of automation of their strategies does not seem to us to serve a useful regulatory purpose. In addition, it should also be expected that any static definition of HFT, no matter how carefully crafted, would likely soon become obsolete given the pace of technological change in the marketplace.

3. **The definition of HFT provided above uses "recurring high message rates (orders, quotes or cancellations)" as one of the identifying characteristics of HFT, and lists three objective measures ((i) cancel-to-fill ratios; (ii) participant-to-market message ratios; or (iii) participant-to-market trade volume ratios) that could be used to measure message rates. Are these criteria sufficient to reliably distinguish between ATSs in general and ATSs using HFT strategies? What threshold values are appropriate for each of these measures in order to identify "high message rates?" Should these threshold values vary across exchanges and assets? If so, how?**

Again, CME Group urges the Commission to take a principles-based rather than detailed and proscriptive approach to addressing the relevant issues. Any effort to define and distinguish between differing business models based on messaging behavior would be very difficult and would, in our view, not be as efficient and fair as simply adopting generally applicable and broadly applied principles-based obligations that apply to all business models. Arbitrary distinctions will inevitably either leave too much out or bring too much in. Further, as technological advances occur, so too will the messaging behaviors of traders. Static definitions that were formulated at a particular point in time will likely become stale or obsolete. From a risk perspective, there is little difference between an ATS and an ATS that is found to use HFT, however defined. The point is that all ATSs should be subjected to similar principles-based risk control requirements.

4. **Should the risk controls for systems and firms that engage in HFT be different from those that apply to ATSs in general systems? If so, how?**

We believe at the exchange level effective risk controls should be implemented equally across all market participants regardless of the type of strategy or trading style a firm deploys through its automated trading system. Moreover, each market participant should be obligated to have risk systems necessary and adequate for the type of trading they employ. The risk systems at HFT firms, for example, would have to have sufficient capacity to handle the order flow generated by the firm. While the capacities of the systems may vary, the controls themselves may be identical between an HFT firm and a firm that utilizes non-HFT systems. We support the Commission adopting principles based rules that are flexible and can adapt to changing circumstance over time, favor distributive motives, promote accountability on the part of decision makers, are less costly to promulgate, and allow decision makers at the firm level to tailor effective supervision and risk management programs that are consistent with the nature of

[3] TAC Subcommittee on Automated and High Frequency Trading, Working Group 1, Presentation to the TAC, 2, (Oct. 30, 2012), available at http://www.cftc.gov/ucm/groups/public/@newsroom/documents/file/tac103012_wg1.pdf.
[4] *Id*.

their business. So long as regulations require firms to have risk systems adequate for the type of trading employed by the firm, we do not believe that regulations need to distinguish between HFT and non-HFT.

Reductions in Latency

5. **Discussions on latency often focus on the how quickly an exchange processes orders, the time taken to submit orders, and how quickly a firm can observe prices of trades transacted on the exchange. The Commission is interested in understanding whether there are other types of messages transmitted between exchanges, firms and vendors wherein differences in latency could provide opportunities for informational advantage. Recent press reports have highlighted such advantages in the transmission of trade confirmations by a specific exchange. Are there other exchanges and trading venues where similar differences in latency exist? The Commission is interested in understanding whether the extent of latency in any such message transmission process can have an adverse impact on market quality or fairness. Should any exchanges, vendors and firms be required to audit their systems and process on a periodic process to identify and then resolve such latency?**

There are many components to, and phases in, the life of an electronic order. The Concept Release focuses solely on order submission and trade messaging within an exchange's infrastructure or between the exchange infrastructure and the entity (*i.e.*, execution firm or clearing firm) that directly connects to the exchange infrastructure. While consideration of latency in those two environments can be useful, a thorough analysis of the issue requires a broader context. There are many types of electronic messages that interact between an exchange and market participants, but for the sake of discussion here we will focus on an originating electronic order.

The life cycle of an electronic order begins long before it enters an exchanges' infrastructure. It begins when the originating market participant enters an order to transmit the buy or sell of a contract. From that moment, the message must travel from the computer or server that prompted the send command through the market participant's internal network and IT infrastructure. This includes any routers, servers, switches, firewalls, or other devices that the customer has established within its network. How those devices and systems are set up influence the amount of time it takes for the electronic order message to traverse the market participant's network. The amount of bandwidth within network cabling can also impact timing.

In short, the number of devices and the corresponding configurations of each device impact the amount of time it takes for an order message to traverse the market participant's internal network, before it even enters an exchange's infrastructure. Intermediated orders then travel through a clearing firm's network and infrastructure. There, an order message must similarly traverse through any devices utilized by the clearing firm to route orders. It must also pass through any pre-trade risk controls that the clearing firm has established for its customers. All of these steps can further influence the amount of time it takes for an order message to travel to an exchange's infrastructure for processing.

Only after an order message passes through the execution and clearing firm's IT infrastructure and risk controls does it makes its way to an exchange's IT infrastructure for processing. The exchange routes the order message for match consideration and market data dissemination. If executed, the order message is further disseminated to the originating market participant as a trade confirmation, and to the trading public as a market data message. During that return trip back to the market participant, the confirmation message must travel back through the same infrastructure of the clearing and execution firm that it traversed in order to make its way to the exchange.

Thus, it is clear there are many contributors to the time it takes for an order message to be processed.

Even if there were no latency within an exchange's infrastructure, latency can exist within the clearing and executing firms' infrastructure. Either may process market data and trade confirmation messages separately, and therefore that too can influence whether there is "latency" between the two. Moreover, the fact that two counterparties exist for each transaction means there can naturally be an imbalance in how data traverses across networks. All can have varying effects on the ability to deliver related order/fill data simultaneously. In reality, there are many factors that can impact these considerations and therefore we believe it best for the Commission to focus on a principles based regime that provides exchanges and market participants' transparency and the greatest ability to adapt to evolving market structures and conditions.

Notwithstanding these challenges, CME Group has employed significant human and technological resources to monitor and analyze activity through sophisticated systems and continually seeks to develop innovative enhancements and solutions to resolve latencies or potential latencies as the markets evolve.

Financial Integrity of the DCO

6. **Are there distinct pre-trade risk controls, including measures not listed below, or measures in addition to those already adopted by the Commission, that would be particularly helpful in protecting the financial integrity of a DCO?**

As we note, pre-trade risk controls are best established between the trading firm and the clearing member (See Regulations 1.73 and 1.74). The clearing organization, by regulation, imposes risk limits on each clearing member (See Regulation 39.13(h)). Mandating any particular measure is contrary to a principles-based approach to regulation and simply induces participants to design around that measure.

The financial integrity of the DCO is a function of the DCO. That integrity begins with appropriate membership requirements and continues with the daily monitoring of the activity of clearing members. Imposing a specific measure of risk provides false hope that any particular measure is, by itself, meaningful in protecting the financial integrity of the DCO either now or in the future.

Risk Controls Applicable in the Case of DMA

7. **Are there distinct pre-trade risk controls, including measures not listed below [see section III.C.], or measures in addition to those already adopted by the Commission, that should apply specifically in the case of DMA?**

CME Group supports allowing exchange clearing members to provide direct market access to their customers, provided the clearing member has appropriately vetted the client and implemented appropriate risk management controls, including exchange mandatory pre-trade credit control functionality, and the client has satisfied the system conformance testing requirements of the exchange. Further, we generally support the Pre-Trade Functionality Subcommittee of the CFTC Technology Advisory Committee's Recommendations on Pre-Trade Practices for Trading Firms, Clearing Firms and Exchanges involved in Direct Market Access.[5] To that end, we feel that each level of the "electronic trading 'supply chain'" (trading firms, clearing firms, and exchanges) must share in the effort to preserve

[5] TAC Pre-Trade Functionality Subcommittee, "Recommendations on Pre-Trade Practices for Trading Firms, Clearing Firms, and Exchanges Involved in Direct Market Access" (March 1, 2011), available at http://www.cftc.gov/ucm/groups/public/@swaps/documents/dfsubmission/tacpresentation030111_ptfs2.pdf.

market integrity through the implementation of effective risk controls, no matter if that participant has direct market access or is routing to the exchange via its clearing member firm.

Moreover, the U.S. futures industry has invested, and continues to invest, considerable time in developing best practices with respect to automated trading and direct market access, and we encourage the Commission to consider the body of work already completed, including the Futures Industry Association's ("FIA") "Market Access Risk Management Recommendations"[6] and the FIA Principal Traders Group's "Recommendations for Risk Controls for Trading Firms."[7]

Message and Execution Throttles

8. If, as contemplated above [see section III.C.1], maximum message rates and execution throttles were used as a mechanism to prevent individual entities or accounts from trading at speeds that are misaligned with their risk management capabilities, how should this message rate be determined?

CME Group believes that it is the responsibility of trading entities and clearing firms to assess the appropriate levels and controls for individual entities and accounts based on the specific attributes of that entity or account. Exchanges are in the best position to ensure that message rate limits are set at levels that will safeguard the integrity of the market. When setting message rates, exchanges should consider many factors, including capacity and performance of its network and match engine, and the unique characteristics of the instrument particularly around liquidity and volatility.

9. Message and execution throttles may be applied by trading firms (FCMs and proprietary trading firms), clearing firms, and by exchanges. The Commission requests public comment regarding the appropriate location for message and execution throttles.

a. If throttles should be implemented at the trading firm level, should they be applied to all ATSs, only ATSs employing HFT strategies, or both?

b. What role should clearing firms play in the operation or calibration of throttles on orders submitted by the trading firms whose trades they guarantee?

CME Group generally believes that Messaging Volume Controls, as well as other functionality, can contribute to well-functioning markets if reasonably established by those in the best position to evaluate and determine their veracity. CME Group has been an innovator in this regard and has, for some time, employed a number of applications designed to identify and mitigate the risk of market disruption. These applications also assist market participants in effectively managing and mitigating their risks. Messaging Volume Controls is one of those applications.[8]

Exchanges are well positioned to identify and set the controls that are best suited for their respective markets and participants. Clearing firms have visibility into their customers' trading activity, as well as the important ability to control the flow of message activity flowing through their systems, and therefore they also have some capacity to further adjust message volume controls beyond those established by an exchange. Finally, with respect to trading firms, CME Group notes the following from

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[6] *See* FIA Market Access Working Group, "Market Access Risk Management Recommendations," (April 2010), available at http://www.futuresindustry.org/downloads/Market_Access-6.pdf.

[7] *See* FIA Principal Traders Group, "Recommendations for Risk Controls for Trading Firms," (November 2010), available at http://www.futuresindustry.org/downloads/Trading_Best_Pratices.pdf.

[8] See Appendix A at iii, and the response to Question 30 for a more detailed discussion of Messaging Volume Controls and the other types of risk mitigation applications used by CME Group.

the FIA Principal Traders Group's web site:

> Automated trading systems should have functionality in place that monitors the number of times a strategy is filled and then re-enters the market without human intervention. After a configurable number of repeated executions the system should be disabled until a human re-enables it.[9]

10. Should the message and execution throttles be based on market conditions, risk parameters, type of entity, or other factors?

There are many factors for exchanges and market participants to consider when setting message and execution throttles. The factors mentioned in the question should be considered as inputs for exchanges (as well as clearing and trading firms, as discussed in response to Question 10) to consider when deciding whether, and at what level, to set a throttle. They should not, however, be mandated in all situations or considered the exclusive set of considerations when deciding whether to establish a throttle. Those decisions are best left to the exchanges and other market participants as discussed in the response to Question 10. Other considerations may include a message based throttle rate that relates to the speed of the risk system, position volatility, market volatility, and trading strategy.

11. What thresholds should be used for each type of market participant in order to determine when a message or execution throttle should be used? Should these thresholds be set by the exchange or the market participant?

As noted above, the responsibility for managing electronic messaging risk should be shared between exchanges and market participants, and principles based requirements should be imposed. Exchanges should be responsible for macro level risks in order to protect the broader market from egregious messaging activity. This includes order size limits. Clearing firms should decide the exact nature of the throttles to impose across their customer base, taking into consideration financial risk to the extent possible and their understanding of their clients' businesses. Throttles related to risk system performance should be at the trading firm level. Finally, trading firms should also evaluate their own trading and financial throttles that are dependent on the nature of their trading strategies, the markets they trade in, speed of their systems (as well as aberrant order controls), and other risk and trading considerations.

12. Are message and execution thresholds typically set by contract, or by algorithm? What are the advantages and disadvantages to each method?

As CME Group, thresholds are typically set by contract and trade match algorithm, depending on the particulars of a given market. This further emphasizes the point made in earlier responses that the consideration of risk mitigation functionality within a market requires sufficient latitude for those in the best position to consider and define such thresholds to make determinations in a pragmatic and reasonable manner, taking into consideration all available facts and circumstances. Flexibility is particularly important as the outcome of those decisions may need to be reconsidered or amended over time to account for the evolving dynamics within a given market. Making an absolute determination that risk mitigation functionality should have exclusive determinations by contract or algorithm would unnecessarily restrict those considerations and, worse, may create situations where risk exposure is unaccounted for. For example, in the context of credit controls, if they are set exclusively at a contract

[9] *See* note 7 at pg 4.

level, it could provide too much latitude (or not enough latitude) for a given market participant because it fails to sufficiently consider activity in other contracts.

13. Who should be charged with setting message rates for products and when they are activated?

See response to Question #11.

14. Would message and execution throttles provide additional protection in mitigating credit risk to DCOs?

It is possible that throttles could have some positive impact on mitigating DCO credit risk; however, for the reasons discussed, it would be very difficult to set throttle values at the precise appropriate levels on an individualized basis for all customers. The concepts discussed herein where risk tolerance is considered by exchanges and market participants, and a principles based regime is followed, will allow DCOs to mitigate some credit risk without unduly handicapping market participants' ability to efficiently participate in the marketplace.

Volatility Awareness Alerts

15. The Commission is aware that alarms can be disruptive or counterproductive if "false alarms" outnumber accurate ones. How can volatility alarms be calibrated in order to minimize the risk that false alarms could interrupt trading or cause human monitors to ignore them over time?

CME Group volatility alerts are calibrated by our analytical tools and are set according to current market dynamics to enforce precision. If the alert should go off for any reason, it is the responsibility of the surveillance team to review and analyze the cause and to react accordingly.

Self-Trade Controls

16. What specific practices or tools have been effective in blocking self- trades, and what are the costs associated with wide-spread adoption of such practices or tools?

Several tools and practices are currently employed in the marketplace to block self-trades. Exchange sponsored self-trade controls and other third-party and proprietary self-trade prevention tools aid executing firms' avoidance of self-trades. Exchange sponsored self-trade controls require investments in technology and resources by the exchanges. Firms registering for exchange sponsored controls also have to invest in technology (or make technological changes) and resources to ensure they are properly registered and submitting proper messaging necessary to prevent self-trades. These technological investments are not insignificant.

These, however, are not the exclusive means to avoid self-trade events. Firms may instead choose, for example, to modify, refine or re-calibrate their trading strategies to accomplish the same objective. Any of these tools or practices has associated costs.

17. Please indicate how widely you believe exchange-sponsored self-trading controls are being used in the market.

More than one hundred executing firms have registered for CME Group Self-Match Prevention functionality since its launch in June 2013.[10] These executing firms represent approximately 35% of our average daily volume. Presently, our Self-Match Prevention operates to cancel the resting order where there would be a self-match event with an aggressor order, as described in response to Questions 18 and 21. We appreciate that some market participants would prefer different functionality, and we continually solicit feedback in this regard. As our Self-Match Prevention functionality evolves, we expect the number of users of our Self Match Prevention functionality to continue to grow.

18. Should self-trade controls cancel the resting order(s)? Or, instead, should they reject the taking order that would have resulted in a self-trade? If applicable, please explain why one mechanism is more effective than the other.

Neither method is inherently "more effective" than the other - both prevent self-trading. However, there are different benefits to each. The benefit of a self-trade control that cancels the resting order is that it favors the most recent information. This mechanism allows orders based on more current market information and presumably more reflective of the trader's most recent strategic decisions to interact with the order book while canceling the resting order that is less recent. Conversely, the benefit of a self-trade control that cancels the incoming/taking order is that it favors the priority of orders resting in the book. By favoring priority, this mechanism would allow a resting order to maintain its queue position in the book while rejecting the incoming/taking order.

Importantly, however, neither of these models addresses all of the functionality preferences for the universe of market participants. Certain participants may prefer degradation functionality (canceling the smaller order and decrementing the larger order by the size of the smaller). Others may prefer that both matching orders be canceled.

As there are many effective means by which self-trades can be prevented, with different benefits to each, the Commission should avoid prescribing the mechanisms of self-trade controls and allow each to be improved upon through experience, leveraging existing functionalities, and through competitive market forces.

19. Should exchanges be required to implement self-trading controls in their matching engines? What benefits or challenges would result from such a requirement?

No. Although CME Group's exchanges have already implemented Self-Match Prevention functionality, which prevents self-trades at the match engine, we nonetheless recommend the Commission avoid prescriptive regulations that would require exchanges to implement controls. As noted in response to Questions 16 and 18, there are different mechanisms by which self-trades can be prevented; some are exchange-based and others are not. We implemented self-trade controls for the betterment of the marketplace and our market participants without prescriptive regulations forcing it upon us. Moreover, we will continue to improve our functionality to address the needs of our diverse customer-base without prescriptive regulations requiring it.

[10] As of November 27, 2013, there are 139 executing firms registered for CME Group Self-Match Prevention functionality.

20. Please explain whether regulatory standards regarding the use of self- trading control technology would provide additional protection to markets and market participants.

Regulatory standards setting forth principles regarding the use of self-trading technology would not necessarily provide additional protections to markets or market participants. We ordinarily associate "protections" with functionality like price bands, stop logic, or message throttling that would prevent or forestall aberrant market moves that could result from certain order executions. As presented in our response to Question 18, self-trade functionality would either cancel resting orders or taking orders. Canceling resting orders would result in an accumulation of taking orders that would either interact with other orders in the book or themselves become resting orders. Alternately, rejecting only the taking order would leave an accumulation of resting orders. We would not say the self-trade functionality had accorded the marketplace any additional protections in either of these scenarios.

Conversely, we proactively developed our Self-Match Prevention functionality, in part, as a means to preserve the integrity of the marketplace. A self-trade would inherently involve a firm trading opposite itself at the same price. In and of itself, this would not violate any exchange rule, Commission regulation, or provision of the Commodity Exchange Act. However, self-trading could create an appearance of impropriety. They often result in a firm having to articulate how the resulting transactions did not violate prohibitions on wash sales, and as noted in the Concept Release, could lead some to believe that the trades inaccurately signal the level of liquidity in the market. Preventing self-trading would prevent these conceptions, thus having a positive effect on the integrity of our markets.

However positive these effects are, regulatory standards are unnecessary. Each exchange has a vested interest in preserving the integrity of its markets. Standards will not promote this to any additional degree. And because there is not a broader market "protection" concern that could be addressed through standards, it is yet another reason standards are unnecessary.

21. If you believe that self-trading controls are beneficial, please describe the level of granularity at which such controls should operate (e.g., should the controls limit self-trading at the executing firm level? At the individual trader level?) What levels of granularity are practical or achievable?

CME Group's Self-Match Prevention functionality allows market participants to prevent, where appropriate, buy and sell orders for the same account, or accounts with common beneficial ownership, from matching with each other. It can be applied at the executing firm level or at more granular levels, including at an individual user level. The Commission, however, should not prescribe the level at which self-trading controls should operate. To be most effective, self-trading controls need to be adaptable at varying levels of granularity to account for the varied business needs of our firms.

22. If you believe that self-trading controls are beneficial, please explain whether exchanges should require such controls for market participants and identify the categories of participants that should be subject to such controls. For example, should exchanges require self-trading controls for all participants, some types of participants, participants trading in certain contracts, or participants in market maker and/or incentive programs? What benefits or challenges would result from imposing such controls on each category of participant?

We do not believe it is appropriate to mandate the use of self-trade prevention functionality given that participants have varied business needs and can choose alternative means for achieving compliance with exchange rules prohibiting wash trades. It is the obligation of the market participant to comply with exchange rules, and market participants are afforded the flexibility to determine the most effective

means to achieve compliance given the nature of their business and trading strategies. As previously noted, CME Globex Self-Match Prevention functionality and other third-party and proprietary self-trade prevention tools are available to aid compliance in this context. Further, firms may instead choose, for example, to modify, refine or re-calibrate their trading strategies to accomplish the same objective. Additionally, the design of existing self-trading controls may not meet all participants' specific needs in every circumstance. In the case of the CME Globex Self-Match Prevention functionality, numerous participants have successfully employed the functionality to mitigate self-trade events, while others prefer to rely on alternative means to comply with the exchanges' rule.

As a practical matter, participants have an obligation to comply with the rule prohibiting wash trades. Whether or not the participant complies with the rule is the threshold question, and any actions that the participant took or failed to take in the context of the activity at issue are factual elements of the investigation and may be considered as aggravating or mitigating factors in the context of the activity. If a participant were identified as potentially violating an exchange's prohibition on wash trades by virtue of appearing to have had a more than de minimis number of self-match transactions, the participant would certainly be questioned regarding its decision-making regarding the use or non-use of self-trade prevention functionality. A participant's failure to employ such functionality or to take other steps to mitigate the occurrence of self-match transactions, particularly where the use of such functionality is specifically recommended in exchange guidance, is a factual element in the matter and will be considered in the context of the other facts and circumstances germane to the analysis of the activity.

With respect to participants in exchange-sponsored volume incentive programs, CME Group has promoted the use of our Self-Match Prevention with program participants but has not mandated it. Participants registered in Exchange incentive programs specifically agree to comply with Exchange rules, including the rule prohibiting wash trades, and are subject to disciplinary action, disgorgement of any benefits obtained, and removal from exchange incentive programs should they be found to have engaged in prohibited wash trades.

Price Collars

23. The Commission is aware that some exchanges already have price collars in place for at least a portion of the contracts traded in their markets. Please comment on whether exchanges should utilize price collars on all contracts they list.

CME Group believes that price banding is beneficial to markets. CME Globex subjects orders to price verification upon entry using a process referred to as price banding. Price banding is designed to prevent the entry of orders at potentially erroneous prices, such as a bid at a limit price substantially above the market, thereby mitigating the potential for a market disruption. For each futures product, CME Group establishes a Price Band Variation parameter which is a static value that is symmetrically applied to the upside for bids and the downside for offers relative to a reference price. In the E-mini S&P 500 futures contract, for example, this parameter is currently set at 12 index points (approximately 1% of the current index value). The reference price, referred to as the Banding Start Price, is a dynamically calculated value based on market information such as last trade price, best bid and offer price, or the indicative opening price. Orders entered at prices beyond the Price Band Variation parameter relative to the reference price are rejected by the Globex engine. Price banding functionality for options on futures is similar to futures price banding except that the Banding Start Price may reference theoretical option prices based on established option pricing models in addition to last trade price. Additionally, the width of the option price bands may be either a static value for a particular option series or a dynamic value that adjusts based on the option's delta or a delta-adjusted percentage of the option's theoretical price.

In addition to price banding, CME Group also employs the following functionalities:

- Protection Points: CME Group employs functionality that applies a limit price (protection point) to each market order entered on the CME Globex platform and to each stop order entered without a limit price. This functionality prevents orders from being filled at significantly aberrant price levels because of the absence of sufficient liquidity to satisfy the order at the time the market order is entered or the stop order is triggered. The protection points for each product are generally defined as one half of the product's "Non-Reviewable Range," a value that is established in connection with the exchanges' Trade Cancellations and Price Adjustments rule. The protection point is measured from the best bid price for sell market orders, the best offer price for buy market orders, and the stop trigger price for stop orders. Any quantity on the order that is unfilled at the protection point level becomes a resting limit order at that price and creates the opportunity to source liquidity. In the E-mini S&P 500 futures contract, for example, this parameter is set at 3 index points (approximately ¼ of 1% of the current index value.)

- Order Quantity Protections: Maximum order size protection is embedded Globex functionality that precludes the entry of an order into the trading engine if the order's quantity exceeds a pre-defined maximum quantity. Orders entered for a quantity greater than the prescribed maximum quantity are rejected by the Globex engine. This functionality helps to avoid market disruptions by preventing the entry of erroneous orders for quantities above the designated threshold. In the E-mini S&P 500 futures contract, this parameter is set at 2,000 contracts.

- Stop Logic Functionality: CME Group's proprietary Stop Logic functionality serves to mitigate artificial and disruptive market spikes which can occur because of the continuous triggering, election and trading of stop orders in an illiquid market condition. On CME Globex, if elected stop orders would result in execution prices that exceed pre-defined thresholds, the market automatically enters a reserve period for a prescribed number of seconds; the length of the pause ranges from 5 to 20 seconds and varies based on the characteristics of the product and time of day at which the stop logic event is triggered. During the reserve period, new orders are accepted and an indicative price is published, but trades do not occur until the reserve period expires, thereby providing an opportunity for participants to respond to the demand for liquidity. If contra-side liquidity is not sourced during the initial reserve period, the price band will increase by another increment and a second iteration of the stop logic will commence. This process will continue until liquidity is sourced or for up to a maximum of twelve iterations. In the E-mini S&P futures, for example, the stop logic price parameter is 6 index points (approximately ½ of 1% of the current index value) and the time parameter is 5 seconds during regular trading hours and 10 seconds outside of regular trading hours.

24. Would price collars provide additional protection in mitigating credit risk to DCOs?

It is possible for price banding to provide some level of additional protection in mitigating credit risk. However, as discussed in other responses (e.g., Questions 9-12, 23, 30 and Appendix A), CME Group believes well-functioning markets are aided by a multi-faceted approach to risk mitigation which provides sufficient latitude and discretion for exchanges (and market participants) to set the necessary parameters for a given market, taking into consideration the relevant factors discussed throughout this response.

Maximum Order Sizes

25. Are such controls typically applied to all contracts and customers, or on a more limited basis?

CME Group applies order size limits on all contracts and market participants. They are set on an individual contract basis. A listing of those limits is available at: http://www.cmegroup.com/confluence/download/attachments/53510509/Globex%20Product%20Reference.xls?version=80&modificationDate=1384527902000&api=v2.

26. Do exchanges allow clearing members to use the exchange's technology to set maximum order sizes for specific customers or accounts?

CME Group does allow clearing members to use its technology to set maximum order sizes for specific customers or accounts. CME Clearing sets certain parameters, and also provides clearing members with the ability to set individual clip sizes in the Risk Management Interface ("RMI"). RMI is an Application Programming Interface ("API") and Graphical User Interface ("GUI") that supports granular, pre-trade risk management for clearing firms, allowing them to manage market exposure of their respective customers at the account level.[11]

- RMI API allows clearing firms to programmatically send instructions to:
  - Block/Unblock order entry by execution firm, account, exchange, derivative type and side;
  - Query current block/unblock instructions; and
  - Cancel working orders, including Good-Til-Cancel and Good-Til-Date order types.
- RMI GUI is a web-based web-based user interface that allows clearing firms to:
  - Block/Unblock order entry at the same levels as the API; and
  - View current blocks.

In addition, CME Globex Credit Controls automatically calculate a maximum order size based on available credit. As discussed elsewhere in this response, these credit controls allow clearing members to set real-time, pre-trade credit limits. Firm risk administrators can define trading limits and select real-time actions if those limits are exceeded, such as email notification, order blocking, and order cancellation. This functionality can operate both manually and automatically. The manual mode enables the firm risk administrator to maintain manual credit control limits by setting a maximum order size and has the capability to block new orders. The automated controls enable the firm risk administrator to view open and filled credit controls system manages credit risk by limiting the maximum order quantity. The automated controls also have the ability to cancel orders.

27. Would additional standardization in the capabilities of this technology or more uniform application of this technology to all customers and contracts improve the effectiveness of such controls?

No. CME Group supports a more tailored approach to the implementation of risk controls rather than a "one-size-fits-all" regulatory structure. In the context of maximum order size protection, such implementation should be determinant on the profile of the customer and the market.

[11] More information is available at: http://www.cmegroup.com/globex/trading-cme-group-products/risk-management-rmi.html.

28. To what extent are clearing firms and trading firms conducting pre-trade maximum order size screens? Please explain whether firms are conducting such screens by utilizing: (1) their own technology; (2) the exchange's technology, or (3) a combination of both.

CME Group believes clearing and trading firms are in the best position to respond to this question.

29. Would regulatory standards regarding the use of such technology provide additional protection to the markets?

As set forth elsewhere in this response, CME Group believes that principles based guidance could provide useful assistance in this area by setting forth expectations among market participants – individual traders, execution firms and clearing firms – that they have responsibility for assessing risk and operational controls, and then making reasonable decisions based on their respective circumstances and which take into consideration their interests and those of the broader marketplace. Conversely, regulatory standards that are prescriptive, static, or follow a "one-size-fits-all" approach are significantly less likely to be very effective.

Trading Pauses

30. Trading pauses, as currently implemented, can be triggered for multiple reasons. Are certain triggers more or less effective in mitigating the effects of market disruptions?

Our general view is that market operators should have the freedom to develop trading pause methodologies in light of the specific circumstances that are relevant to their markets. With that said, we certainly support the use of trading pauses to address the problem of sharp, destabilizing price swings. CME Group has already deployed these techniques in our markets and the benefits of this type of functionality was clearly evident on May 6, 2010, as stop logic functionality on CME Globex triggered a five second pause in the E-mini S&P futures market, during which time buy-side liquidity came into the market, leading to the reversal of the broader market decline.

Although set out in more detail in **Appendix A**, below is a brief summary of certain current CME Group functionality that is designed to detect and prevent trading activity not associated with rational market dynamics:

- ***Credit controls*** provide pre-execution risk controls that enable clearing firms to set credit limits for their executing firms.
    - CME Group credit controls, which every clearing member firm is required to use, can include order blocking, order cancellations, and email notifications, which can be set at varying thresholds.
- ***Messaging controls*** limit the rate at which firms can submit mass quotes and can block orders from entering the system if volume thresholds or order quantities are exceeded.
- ***Stop-logic functionality*** prevents extreme price deviations. Stop logic can automatically halt the market for a predetermined time period. When it was triggered on May 6, 2010, stop logic reversed the course of the Flash Crash on the CME by halting the market for enough time for liquidity to be replenished.
- ***Velocity-logic functionality*** is designed to guard against rapid price spikes. It is triggered by a pre-specified price movement over a defined (short) period of time. Like stop price logic, it

places the markets in a "reserve state" where orders may be entered, modified or canceled but not executed.

- ***Circuit breakers*** in our equity index and energy products halt trading for a period of time when a circuit breaker level is reached. In addition, daily price limits prevent trading at prices higher or lower than limits preset by CME Group.
- ***Protection points*** act as controls against excessive price swings in illiquid markets. These points prevent market and stop orders from being filled at significantly aberrant prices because of the absence of sufficient liquidity.

31. Are there additional triggers for which pauses should be implemented? If so, what are they?

Market operators should have the freedom to develop trading pause methodologies in light of the specific circumstances that are relevant to their markets. As a general matter, regardless of their methodology, trading halts should be designed to consider the unique characteristics of applicable product and should be set by the exchange at the product level.

32. What factors should the Commission or exchanges take into account when considering how to specify pauses or what thresholds should be used?

Although CME Group broadly concurs that risk control mechanisms such as trading pauses should be used by market centers, an individual market must retain the flexibility to determine and to implement risk controls that it believes are necessary to protect the integrity of its market.

33. How should the re-opening of a market after a trading pause be effected?

Although markets should be afforded the flexibility to determine and to implement risk controls that each believes are necessary to protect the integrity of its markets, we believe there are some general principles that markets should adhere to when designing trading pause re-openings. First, we believe trading pauses should be as brief as possible to allow liquidity replenishment and avoid unnecessary market disruption. In addition, we believe the re-opening of trading should feature a period of price discovery to facilitate the orderly continuation of trading.

Credit Risk Limits

34. What positions should be included in credit risk limit calculations in order to ensure that they are useful as a tool for limiting the activity of a malfunctioning ATS? Is it adequate for such a screen to include only those positions entered into by a particular ATS or should it include all the firm's positions?

In our opinion, regulations should not specify such things as how credit limit calculations are structured or the entity level at which they would apply. CME Group believes the Commission would be better served to apply principles-based supervisory obligations in this area. Regulated entities must have discretion to manage risk based on the particular facts and circumstances of their businesses.

We do believe, however that effective risk management is necessary at the trading firm, clearing firm, and exchange levels. A holistic approach with overlapping supervisory obligations offers the most robust protection to markets by engaging all levels of the supply chain in the commitment to preserving market integrity and eliminating the possibility that a single point of failure will cause significant harm to the market.

With respect to the credit risk link, CME Group currently offers the CME Globex Credit Control functionality to its clearing members. This functionality provides automated pre-trade credit controls at the trading firm level without introducing additional order processing latency. The credit limits for each trading firm are established by the clearing firm and the functionality provides for automated early warning notifications as well as automated real-time actions that prevent the limits from being breached. These exchange-provided controls are intended to complement the other risk management tools used by clearing firms and trading firms to manage risk at a more granular level, but they are just one piece of the total risk management puzzle. In addition, CME Group offers functionality that provides its clearing member firms with the ability to set individual clip sizes in the RMI. As discussed in our response to Question 26, RMI is an API and GUI that supports granular, pre-trade risk management for clearing firms, allowing them to manage market exposure of their respective customers at the account level.

35. Should pre-trade credit screens require a full recalculation of margin based on the effect of the order?

No, we do not believe pre-trade credit screens require a full recalculation of margin based on the effect of the order.

36. In light of your answers to the previous two questions, where in the lifecycle of an order should the credit limits be applied and what entity should be responsible for conducting such checks?

As discussed above, CME Group believes that effective risk management is necessary at the trading firm, clearing firm, and exchange levels. However, we encourage the Commission to establish an appropriately consistent and appropriately flexible regulatory framework that effectively supports the principles of sound supervisory and risk management protocols without creating unnecessarily onerous burdens or impeding continued innovations in the market.

37. If credit checks are conducted post-trade, what should be done when a trade causes a firm to exceed a limit?

As a general matter, CME Group is of the view that any orders from a market participant that would take that participant beyond their applicable credit limits should be canceled. However, we also believe that clearing firms should have principles-based obligations to implement effective risk management policies and procedures. Moreover, a detailed answer to this particular question depends on the specific market, specific trading systems, and specific clearing firm specifications involved.

38. Please describe any technological limitations that the Commission should be aware of with respect to applying credit limits.

Market participants execute trades across a variety of trading systems. Applying credit limits across diverse markets would be very challenging from a technology standpoint. Developing a centralized system would be exceedingly complex and would introduce the problem of creating a potential single point of failure for the entire market. Our judgment is that the benefits of such a system would not outweigh the very significant costs that would be involved.

39. The Commission is particularly interested to receive public comment on the "hub" model and its applicability to different types of pre-trade risk controls. What are the strengths and weaknesses of this approach relative to other pre-trade or post-trade approaches to checking trades against credit limits? How would the latency between the "hub" and the exchanges be managed to provide accurate limits for high frequency ATS?

Centralized credit checking facilities, or "credit hubs," are unregistered third party service providers which are primarily designed to increase cleared trade certainty at execution via pre-trade credit checks in the swaps market. The "hub" effectively acts as a central service, providing connectivity between all participants involved in the trade. Through this connectivity the market participant and FCM have the ability to monitor credit limits in real-time. The "hub" model however, does not transcend itself from the swaps market to the vertical clearing model of the futures market.

Financial market participants trade in markets all over the world. Thus, a multi-jurisdictional, multi-market (OTC, exchange traded, cash market) view would be necessary to measure systemic risk accurately. This reality makes a "hub" design simply infeasible and unnecessary given the robust pre- and post-trade credit controls currently utilized by all levels of the futures market supply chain. For example, a firm's position in the U.S. will not provide an entirely accurate risk profile by itself if that firm also has positions in related products in other jurisdictions. Further, a hub model would almost certainly introduce significant latency because of the very large volume of requests it would be called on to handle across multiple markets. Given the multi-jurisdictional, and multi-market requirement to manage the systemic risk, the operational challenges of managing positions, credit limits and valuations in real-time, and the significant costs that would be incurred to establish a hub, the hub model does not present a realistic solution.

40. If you believe that post-trade credit checks would be an effective safeguard against malfunctioning ATSs, what is the maximum amount of latency that should be allowed for conducting such checks? What technological or information flow challenges would have to be addressed in order to implement post-trade checks with that degree of latency?

As a general matter, CME Group believes that post trade checks should be utilized simply as an additional measure after pre-trade checks. With that said, CME Group believes the Commission should simply apply wide ranging supervisory principles that require implementation of risk control mechanisms. Registered entities must retain the flexibility to determine the exact nature of risk controls used. Firms that are subject to these principles should have discretion to take account of particular circumstances and varying business models. CME Group does not believe it is appropriate to adopt rules in this area that regulate to this level of detail.

41. With respect to any entity that you believe should be responsible for applying credit risk limits, please describe the technology necessary to implement that risk control and the cost of such technology.

Again, we believe that effective risk management is necessary at the trading firm, clearing firm, and exchange levels. A holistic approach of having redundant checks offers the most robust protection to markets by engaging all levels of the supply chain in the commitment to preserving market integrity and eliminating the possibility that a single point of failure will cause significant harm to the market. However, we believe that a principles-based obligation in this regard, where each particular link is afforded the flexibility to determine and implement risk controls that are necessary in light of its particular business circumstances, is the best approach. The technology necessary to implement risk

controls and the costs of such technology for any firm necessarily depends on the particular trading activities and messaging flow characteristics of that firm.

Order, Trade and Position Drop Copy

42. What order and trade reports are currently offered by DCMs and DCOs? What aspects of those reports are most valuable or necessary for implementing risk safeguards? Please also indicate whether the report is included as part of the exchange or clearing service, or whether an extra fee must be paid.

CME Group Drop Copy service is a risk management tool designed to facilitate real-time monitoring of trading activity on the CME Globex platform and hosted in a high performance, high availability environment with monitoring and support that is commensurate with that of the trading platform/environment. The Drop Copy FIX service allows customers to receive real-time copies of CME Globex Execution Report and Acknowledgement messages as they are sent over iLink order entry system sessions. Drop Copy effectively aggregates iLink messages, enabling customers to aggregate positions and monitor orders for sessions guaranteed by one or more clearing firms upon approval of the clearing firms. The service is offered at no cost to each customer or clearing firm but a nominal charge may be applied for secondary or tertiary Drop Copy feeds the consumer may wish to receive.

Additionally, CME Group offers a browser-based order management tool that provides real-time access to information on working and filled CME Globex orders, across multiple firm IDs called FirmSoft. CME Group customers may access FirmSoft at no charge through written request from an officer of a clearing member firm, or by requesting access through a clearing firm's FirmSoft Administrator. FirmSoft allows customers to access order history, order status, fill information, and if authorized to do so, may permit the user to cancel individual orders, multiple resting orders, or all resting orders and mass quotes. Moreover, FirmSoft employs "Cancel All" or "Kill Button" functionality which provides an important risk mitigation tool at all times, including during system failures.

43. If each order and trade report described above were to be standardized, please provide a detailed list of the appropriate content of the report, and how long after order receipt, order execution, or clearing the report should be delivered from the trading platform to the clearing member or other market participant.

CME Group supports the proposition that Drop Copy be provided for all trading activity and should be disseminated to the consumer in real-time using the FIX Protocol as the API and messaging format. As such, the content of the report should include all standard fields provided within a FIX Order Entry Acknowledgements[12] or Trade Execution Report.[13] The specific content provided within the CME Group Drop Copy solution can be found in **Appendix B**.

[12] Acknowledgments are messages that include all confirmation and elimination messages generated by the Source session(s). These messages can be used to determine the trading customer's open order position.

[13] Execution Reports are messages that include all fills and any trade cancel messages generated by the Source session(s). These messages can be used to determine the trading customer's filled position.

Trade Cancellation or Adjustment Policies

44. Is a measure that would obligate exchanges to make error trade decisions (i.e., decisions to cancel a trade or to adjust its price) within a specified amount of time after an error trade is reported feasible? If so, what amount of time would be sufficient for exchanges, but would be sufficiently limited to help reduce risk for counterparties to error trades?

Over the past few years CME Group has moved away from canceling trades and has, whenever possible, attempted to adjust prices in error or mistrade situations. Feedback from market participants has been that the adjustment process is a more effective way to resolve these situations. CME Group's error trade rules seek to balance the adverse effects on market integrity of executing trades and publishing trade information inconsistent with prevailing market conditions while preserving legitimate expectations of trade certainty by market participants.

We believe a decision of whether to adjust or cancel a trade should be determined expeditiously when an error trade has been reported to the exchange. When a trade on our markets has been questioned, CME Group sends a message (including the contract, time of trade, quantity and trade price) to all CME Globex registered contacts via Targeted Messaging alerting them. We then begin a process of determining whether to adjust, cancel, or let stand the questioned trade, considering factors such as the price of the trade, prices that traded immediately before the questioned trade, better bids or offers, more recent prices in different contract months, and prices of related contracts, among others.

Requiring the exchanges to perform this analysis in a prescribed time period would unnecessarily constrict the analysis and inhibit the decision-making process, especially during situations where the complexity of the error requires additional analysis.

45. Should exchanges develop detailed, pre-determined criteria regarding when they can adjust or cancel a trade, or should exchanges be able to exercise discretion regarding when they can adjust or cancel a trade? What circumstances make pre-determined criteria more effective or necessary than the ability to exercise discretion, and vice versa?

Given the fluidity and complexity of the markets, no two error trades, adjustments, or cancellations are the same. To account for this, predetermined criteria for when exchanges could cancel or adjust a trade would either have to be extraordinarily broad or impracticably cumbersome and complex. Either would have an impact on the marketplace. Broad criteria could result in less precise determinations of cancellations or adjustments, while cumbersome and complex criteria could result in inordinate delays in rendering decisions. Affording exchanges discretion in rendering cancellation or adjustment decisions not only allows for more exacting decisions to be made, but it also allows consideration for the unique market dynamics and the collaboration of criteria on a product market basis. Notwithstanding this, CME Group also believes that certain predetermined criteria can aid the cancellation or adjustment decision-making process.

To promote market certainty, CME Group's error trade review process discussed in response to Question 44, in fact, utilizes certain predetermined criteria. For example, any request to review a trade must be made to CME Group's Global Command Center (GCC) by telephone within eight minutes of the execution of the trade. Further, if a questioned trade is priced within a predetermined price range for the particular contract traded, the trade will stand and will not be canceled or adjusted unless we determine that allowing a trade to stand may have a material, adverse effect on the integrity of the market. If the questioned trade is outside of the pre-determined price range, the trade price is adjusted to the fair market value for that contract at the time of the trade. The predetermined "Non-Reviewable

Trading Ranges" for futures and the policy under which they are applied are publicly available in Rule 588 of the exchanges' rulebooks.

As indicated in the previous paragraph, our error trade policy accords CME Group absolute and sole discretion in the decision-making process if it is determined that allowing a trade to stand may have a material, adverse effect on the market. This is necessary to mitigate market disrupting events caused by the improper or erroneous use of electronic trading systems or by system defects. The policy further provides that in the absence of a timely request for a review, during volatile market conditions, upon the release of significant news, or in any other circumstance the GCC deems it appropriate, the GCC, in its sole discretion, may determine that a trade shall not be subject to review.

Utilizing these predetermined criteria with a level of discretion allows us to offer the marketplace a high degree of trade certainty, while still according sufficient flexibility to ensure error trades are fairly reviewed and market impact from an erroneous trade is minimized.

46. Do error trade policies that favor price adjustment over trade cancellation effectively mitigate risk for market participants that are counterparties to error trades? Are there certain situations where canceling trades would mitigate counterparty risk more effectively? If so, what are they and how could such situations be identified reliably by the exchange in a short period of time?

At CME Group, all futures and options contracts are price adjusted, not canceled, except in certain circumstances. Price adjustments are favored in order to promote trade certainty. However, trade cancellations may be a less invasive option when there is a predominance of stop orders involved.

47. Should error trade policies be consistent across exchanges, either in whole or in part? If so, how would harmonization of error trade policies mitigate risks for market participants, or contribute to more orderly trading?

We believe that marketplaces should have transparent effective error trade policies that promote timeliness of decision making and promote trade certainty. However, considerations must be given to the dynamics of each marketplace and as such; policies should be representative of the attributes of the specific market.

Order Cancellation Capabilities

48. The Commission's discussion of kill switches assumes that certain benefits accrue to their use across exchanges, trading and clearing firms, and DCOs. Please comment on whether such redundant use of kill switches is necessary for effective risk control.

Kill switch functionality deployed at multiple layers of trade execution (exchange, clearing firm, execution firm, etc.) should not be considered redundant. While functionality within each layer may the same (killing connectivity), different risk parameters and data points at each layer can influence the functionality. However, multi-layered kill switch functionality is not entirely "necessary for effective risk control." Single layer kill switches can be effective at controlling risk. CME Group, nonetheless, believes that multi-layered kill switch functionality is beneficial as it adds additional layers of protection.

49. What processes, policies, and procedures should exchanges use to govern their use of kill switches? Are there any different or additional processes, policies and procedures that should govern the use of kill switches that would specifically apply in the case of DMA?

CME Group's Kill Switch tool enables CME risk administrators, Legal Clearing Entity (LCE) risk administrators, and Execution Firm risk administrators to immediately block all new order entry and cancel all working orders based on certain permission levels. An Execution Firm risk administrator, for example, can be permissioned to send kill/unkill instructions for all Sender Comp IDs (TAG49) at their firm. Similarly, the LCE risk administrators have permissions to kill/unkill the LCE, all Execution Firms the LCE clears, and all Sender Comps that the LCE clears. Finally, CME Group risk administrators have the ability to act as both Execution Firm and LCE risk administrators, sending kill/unkill instructions just as the firm and LCE administrators could.

Importantly, each of these roles operates independent of the others and an appropriate permissions hierarchy is employed. For example, an Execution Firm cannot "unkill" kill instructions sent by their clearing firm or a CME Group risk administrator.

Should processes or policies govern an exchange's use of kill switches, they should focus on the clearly defining roles or levels of authority for those who can send kill/unkill instructions. It would be important, for example, for processes or policies to define the hierarchy of authority – that clearing firms have the authority to kill orders of their executing firms and the executing firms' order senders; and that the exchanges have the authority to kill orders of clearing firms, executing firms, and senders. Furthermore, it would be important for those hierarchical levels of authority to be unable to override a kill instruction of a different level – it would be self-defeating if one level of risk administrator was able to override a kill instruction sent by a different level of risk administrator.

50. What processes, policies, and procedures should clearing firms use to govern their use of kill switches when using such a safeguard to cancel and prevent orders on behalf of one or more clients?

CME Group believes clearing firms are in the best position to answer this question.

51. What objective criteria regarding kill switch triggers, if any, should entities incorporate into their policies and procedures?

52. What benefits or problems could result from standardizing processes, policies, and procedures related to kill switches across exchanges and/or clearing firms?

While CME Group agrees that standardized processes and procedures are generally beneficial, the execution of kill switch functionality must be free from restrictive processes or prescriptive policies. When the exchanges, clearing firms, or execution firms enter the decision-making process of determining whether to send kill instructions, time is often of the essence. If these entities are delayed in sending kill instructions because of processes or procedures, the marketplace, firms, and the exchanges could be adversely affected. CME Group, therefore, believes these entities should be afforded significant discretion, free from processes, policies, and procedures surrounding the use of kill switch functionality.

53. Please explain how kill switches should be designed to prevent them from canceling or preventing the submission of orders that are actually risk reducing or that offset positions that have been entered by a malfunctioning ATS.

CME Group's kill switch was designed and is intended to be used when a trading entity is experiencing an issue which necessitates removing it from the market completely and immediately. It is not intended to assess risk or position offsets. As discussed below, CME Group offers other tools which allow for those types of assessments.

CME Group's kill switch functionality allows an exchange, a clearing firm, or authorized execution firm risk administrator to take several risk management actions in a single step, blocking new orders and canceling open orders or unblocking an entity that was previously blocked. The functionality would not allow a blocked entity to continue submitting orders while the block or kill instructions are in force. Once the kill switch functionality is engaged, all open orders are canceled and the entity is blocked from entering any new orders.

Further, allowing an exception to a black and white process (kill and unkill) wherein some electronic orders (risk reducing orders) would be allowed to flow through to the exchange adds such a degree of uncertainty and complexity that it would likely render the kill switch functionality at the exchange level inoperable. Consider utilization of this functionality by an exchange in the context of a malfunctioning ATS. Certainly the exchange could determine trade executions by the same firm or user over a given period of time and it would therefore be able to ascertain risks associated with those positions; however, the exchange would not be privy to the participant's *entire* risk portfolio. The exchange, therefore, would not be in a position to determine which orders should flow through as "risk reducing" or offsetting and which orders should be cancelled. Thus, in this scenario, the exchange's kill switch functionality must completely remove the entity from the marketplace.

Importantly, the entity is not without options if it intends to enter risk reducing orders. The Kill Switch functionality, for example, would not impact an entity's ability to manually submit orders for execution on the trading floor.

Further, CME Group offers a suite of risk tools outside of Kill Switch functionality that allow for more specific risk criteria determinations. CME Group offers clearing firms and end users (at a clearing firm's discretion) a real-time browser-based order management tool called FirmSoft. This tool has many robust functions allowing users to view and cancel orders at a very granular level, including canceling individual orders, a group of orders, or all working orders and mass quotes. Therefore, if an entity wanted to retain an ability to submit risk-reducing orders in a kill-type situation without completely invoking the kill functionality, it could do so through FirmSoft.

Similarly, CME Globex Credit Controls (GC2) provide clearing firm risk administrators pre-execution risk controls that allow the risk administrators to define trading limits and select real-time actions if those limits are exceeded, including email notifications, order blocking , and order cancellation. This tool would allow a firm to block all risk increasing orders if there was a credit limit breach, for example. As with FirmSoft, if an entity wanted to retain an ability to submit risk-reducing orders in a kill-type situation without completely invoking the kill functionality, it could manage this through GC2.

As there are risk management tools available to entities allowing them to manage their risk, kill switch functionality should continue to exist solely to remove an entity from the market completely and immediately.

54. The Commission requests comment regarding whether kill switches used by clearing firms already have or should have the following capabilities: (a) distinguish client orders from proprietary orders; (b) distinguish among orders from individual clients; and (c) cancel working orders and prevent additional orders from one or more of the clearing firm's clients, or for all the clearing firm's proprietary accounts, without cancelling and preventing all orders from the clearing firm.

CME Group believes clearing firms are in the best position to respond to the question.

55. The Commission is aware of proposals that would enable FCMs to establish credit limits for customers that are stored at a central "credit hub" for the purpose of pre-trade credit checks. If such a model were implemented, is it possible that it could also be enabled with kill switches that cancel existing working orders and prevent additional orders from being submitted by one or more market participants? Should such an approach be designed to complement kill switches that are controlled by exchanges, clearing members, and trading firms, or to replace these kill switches? What benefits and drawbacks would result from each approach?

CME Group fails to see the feasibility of what is being suggested in this hypothetical. Please also see our response to Question 39 above.

ATS Testing

56. Please describe the necessary elements of an effective ATS testing regime, in connection with both the initial deployment and the modification of an ATS.

CME Group supports the FIA's Professional Traders Group's "Recommendations for Risk Controls for Trading Firms,"[14] as a principles-based approach to management, oversight, and testing of electronic trading systems. CME Group strongly believes market participants are in the best position to maintain responsibility for conducting appropriate testing of their trading algorithms, as participants routinely do today in their own, often sophisticated, testing environments using historical data to test the performance of particular strategies against a wide range of market conditions. Further, such testing should seek to assure, among other things, conformance with trading strategies, adherence to exchange rules and messaging policies, back end integration with clearing systems, properly operating preventative controls functionality, and avoidance of market disruptions. Market participants may capture and store data in-house for these purposes or rely on vendors who compile and can replay data feeds from exchanges around the world, thereby allowing market participants to back test their algorithms across multiple venues or against a variety of particular market conditions, including, for example, high volatility environments or sudden liquidity crises. Exchanges also commonly make their own historical data available.

Market operators should be responsible for providing conformance testing functionality to users of their markets to ensure that the trading systems connecting to the trading host will not adversely impact the connecting client or the market. CME Group requires that all electronic programs and systems interfacing with the CME Globex platform, regardless of trading strategy, be certified by CME Group on the order entry and/or market data interfaces prior to being deployed in production in order to mitigate potential risks both to the trading entity and to the broader market. This certification is primarily designed to test the customer's systems interface software or front end interface software (automated

[14] *See* note 7, *supra*.

or otherwise), that directly interact with any of CME Group's electronic interfaces and systems, including CME Globex.[15]

CME Group currently offers two testing environments to its users - the "certification" and "new release" environments. Customers use the CME Group certification environment, which mirrors the production environment, to perform certification testing for CME Globex core functionality, maintenance testing and development testing for new customer system features. Customers use the new release environment to test new CME Globex products and releases prior to production. Both the certification and new release environments are connected to their own clearing testing environments. This allows customers, who have clearing setup in the production environment, to perform end-to-end testing by submitting and executing orders from their front-end systems and receiving the corresponding clearing trade reports on their back-end systems in conditions similar to production.

Prior to permitting the electronic trading system to access the production environment, CME Group requires AutoCert+ testing, an automated certification tool for customer system certification for iLink order routing and FIX/FAST market data used to ensure all trading applications conform to CME Globex specifications and adhere to CME Group requirements. The AutoCert+ tool requires a virtual private network ("VPN") to connect to a user-friendly web interface and guides customers through the entire certification process. Further, AutoCert+ is flexible and scalable, allowing customers to simultaneously test order entry and market data messages, and to receive instantaneous test result with an explanation for failed tests. Finally, AutoCert+ has extensive online documentation, including an access guide, detailed test script descriptions and online help.

57. With respect to testing of modifications, how should the Commission and market participants distinguish between major modifications and minor modifications? What are the objective criteria that can be used to make such distinctions? Should any testing regime applicable to ATS modifications distinguish between major and minor modifications, and if so, how?

CME Group urges the Commission to, rather than seek comment in an attempt to establish objective criteria for "major" or "minor" modifications of exceedingly varied, highly sophisticated, and constantly evolving automated trading systems, examine the institution of industry-wide best practices and associated controls. Given the complexity associated with the multitude of diverse automated trading systems, how they interface, and the varying business needs of market participants, determining the magnitude of a change or modification and the level of testing required to confirm its intended function should be left to those who have developed, coded, or otherwise deployed the trading system.

58. What challenges or benefits may result from exchanges implementing standardized procedures regarding the development, change management and testing of exchange systems? Please describe, if any, the types of standardized procedures that would be most effective.

CME Group employs robust procedures and controls for development, change management and testing of all of its exchange systems. Exchange based systems vary widely in function and operation, therefore each exchange system should be developed and tested in a manner that comports with industry best practices.

[15] CME Group maintains and operates various electronic interfaces and systems including, but not limited to, CME Globex, CME ClearPort, CME Direct, ConfirmHub, CME Cleared Trades API, Risk Management Interface, Front End Clearing, EOS Trader, Drop Copy, and CME Account Manager.

Crisis Management Procedures

59. Should basic crisis management procedures be standardized across market participants? If so, what elements should be addressed in an industry-wide standard?

60. Are there specific, core requirements that should be included in any crisis management procedures? Similarly, are there specific types of crisis events that should be addressed in any crisis management procedures? If so, please identify such requirements and/or crisis events and the level of granularity or specificity that the procedures should have with respect to each.

CME Group employs a robust business continuity management program, which is central to helping mitigate potential impacts to our markets and is designed to safeguard the interest of all CME Group stakeholders, following a disruption. CME Group strongly believes that crisis management procedures should be implemented at all levels of the industry value chain and should include responses that could span financial, reputation, or operational events. CME Group, however, does not believe that these plans should be standardized or prescriptive in nature due to the unique variables that each exchange, clearing member or market participant may have to deal with during an event.

With respect to the Commission's inquiry of crisis management core requirements, CME Group supports the proposition that each entity should evaluate its business and implement effective crisis management and disaster response plans according to its specific needs. Plans should generally cover system outages, pandemic events, site failures, and wide scale disasters with effective emergency communication strategies for each type of event.

Self-Certification and Clearing Firm Certification

61. How often should a market participant certify that their pre-trade risk controls, post-trade reports and other measures, and system safeguards meet the necessary standards?

As noted elsewhere in our response, prescriptive and inflexible "one-size-fits-all" regulation tends to be inappropriately targeted and have unintended adverse consequences given the variability of participant and market circumstances. Specific pre- and post-trade risk management tools and system safeguards will vary depending on the firm's size, scope, and trading strategies, and the requirements associated with the markets in which the firm operates. The Commission should thus consider establishing principles of an effective supervisory regime that require participants to establish and effectively implement pre- and post-trade risk management and supervisory procedures that are appropriate to the nature of their business and are reasonably designed to control access, effectively monitor trading, and prevent errors as well as other inappropriate activity that poses a material risk of causing a significant market disruption. It is important, as well, to recognize that such principles are equally as important in the context of manually entered orders in an electronic environment as they are in the context of orders entered via automated trading systems because the method of order entry does not impact the effect of a particular order on the market.

Clearly, DCMs have an important role to play in protecting the integrity and orderliness of their markets and have strong incentives to mitigate the potential for market disruption. Market centers should ensure that robust conformance testing, as described in CME Group's response to Questions 56 and 57, clear trade adjustment or cancellation protocols, and automated risk controls reasonably designed to protect the broader market from disruptive activity are in place.

Further, CME Group requires all clearing members to have written risk management policies and procedures in place (see CME Group exchanges' Rule 982) that are commensurate with the firm's size,

clientele and product mix, and the Clearing House Risk Management Group conducts regular risk reviews of clearing members. Given the breadth of risk profiles across the spectrum of clients, it would be unduly burdensome and cost-prohibitive for exchanges or the Commission to mandate specific risk management parameters and the continuous auditing or formal certification thereof, when the individual firms are much better positioned to determine the specific parameters of appropriate pre-and post-trade risk management. Consistent with the statute, we believe that the Commission should take a principles-based rather than a prescriptive approach to supervisory obligations that include the establishment of documented internal control procedures and implementation of risk management controls that are appropriate to the entity's business and reasonably designed to protect against disruptive trading activity that threatens the integrity of the market.

62. Which representative of the market participant should be required to attest that the certification standards have been met? Should it be the market participant's chief executive officer, chief compliance officer, or similar high-ranking corporate official, or some other individual?

Notwithstanding our response to Question 61, CME Group believes that any attestation to the certification of a firm's risk based systems and system safeguards should lie with the supervisors with business line responsibility and knowledge for the systems at issue and be consistent with the financial services model and established industry practices of accountability.

63. Which entity(ies) should receive certifications from market participants? For example, should it be the market participant's clearing firm, its designated self-regulatory organization (if applicable), one or more trading platforms, a registered futures association, the Commission, or other entity?

Notwithstanding our response to Question 61, CME Group believes that certification should be tendered to each level of the supply chain with supervisory authority.

64. Should DCMs, SEFs or clearing member firms be required to audit market participant certifications? What would be covered in an audit and how often should these audits occur? Should the same entity that receives the certification be required to perform the audit?

See response to Question 61 above.

Risk Event Notification Requirements

65. Do commenters believe that risk event notifications would help to better understand and ultimately reduce sources of risk in automated trading environments? What information should be contained in a risk event notification to maximize its value?

CME Group encourages any effort that supports sound supervisory and risk management practices. However, we do not believe there is a need for a new reporting regime along these lines. We believe the best policy is to allow exchanges to define the scope of incident reporting rather than adopt new federal standards the set out inflexible "one size fits all" reporting requirements.

66. What types of risk events should trigger reporting requirements, and what entities should receive risk event notifications from market participants operating ATSs?

67. Which entities should receive risk event notifications?

As described above, our view is that there is no need to pursue new mandatory reporting requirements to address the issue of risk event notifications. Rather, we believe market centers should be afforded flexibility to manage risks in this area and establish best practices that are adaptable.

ATS or Algorithm Identification

Our answers for this section were developed in conjunction with the FIA and its members. We believe this demonstrates that a large section of the industry is harmonized on these topics.

68. Should the Commission define ATS or algorithm for purposes of any ATS identification system that may arise from this Concept Release? If so, how should ATS or algorithm be defined? Should a separate designation be reserved for high frequency trading algorithms and if so, what is the threshold difference?

The definition of ATS is simple and has been in use for a long time. The definition applies to orders generated by a computer system as well as orders that are routed using functionality that manages order submission by automated means (i.e. execution algorithms). By contrast, a "manual" order is that which is submitted to the matching system by an individual directly, typically via keyboard, mouse, or touch screen, and which is routed in its entirety to the match engine at the time of submission. A number of exchanges require an automated/manual indicator to be placed on each order or cancellation message.

CME Group does not believe it is necessary or advisable for the Commission to expend regulatory resources to adopt a new definition for these terms, however, to the extent the Commission felt defining these terms was necessary, any such definitions should be clear and unambiguous and should correspond to related definitions that are already in place. CME Group believes it is appropriate for the Commission to consider establishing principles of a supervisory regime, including effective implementation of documented pre- and post-trade risk management and supervisory procedures that are reasonably designed to control access, effectively monitor trading and prevent errors or other inappropriate activity that poses a material risk of causing a significant market disruption. Further, we urge the Commission to be mindful that any such principles are equally as important in the context of manually entered orders in an electronic environment as they are in the context of orders entered via automated trading systems; the method of order entry simply is not determinative of either the speed of order entry or the potential impact of the participant's orders on the market.

"Algorithm" is a broad term that refers to a step-by-step procedure used for calculation or analysis. Computer programs are often made up of many algorithmic steps, and attempting to identify each calculation, function, or decision point within a program would not be practical, nor could such information be standardized to the point of being useful for regulatory purposes. Large orders represent demand for liquidity and that demand necessarily informs price discovery. Participants typically rely on algorithms to execute large orders today precisely because sophisticated algorithms can employ intelligent real-time analytics that allow traders to significantly reduce the market impact of their orders and enhance the quality of their execution. We do not believe the Commission is equipped or should be involved in regulating the design of algorithms, and should instead focus on regulating conduct that is shown to be harmful to the market.

69. What are the existing practices within trading firms for internally identifying ATSs or algorithms and for tracking their performance, including profit and loss? What elements of existing practices could be leveraged in any ATS or algorithm identification system proposed by the Commission in the future?

Certainly all trading firms track their profit and loss and the source of those profits and losses, however, firms use a variety of methods to do so. Some firms track particular software processes/algorithms, others track based on the trader ID/operator ID, and a number use different trading accounts to track activity. The methods that trading firms use to measure their own market performance do not provide any precedent that can be leveraged for algorithm identification.

70. The Commission understands that an ATS may consist of numerous algorithms, each of which contributes to a trading decision. If an algorithm-based identification system is proposed, which of the potentially multiple algorithms that constitute an ATS should carry the ID? In addition, what degree of change to an algorithm should necessitate the use of a new ID, and how often does this change typically occur? What is the appropriate definition of "algorithm" for purposes of an algorithm identification system?

The question itself highlights why an effort to create an identification system based on algorithmic processes is not advisable. Computer programs might be made up of numerous algorithms that make decisions or contribute information in a decision tree process. Identifying which of these algorithms best identifies the actions of the automated system as a whole is not possible. While it is possible that someone may use a very simple program to trade, such that the program can be defined as a single algorithm, such occurrences are exceptions, not the rule.

However, all U.S. exchanges have existing rules and methods for identifying the terminal operators/ administrators or responsible persons that enter orders or operate automated systems active on markets. This identification system has been in place for many years, and is a data element on all orders. For instance Rule 576 (Identification of Globex Terminal Operators), codified in each of CME Group's exchanges' rulebooks, requires that each order entered into CME Globex include the submission of an operator ID, also referred to as the "Tag 50 ID" or "User ID", which is unique to the party who entered the order. For orders entered manually, the Tag 50 ID must be unique to the individual entering the order into CME Globex. For orders entered by an ATS, the Tag 50 ID must be unique to the person,[16] or the identified team[17] of persons on the same shift, who are responsible for the operation of the ATS. All Tag 50 IDs must be unique at the level of the clearing member firm. The operator ID has proven to be an effective identification tool and is heavily used in market participant risk and monitoring systems, in

[16] The individual who administers and/or monitors the ATS is considered to be the ATS operator. The person in this role typically initiates or disables particular algorithms or strategies, adjusts the parameters of the automated program(s), or monitors the live trading of the ATS. All ATS orders must be submitted with a Tag 50 ID that identifies the person who operates, administers and/or monitors the ATS. *See* CME Group, "Identification and Registration of Globex Operator IDs (Tag 50 IDs)" Market Regulation Advisory Notice (Sept. 10, 2009), available at: http://www.cmegroup.com/rulebook/files/CME_Group_RA0908-5.pdf.

[17] If there are multiple individuals who *simultaneously* work together to operate the ATS, they may qualify to be an "ATS Team" and assigned a single Tag 50 ID that represents all of individuals on the team. For example, a firm may have one person who adjusts pricing parameters, but others who continuously monitor positions or risk or adjust trading size parameters. In these situations, the individuals on the ATS Team may use a single Tag 50 ID. If an ATS operator or an ATS Team is responsible for multiple trading models, algorithms, programs, or systems which trade the same product, and which potentially could trade opposite one another, then each model, algorithm, program, or system must be assigned a unique Tag 50 ID. See *Id*.

clearing firm monitoring systems, and in exchange risk and regulatory systems. In thinking about any identification system, the Commission should consider the relevant and effective tools that have long been employed within the industry and apply a principles based approach to their management.

71. If the identification system resides at the ATS level, how should such IDs be structured to ensure that they are nonetheless sufficiently granular to identify components that may be leading or have led to unstable market conditions?

As discussed above, it is not feasible to come up with a universal way to identify the granular components of a software process that may have led to unstable market conditions. A better way is to identify the people that are running the software through the use of existing unique operator IDs, and if something goes wrong, hold them accountable.

72. What message traffic between an ATS and a trading platform should include the ATS or algorithm ID (all messages, orders only, etc.)?

As discussed above, developing a meaningful method of algorithm identification is not a practical idea.

73. What relationship should this ATS ID have to the legal entity identifier (LEI)?

The LEI has been designed to identify the legal entity that is the principal, or owner of a transaction. In the futures industry, ownership is best represented in other data points such as the firm, the account, or the connection ID. The new OCR rule looks to further develop the process for identifying account owners to the Commission. The Commission should avoid a drastic change to the data model that currently works in the futures industry.

It is important to note that an automated trading system may be designed and developed for the use of multiple end users, particularly in the case of FCM or vendor provided execution tools. Such tools would not have a one-to-one mapping with the beneficial owner behind the trade executed through the tool.

Data Reasonability Checks

74. Please describe existing practices in the industry concerning how and the extent to which ATSs use (1) market data; and (2) news and information providers, including social media, to inform trading decisions.

75. The Commission requests comment regarding any risk controls, including reasonability checks, currently being used by market participants operating ATSs to review market data and news and information providers, including social media. Please describe the risk control, including the purpose of the control, the extent of its use among derivatives market participants, and any other aspects of the risk control that you believe would be helpful for the Commission to understand.

Market participants use a wide variety of automated trading systems that incorporate market data, news, and social media to inform trading decisions. CME Group would support firms that utilize news and social media to institute prudent reasonability checks to reduce the likelihood of invalid or erroneous data or information being utilized to make trading decisions.

Registration of Firms Operating ATSs

Our answers for this section were developed in conjunction with the FIA and its members. We believe this demonstrates that a large section of the industry is harmonized on these topics.

78. Should firms operating ATSs in CFTC-regulated markets, but not otherwise registered with the Commission, be required to register with the CFTC? If so, please explain.

CME Group does not believe that requiring the registration of firms deploying automated trading systems would provide any significant regulatory benefit and that current practices provide the required regulatory tools that registration would address. A registration requirement is typically designed to provide a regulator, such as the Commission, with certain identification information regarding market participants, or as a means to require registrants to meet certain standards or comply with requirements to which they are not already subject. In many ways, the exchanges have addressed these important registration goals by requiring firm's to use unique identifications which are included as part of each order message sent to the exchange and maintained in the exchange's automated audit trail. For instance, CME Group exchanges require that every order entered into CME Globex identify whether the order was entered by manual or automated means in FIX Tag 1028 on the order entry message.[18] By requiring such registration, exchanges also set certain obligations for firms based on their type or level of activity—including the application of robust risk controls.

We believe the information currently collected by the futures exchanges in their audit trail — to which the Commission has access — goes a long way to satisfying the Commission's goals regarding registration. Today, among the information on each message sent to an exchange, and thus included within the exchange's audit trail, are the following:

- A unique operator registration identification, such as a Tag 50 or Tag 116, which identifies the firm, head trader, traders or systems administered under the head trader, and contact information for the firm and head trader;
- The clearing firm account, execution firm ID, and client order ID;
- An exchange code;
- A unique sequential number, date and time;
- An identifier indicating whether the order was generated manually or by automated means (ex. Tag 1028);
- The type of message (e.g., new order, modify, cancel, execution, mass quote, quote request);
- On execution messages, an indicator as to whether the order was partially filled, completely filled, modified, rejected, expired or the trade canceled;
- On all cancel messages not triggered by an Order Cancel Request, an indicator of origin of cancellation;
- For rejected messages, an indicator of the reason for the rejection;
- The contract and maturity date, the type of order and whether it is to buy or sell, and the number of contracts;

[18] *See* CME, CBOT, KCBOT, NYMEX, and COMEX exchange Rules 536.B. (Globex Order Entry).

- The limit price or stop price, if any; and
- The type of customer and whether it is for a customer or firm account.

79. Please identify the firm characteristics, trading practices, or technologies that could be used to trigger a registration requirement.

As discussed above, we believe that current practice provides the necessary regulatory oversight of market participants and that audit trail information provides the Commission any necessary surveillance, analysis, and research information sufficient to protect the integrity of U.S. markets.

80. Should all firms deploying ATS be required to register, and should there be different standards for firms deploying HFT strategies? What are the appropriate thresholds levels below which registration would not be required?

As discussed above, we believe that current practice provides the necessary regulatory oversight of market participants and that audit trail information provides the Commission the necessary surveillance, analysis, and research information sufficient to protect the integrity of U.S. markets. Moreover, there is no empirical evidence to date that supports the proposition that a firm deploying a HFT strategy is more likely to engage in disruptive trade practices, than a firm executing a non-HFT strategy, thus we do not support a regime that institutes different standards based upon the trading strategy or style utilized.

81. Since the floor trader distinction only addresses proprietary traders, please explain whether there is any other category of market participant, such as those deploying ATS or HFT strategies and trading on behalf of clients (aside from market participants already subject to Commission jurisdiction, such as Introducing Brokers and FCMs) that the Commission should consider with respect to potential registration requirements.

As discussed above, we believe that current practice provides the necessary regulatory oversight of market participants and that audit trail information provides the Commission any necessary surveillance, analysis, and research information sufficient to protect the integrity of U.S. markets.

82. Should software firms providing algorithms be required to register, and under what authority? What standards should apply to such firms?

Registration of software firms that provide algorithms does not seem necessary. Existing Commission staff guidance exempts newsletters and computerized trading systems from registration as a Commodity Trading Advisor when communications are generic in nature and are not found to be targeted at a specific customer's needs. As to software firms providing algorithms, they are presumably doing so either generically or at the direction of the market participant that would otherwise be under the jurisdiction of the exchange.

83. Please identify the functionalities discussed in this Concept Release that could be applied to floor brokers that operate ATSs. Are there any other controls not mentioned in this Concept Release that should be under consideration?

As noted elsewhere, the Commission should consider establishing principles of an effective supervisory regime that require market participants to establish and effectively implement pre- and post-trade risk management and supervisory procedures that are appropriate to the nature of their business and are reasonably designed to control access, effectively monitor trading, and prevent errors.

84. Please supply any information or data that would help the Commission in deciding whether firms may or may not meet the definition of "floor trader" in § 1a(23) of the Act.

85. Do you believe that the registration of such firms as "floor traders" would effectuate the purposes of the CEA to deter and detect price manipulation or any other disruptions to market integrity?

We believe that the use of the term "floor trader" is an anachronism that is not relevant in the context of automated trading environments. Further, given the Commission's robust regulatory authority over markets within its jurisdiction, we do not believe that registration provides any significant enhancements to that authority under the CEA.

86. Considering the broad deployment of automated trading systems across both equities and derivatives markets, the Commission seeks to understand the appropriate level of coordination between itself and the SEC in defining and applying possible standards to the ATS and HFT trading space. How closely should the CFTC and SEC coordinate on possible rules and requirements for trading firms? The Commission also seeks public comment on the appropriate level of coordinated oversight between itself and relevant Self-Regulatory Organizations such as National Futures Association and FINRA.

We support the SEC and the CFTC continuing to coordinate regulatory activity through the Joint Advisory Committee and through informal consultation on rulemakings. In addition, we believe that certain standards, such as circuit breakers, can reasonably be applied to the equities and derivatives markets. However, given the fundamental market structure and regulatory differences between the two markets, we do not believe that any single set of rules would be appropriate.

87. Using the Flash Crash as an example, is it important to have identical definitions and remedies in the case of ATS and HFT registration requirements or do the existing market controls, such as circuit breakers, provide the necessary market protections in both the equities and derivatives markets? If the rules are not coordinated, what impact would this have on market interaction and oversight?

The Flash Crash tested the risk mitigation features proactively adopted by the futures industry. In our view, this example proved their relative effectiveness. It also demonstrated the contrast to the equities markets which, in large part, did not have comparable risk mitigation techniques in place at the time. We believe the equities markets would be well served to adopt similar risk control mechanisms. The financial markets are connected in certain respects and market participants frequently employ strategies that span across the markets and involve simultaneous trading of related products. For these reasons, we believe the entirety of the financial markets would be well served if there was wide scale adoption of the existing and proven risk mitigation controls already employed in the futures markets.

88. If trading venues apply mandatory functionalities to access derivatives markets, what benefit would a registration requirement provide to the Commission?

We do not believe that registration of types of participants or their automated trading systems provides significant benefits to the marketplace or would enhance the Commission's implementation of the CEA.

Market Quality Data

89. What market quality indicators are in place today? Please describe the metrics, how and where they are deployed, and how market participants access these indicators and at what cost.

To a very large extent, the mentioned indicators (and other not mentioned) are useful when sent in real-time so that they can be considered under prevailing market conditions. Aggregated or averaged statistics provide nominal value because they are necessarily out of context, meaning they are not matched to the prevailing market conditions that existed for a given point in time.[19] Market conditions are constantly changing and evolving, and therefore the utility of indicators and other statistics vary across the spectrum of market participants, including many who have little to no interest. CME Group provides market data to all market participants real-time and, in doing so, enables them to capture and utilize the data in the manner that is most meaningful to their particular needs. Thus, continuing to make real-time market data available to participants who wish to utilize the data, and affording them the flexibility to determine for themselves how best to utilize the data, is the most efficient outcome for the marketplace.

90. What value would each of the market quality metrics described above [see section III.F.2] provide to market participants receiving them? If possible, please be specific about how each market quality measure could be used to enhance reliability and risk management of ATSs.

91. Conversely, could any of the market quality metrics described above [see section III.F.2] be used by market participants to manipulate the order book, to identify competitors' trading strategies, or to engage in other trading activities that do not contribute to effective risk management and efficient discovery the traded asset's economic value? If so, please provide specific information regarding how such information could be misused. If possible, please provide recommendations regarding steps the Commission could take to prevent misuse.

92. Are there additional market quality metrics that the Commission should contemplate requiring exchanges to provide? If so, what value would they provide and how would they be used?

93. If the Commission determines that measures should be calculated in the same way by various exchanges in order to provide comparable measures of market quality, then how, specifically, should each of the above mentioned metrics be calculated in order to ensure that they are most valuable to market participants?

As stated above, it would be very difficult to set metrics across all markets, instruments, combinations of instruments, and platforms. The Commission should allow the industry to continue to innovate on its own, and at the very least postpone any consideration of prescribed metrics or thresholds until there is further dialogue and experience on these issues. Moreover, such consideration must be postponed until the industry, including the Commission, has conducted a thorough examination on the impact and costs associated with such measures and their effect on the efficiency and reliability of the markets.

[19] For example, any metric that calls for an average would be extremely difficult to produce real-time because they require a durational summing in order to be meaningful, but such a calculation would be necessarily dynamic and therefore extraordinarily difficult to calculate.

94. What timing and mode of dissemination is appropriate for each metric? For example, should measures be provided as daily averages?

CME Group currently disseminates trade and quote information in real-time. Market participants are therefore able to derive statistics on their own from this information. As discussed in response to Question 89, aggregated or averaged metrics have less value to market participants.

95. Does the liquidity of a given market impact which market quality metrics would be reliable and useful when calculated for that market? If so, which metrics are inapplicable in less liquid markets, and why? What liquidity measures and thresholds are relevant to determining which metrics should apply to a given market?

Yes, the particular market dynamics vary by market which is why CME Group believes the most valuable piece of information to our customers is the real-time data that we already distribute.

Market Quality Incentives

96. Should exchanges impose a minimum time period for which orders must remain on the order book before they can be withdrawn? If so, should this minimum resting time requirement apply to orders of all sizes or be restricted to orders smaller than a specific threshold? If there should be a specific threshold, how should that threshold be determined?

No. The Commission's request for comment pertaining to the implementation of a mandatory minimum time threshold for which orders must remain in the order book before they can be modified or canceled appears to stem from a limited body of research that implies high-frequency trading and/or automated trading systems may operate in a manner that is disruptive to the market. Despite this assertion, studies and empirical evidence demonstrate that the advent of electronic trading and the corollary growth of algorithmic trading have dramatically enhanced liquidity and trading efficiency in futures markets, and market participants have benefited on many different levels as a result of this evolution. Technology and market structures have elevated the speed with which liquidity can be sourced, consumed and withdrawn in response to market factors. Since many of the observations from high frequency trading are due to more efficient provision of liquidity, an imposed minimum time period for which orders must be exposed would effectively reverse any market quality gains by adversely affecting the liquidity supply and would undermine the effective and efficient functioning of the markets. Thus, CME Group adamantly opposes a minimum time-in-force for which orders must be exposed to the market and believes that the Commission would be better suited to focus its efforts on the enforcement of its existing rules rather than attempting to impose strict regulation that would have a significant negative impact on the structure and performance of the existing market, considerably stifle innovation, disrupt legitimate trading strategies, increase market risk, and defeat the important benefits high frequency trading brings to the marketplace.

97. The Commission seeks to understand where time-weighted Pro Rata trade allocation is currently being utilized and what the effects have been. Please note examples from exchanges and, to the extent possible, please comment on the impact that such matching algorithms have had on the amount of time resting orders are left in the order book, as well as on other aspects of market quality.

As explained in "Recommendations for Equitable Allocation of Trades in High Frequency Trading Environments," a time-weighted allocation would "allocate matched trades based upon the actual time that the orders have been resting in the Order Book relative to the times that other orders have been

resting in the Order Book—and not based on the ordinal ranking of the respective time stamps of resting orders."[20] CME Group does not employ time-weighted Pro-Rata trade allocations for products on its DCMs – our match algorithms, which are publicly available, are primarily based on pure or combinations of FIFO (First-In/First-Out) and Pro-Rata allocations.

Our Pro-Rata allocation matches fills based on the resting order's proportional size of the cumulative bid or offer. This is especially valuable in markets with low price volatility where a FIFO allocation could result in a large limit order at the top of the book to maintain a priority position for longer periods of time, effectively blocking later entrants from receiving any fill volume. The Pro-Rata allocation enables all traders to join the queue at a particular price level and have an opportunity to compete for a fill, independent of their order's relative time priority. Further, since time is not factored into the allocation, like-sized orders at the best bid or offer are at equal risk of being allocated a fill from an aggressor order.

In certain markets, we employ a split FIFO/Pro-Rata allocation. The FIFO component motivates traders to narrow the bid/ask spread and rewards traders who are among the first to enter orders at the top of the queue. The Pro-Rata component leads to greater participation and depth because orders other than those near the top of the time priority queue still have an opportunity to be allocated a portion of the fill. The combination of the two match algorithms therefore helps to foster tight bid/ask spreads and broad participation in the market. It is important for the Commission to note, however, that there are a variety of factors that a marketplace must consider when instituting a particular type of matching algorithm in a market, some of which include, but are not limited to, market type, bid/ask spread, minimum tick sizes, liquidity, and price volatility.

98. If exchanges aggregated multiple, small orders entered by the same entity with the intent of abusing rounding conventions to gain a disproportionate share of allocations, what criteria should exchanges use to distinguish such orders from those that are entered by the same legal entity for legitimate trading purposes? Are there empirical patterns that could be used to reliably identify such manipulative intent?

Generally, CME Group's Pro-Rata match algorithm rounds fractional allocations down to the nearest whole integer.[21] In a rounding-down environment, rather than seeing a market participant abusing a rounding convention to gain a greater allocation as presented in Question 98, we could see an entity intending to abuse rounding conventions to avoid an allocation (i.e., entering multiple small-lot orders that would receive a decimal allocation, rounded down). In ascertaining whether such orders were entered for bona fide reasons, the same criteria would be considered irrespective of the rounding convention. This would include analyzing whether there was an imbalance in the quantities entered on opposite sides of the market, the size of the resting book relative to the size of the order, the relative size of any canceled orders, the exposure time of canceled orders, and the number of instances and pattern of the purported activity. However, because each case would tend to differ, the designation of hard-and-fast criteria should be avoided.

[20] John McPartland, "Recommendations for Equitable Allocation of Trades in High Frequency Trading Environments" (July 25, 2013), 10, available at http://www.chicagofed.org/webpages/publications/policy_discussion_papers/2013/pdp_1.cfm.

[21] An exception is the match algorithm for covered options strategies where futures are allocated based on the delta of the option, which could result in decimal or fractional allocations of futures. For incoming orders, the decimal futures are rounded up to the nearest integer if the calculated futures decimal is 0.50 or greater and rounded down if the decimal is 0.49 or less. For resting orders, the decimal futures are always rounded down.

99. Would batched order processing increase the number of milliseconds that are necessary for correlations among related securities to be established? If so, what specific costs would result from this change and how do those costs compare to the potential benefits described in recent research?

CME Group believes that batched order processing would substantially change the overall dynamic of an otherwise well-functioning marketplace. Moreover, the costs and negative impacts associated with such a model, not the least of which is the significant disruption in the fluidity and certainty of the market that would be caused by the continuous opening and closing of the market (auction period), are in many ways incalculable or unpredictable.

We anticipate there are significant market impacts associated with batched order processing that include, but are not limited to, uncertainty to market participants that they would be able to hit the bid or lift the offer due to the market's continuous calculation of the opening price, dislocations in related markets unless fully synchronized, and/or a negative impact on spread markets in the context of how market participants are influenced in making implied trading decisions. The idea that batch auctions will eliminate a HFT arms race is simply an incorrect assumption. For example, market participants will always seek to find a way to respond to an amalgamation. Therefore, market participants will likely develop technologies that listen or react to orders up to the very end of the auction period, and then either withdraw or amend their orders, or submit new ones, thus distilling the intended impact of the auction functionality. In reality, the auction may create a greater need for speed and smaller increments – *i.e.*, at the end of each auction period to see who can react the fastest to the market data produced during that period. Further, while this is taking place, the market data will be impacting other corollary markets, including equity markets, which may not be subject to price auctions, thus injecting unnecessary and greater risk into the market place.

CME Group believes that rules should be promulgated to provide greater certainty and price transparency to futures markets. We thus urge the Commission to avoid taking steps that would diverge from this premise.

100. What costs and benefits result from providing market participants with real-time access to information about the order book that extends beyond aggregate size available at a limit price? Is there a legitimate economic benefit that results from market participants (both human participants, and ATSs) accessing such information? Is it possible for market participants to use such information to manipulate the order book?

We do not believe the Commission should prescribe what information an Exchange can and cannot produce to the market in the context of market data. Rather, the Commission should support steps that provide greater transparency to the market by way of disclosure (i.e. performance characteristics, associated fees, types of feeds) so as to promote competitive decision-making and drive optimal market structures for specific products. Generally, CME Group believes that for a given product, all market data should be consistent and made available to all market participants.

101. The Commission seeks to understand whether any of the recommendations above [see section III.F.3] are inapplicable or irrelevant to markets subject to the CEA. If so, please indicate which recommendation(s) and what makes it inapplicable or irrelevant to those markets.

CME Group emphasizes again, the Commission should avoid being overly prescriptive in its regulation. The Commission's preamble and associated questions to section III.F.3 are set forth in the context of

recommendations that would "disincentivize trading strategies that do not contribute to efficient price discovery." To that end, the Commission, through its authority under the CEA, has already codified rules and regulations that prohibit manipulation, disruption, and other abusive or fraudulent activity that would be detrimental to the interest and welfare of a well-functioning marketplace. Moreover, section III.F.3 specifically seeks to address how, based on the Commission's referenced research,[22] the six recommendations cited may in some manner preemptively preclude automated trading systems, particularly HFT strategies, from engaging in behavior or trading techniques generally "considered to be detrimental and not capital formative."[23] Such strategies or techniques indirectly referenced by the Commission through its reliance on "Recommendations for Equitable Allocation of Trades in High Frequency Trading Environments," as supportive material include spoofing, layering, and quote stuffing.[24] However, the Commission has already promulgated rules that would serve to deter such behavior, thus the Commission is appropriately armed with the regulation it needs to serve its purpose and punish those market participants looking to engage in bad acts in all markets within its jurisdiction.[25] Moreover, any attempt at eliminating violative behavior before it can occur should be looked at positively, to the extent that any change to the trade match and trade allocation process does not also lead to the demise/frustration of innovation, legitimate trading strategies, or technological advancement.

Notwithstanding the above concept, any attempt to implement the recommendations cited by the Commission in section III.F.3 would have to be done after significant detailed and granular analysis on a jurisdiction by jurisdiction, market by market, and contract by contract basis to fully understand the impact of such regulation. CME Group believes futures exchanges, through recommendations and feedback by the broader industry, are in the best position to appropriately weigh the costs and benefits associated with each of the proposed recommendations and contemplate the varying effects on existing market structures and on price discovery. For instance, with regard to the Commission's recommendation to require orders that are not fully visible in the order book to go to the end of the queue with respect to trade allocation, CME Group's algorithm for iceberg orders already puts the "refreshed quantity" in the back of the queue. This was designed by CME Group through effective and efficient innovation and thorough understanding of the affects such orders may have on the existing market structure, not due to regulation. As a result, CME Group has implemented an order type that is not susceptible to gaming from the standpoint that an iceberg can retain FIFO queue priority without being fully transparent regarding its total size.

Policies and Procedures to Identify "Related Contracts"

102. If you are a DCM, please address whether you have (i) identified all contracts that are linked to, or are a substitute for, other contracts either listed on your market or on other trading venues; and, if so, (ii) coordinated your risk controls with any similar controls placed on those other contracts. If you have not identified such contracts and coordinated risk controls on such contracts, please address any other means by which you are addressing risk controls applicable to contracts that are linked to, or are a substitute for, other contracts listed on your exchange or on other trading venues.

[22] *See* Concept Release footnotes 113 – 117.
[23] *See McPartland, supra* note 14 at pg 4.
[24] *Id.*at pg 5.
[25] See for example, Section 4c(a)(5) of the CEA.

103. Please explain whether it would be beneficial for exchanges to develop and document policies and procedures for regularly reviewing contracts on other exchanges in order to identify those that are "linked to" or that are "a substitute for" contracts listed on its own market.

CME Group has long implemented Market Wide Circuit breakers in its stock index futures that are coordinated with the cash equity market in accordance with NYSE Rule 80B. Moreover, we have various price limit levels associated with all of our stock index futures products, including international stock index futures such as the Nikkei 225 futures and U.S. Dollar-Denominated Ibovespa futures. To the extent that we have cross licensed products, the stock index price limits are generally set at similar, but not necessarily identical, levels.

Standardize and Simplify Order Types

104. Please explain whether the standardization and simplification of order types that have complex logic embedded within them would reduce the potential for instability and other market disruptions. If not, what other measures could achieve the same effect?

105. If the Commission were to consider the standardization and simplification of order types in a future rulemaking, please identify who should conduct this review (i.e., the Commission, trading platforms, or other parties).

CME Group order functionality on its CME Globex platform offers convenience and flexibility to meet a wide variety of individual trading needs. The availability of specific order types varies based on how customers access CME Globex and the products they trade. See **Appendix C** for a list of CME Group supported order types and functionality on CME Globex by product line.

The Commission inquires whether it should codify rules that standardize order types for the purpose of reducing the potential for instability resulting from unexpected interactions of multiple automated trading systems using multiple means of executing within the order book; however the context within which the Commission seeks comment on this issue is primarily grounded in the complexity demonstrated by order proliferation within equity markets. Market structure, recently introduced regulation,[26] and the increased competition for order flow by equity exchanges represent the present dynamic factors that are attributable to the current profusion of order types in the securities industry. This reality is not present within the futures market microstructure, thus there is no need to standardize or simplify the existing order archetype. Notwithstanding this, CME Group strongly urges the

[26] As noted in in the Trader Magazine article, referenced in footnote 121 of the Concept Release, the implementation of the Regulation National Market System ("Reg NMS") is primarily to blame for the unnecessary complexities and thousands of exchange order types prevalent in today's U.S. stock markets. Specifically the Security and Exchange Commission's adoption of Rule 610 (The Access Rule requires trading facilities to provide fair and equal access to pricing information) and Rule 611 (The Order Protection Rule, commonly known as the "trade-though rule," is designed to ensure that investors always receive the best explicit price no matter the venue that they send their order to placing an obligation on the exchange to onward route orders if better prices are available.) have largely been specifically targeted as the root cause for this phenomenon by industry pundits. *See* Will Psomadelis, "Know your Counterparty: The New Paradigm of Equity Market Microstructure and The Impact to Institutional Investors," Schroeders (Aug. 2013), available at http://www.schroders.com/staticfiles/Schroders/Sites/australia/pdf/30082013-know-thy-counterparty.pdf.
See also, Haim Bodek, "Locked Markets, Priority and Why HFTs Have an Advantage: Part 1, TABB Forum (Oct. 11, 2012), available at http://tabbforum.com/opinions/locked-markets-priority-and-why-hfts-have-an-advantage-part-i. *See also,* Haim Bodek, "Locked Markets, Priority and Why HFTs Have an Advantage: Part 2: Hide & Light," TABB Forum (Oct. 16, 2012), available at http://tabbforum.com/opinions/locked-markets-priority-and-why-hfts-have-an-advantage-part-2-hide-and-light. *See also,* Haim Bodek, "Why HFTs Have an Advantage: Part 3: Intermarket Sweep Orders," TABB Forum (Oct. 29, 2012), available at http://tabbforum.com/opinions/why-hfts-have-an-advantage-part-3-intermarket-sweep-orders.

Commission to avoid formal regulation and instead focus on an approach, inclusive of opinions at all levels of the industry supply chain, which promotes best practices and continued innovation.

General Questions Regarding All Risk Controls

106. For each of the specified controls described above [see sections III.C-F], please indicate whether you are already using the control on customer and/or proprietary orders. If applicable, please also indicate how widely you believe the control is currently being used in the market, and how consistent the application of the control is among firms.

107. If possible, please indicate specific costs associated with implementing each of the risk controls described above [see sections III.C-F]. Please include detailed estimates, distinguishing between the cost of developing the functionality, the cost of implementation, and the cost of ongoing operations.

108. Please describe the specific benefits associated with each of the risk controls. Where possible, please indicate the market participant category(ies) to which the benefit would accrue.

CME Group employs a variety of risk management and volatility mitigation functionality on its Globex platform that applies to all orders entered into its electronic markets, including many of the risk controls outlined in sections III.C-F. CME Group's commitment to protecting the integrity of its markets is reflected in the continuous evolution of its risk management capabilities and services and its success in identifying innovative solutions to the risk management challenges arising from the dynamic changes in our industry. A high level description of many of the risk management assets CME Group employs to protect against market disruptions and their benefits may be found in **Appendix A**.

To the extent the Commission seeks specific costs associated with implementing risk controls described in section III.C-F, such development, implementation, and ongoing operational figures will vary widely across the futures industry supply chain. CME Group has, and continues to invest heavily in its risk controls and system safeguard mechanisms; however we do not believe the public forum is the proper venue to provide detailed analysis to the Commission on the significant complex capital expenditures associated with CME Group's continuing effort to provide safe and reliable markets in this context. Moreover, such comprehensive analysis would be unduly burdensome and come with significant internal costs.

109. Please comment on the appropriate order of implementation and timeline for each risk control, including any distinctions that should be made based on the category of registrant or market participant implementing the same or similar control, whether the market participant is using DMA, and whether implementation is already in place for certain categories.

As discussed elsewhere in our responses to this Concept Release, CME Group does not believe in a "one-size-fits-all" approach to regulation. Rather, we strongly support a principles based methodology in assessing risk controls and system safeguards applications given the broad variety of entities within the futures industry supply chain and their varying functions and needs. By implementing a best practices approach, similar to the FIA's "Market Access Risk Management Recommendations" and the Professional Traders Group's "Recommendations for Risk Controls for Trading Firms," in conjunction with the previously established and significant steps taken by derivatives market participants, including DCMs, FCMs, clearing members and traders, and those efforts already taken by the Commission pertaining to required risk controls, the industry will be well positioned to effectively identify, measure, manage, and mitigate risk in a responsible and prudent manner. Moreover, such design will allow for the appropriate level of flexibility and continued innovation needed to augment and improve appropriate

risk controls as technology advances.

See also CME Group's response to Questions 7, 112, and 113.

110. Are any of the risk controls unnecessary, impractical for commercial or technological reasons, or inadvisable? If so, please note the control and provide reasons why.

CME Group generally supports the need for appropriate risk controls and systems to avoid or minimize the potential for market disruptions or disorderly trading; however, we take the position that the relevancy and effectiveness of the each risk control listed by the Commission in this Concept Release *may* have a wide array of practical or impractical application determinate on a multitude of factors that include, but are not limited to, the nature of entity utilizing such controls, the risk objective the control seeks to eliminate or mitigate, costs associated with design, implementation, and maintenance, and/or potential effects to market dynamics and price discovery. Hence, we support a principles based approach that is designed to provide the needed plasticity in a diversified marketplace.

For example, CME Group implements price banding, maximum order quantities, market and stop order protection points, stop logic functionality, firm-level credit controls, messaging controls and velocity logic all of which serve to substantially reduce the likelihood and/or impact of disruptive trading. The specific parameters of each of these risk management tools are carefully considered and are routinely evaluated by exchange staff that has the expertise necessary to establish parameters that effectively protect market integrity without inappropriately interfering in the efficient and reliable functioning of the market. While an exchange implements such functionality in the context of protecting broader market vulnerabilities to disruptive trading or significant market events, this functionality cannot replace the more granular risk management controls that clearing firms should have in place that are dependent on the unique characteristics of their clients.

111. A number of the pre-trade risk controls contemplated above are similar protections at distinct points in the life of an order.

a. Please comment on the utility of redundant pre-trade risk controls and the desirability of risk control systems in which controls are placed at one or more than one focal points.

b. If pre-trade risk controls should reside at one or more than one focal point, then please identify, for each risk control, what that focal point should be?

We believe that effective risk management is necessary at the trading firm, clearing firm, and exchange levels. A holistic approach with redundant overlapping supervisory obligations offers the most robust protection to markets by engaging all levels of the supply chain in the commitment to preserving market integrity and eliminating the possibility that a single point of failure will cause significant harm to the market. For instance, the CME Group Messaging Efficiency Program is designed to encourage responsible messaging practices and discourage excessive messaging that does not contribute to market quality. Although CME Group's Messaging Efficiency Program is an effective deterrent, it may be prudent for certain trading firms, in the context of algorithmic trading, to institute messaging throttles to prevent an algorithm from sending too many messages in a specified period and assure that it is functioning properly. Registered entities however must retain the flexibility to determine the exact nature of risk controls used.

112. Are there risk controls that should be implemented across multiple entity types? If so, which controls and for which types of entities should they apply? Also, please comment generally on the factors the Commission should consider when determining the appropriate entity(ies)

upon which to place a risk control requirement that could pertain to more than one entity.

CME Group believes that effective risk management protocols are necessary at each level of the supply chain, that is, at the trading firm, clearing firm and the exchange levels, thereby substantially reducing the likelihood that a single point of failure will threaten the integrity or stability of the market. CME Group supports adopting principles-based rules that require effective supervision and risk management programs, consistent with the nature of the business being conducted. Effective programs at the firm level should feature robust pre- and post-trade risk management protocols and supervisory procedures that are reasonably designed to control access, effectively monitor trading, and prevent errors as well as other inappropriate activity that poses a material risk of causing significant market disruption. In the case of trading firms, these controls commonly include, for example, credit, position and loss limits, order size restrictions, price sanity checks and automated execution throttles, all of which serve to mitigate the potential for disruptive activity. As the markets have evolved, the sophistication of these risk management capabilities has evolved as well. Additionally, it is important to recognize that such principles are equally important in the context of manually entered orders which are equally capable of causing market disruptions in an electronic trading environment.

CME Group rules require all clearing members to have written risk management policies and procedures in place that are commensurate with the firm's size, clientele and product mix, and CME Group's Clearing House Risk Management Group conducts regular risk reviews of clearing members to assess compliance with these standards. Given the breadth of risk profiles across the spectrum of clients, it would be inappropriate for exchanges or federal regulators to mandate "one-size-fits-all" risk management parameters when the firm is much better positioned, given its relationship to the client and its knowledge of the client's trading, to determine the specific parameters of appropriate risk management. Clearing firms, who must financially guarantee the trading activity of their clients, also have strong incentives to manage their clients' risk exposures and routinely have numerous automated pre-trade and post-trade risk controls built into the proprietary or vendor-provided order entry systems they offer.

CME Group provides firms with a number of tools, as discussed above, to assist them in managing risk, including, for example, its Drop Copy service and FirmSoft order management Tool. Further, CME Group believes that exchanges have an important role to play in protecting the integrity and orderliness of their markets and have strong incentives to mitigate the potential for market disruptions. Beyond the granular pre-trade and post-trade risk controls firms employ at the account/trader level to reduce the potential for disruptive trading, CME Group employs a variety of risk management and volatility mitigation functionalities on its Globex platform that apply to all orders entered into its electronic markets. For example, CME Group's price banding, maximum order quantities, market and stop order protection points, stop logic functionality, firm-level credit controls, messaging controls, cancel-on disconnect functionality and velocity logic all serve to substantially reduce the likelihood and/or impact of disruptive trading. (A number of these mechanisms are discussed in more detail in **Appendix A**.) The specific parameters of each of these risk management tools are carefully considered and are routinely evaluated by exchange personnel who have the expertise necessary to establish parameters that effectively protect market integrity without inappropriately interfering in the efficient and reliable functioning of the market. Of course, while an exchange implements such functionality in the context of protecting broader market vulnerabilities to disruptive trading, this functionality cannot replace the more granular risk management controls that firms should have in place and execute at the client level.

However, as noted above, the Commission should consider establishing principles of an effective supervisory regime that require registrants to establish and effectively implement pre- and post-trade risk management and supervisory procedures that are appropriate to the nature of their business and

are reasonably designed to control access, effectively monitor trading and prevent errors as well as other inappropriate activity that poses a material risk of causing a significant market disruption. The industry has committed significant effort over the past several years to examine and articulate best practices in this regard which should inform the Commission's considerations in this area. It is essential, as well, to recognize that such principles are equally as important in the context of manually entered orders in an electronic environment as they are in the context of orders entered via automated trading systems because the method of order entry does not impact the effect of a particular order on the market.

113. Are there controls that should not be considered for overlapping implementation across exchanges, clearing members and market participants? If so, please explain which ones and why.

114. Each of the risk controls is described in general, principles-based terms. Should the Commission specify more granular or specific requirements with respect to any of the controls to improve their effectiveness or provide greater clarity to industry participants? If so, please identify the relevant control and the additional granularity or specificity that the Commission should provide. Are any of the controls, as currently drafted, inadequate to achieve the desired risk-reduction?

As noted above, CME Group cautions against adopting overly prescriptive and inflexible "one-size-fits-all" regulation. Such regulation tends to be inappropriately targeted, ineffective and have unintended adverse consequences given the variability of participant and market circumstances. Prescriptive rules also often become quickly outdated in areas where markets and technology rapidly evolve, and there is little room for continuing innovation within the confines of inflexible and highly rules-based systems. Given the exceptional breadth of automated trading systems and strategies and the dynamic evolution of markets and technology, any effort to promulgate prescriptive rules in this regard is therefore likely to be counterproductive.

115. To the extent that there is any need to standardize or provide greater specificity regarding any measures discussed in this Concept Release, including those that reflect industry best practices, please describe the best approach to achieve such standardization (*i.e.*, through Commission regulation, Commission-sponsored committee or working group, or some other method).

CME Group strongly supports the proposition that best practices are best determined by the collaborative and coordinated efforts of participants at all levels of the futures industry and, to the extent such cooperation is necessary for conceptualizing these principles, supports the establishment of a working group that is representative of exchanges, clearing firms, and market participants.

116. How should risk control monitoring be implemented? Should compliance be audited by internal and external parties? For each control, please identify the appropriate entity(ies) to monitor compliance with the control. Also, please describe what an acceptable compliance audit would entail for each control.

As stated elsewhere in this letter, CME Group believes that both trading firms and clearing firms should have principles-based supervisory obligations that include the establishment of documented internal control procedures, including appropriate testing before automated systems are deployed in the production environment, as well as the implementation of risk management controls that are appropriate to the entity's business and reasonably designed to protect against activity that could

disrupt the market. Further, CME Group believes that risk control systems monitoring should be effectuated by the entity that manages and controls the systems.

117. Are there additional controls that should be considered, or other methods that could serve as alternatives to those described above [see sections III.C-F]? If so, please describe the control, its costs and benefits, the appropriate entity(ies) to implement such control, and whether there is any distinction to be drawn in the case of DMA.

CME Group has employed significant human and technological resources and capabilities to develop effective risk management functionalities. These capabilities have been constantly evolving and improving over time as we have developed innovative solutions to regulatory and risk management challenges arising from the dynamic changes in our industry. Moreover, we believe that the entire industry has invested significant resources in the development and implementation of sophisticated and effective risk based controls and safeguards at the trading firm and clearing firm levels to prevent market disruptions and protect market integrity. Any attempt to promulgate rules that are overly burdensome, arbitrary, and impulsive in their application and implementation in the context of risk controls and systems safeguards jeopardies undermining the effective and efficient functioning of the markets.

See also CME Group's Introduction and responses to Questions 7, 106, 107, 108, and 112.

118. Would any of the risk safeguards create a disincentive to innovate or create incentives to innovate in an irresponsible manner? If so, please identify the control, the concern raised, and how the control should be amended to address the concern. Responses should indicate how an amended risk control would still meet the Commission's objectives.

The scope of this question is vague and not reasonably designed to elicit an answer without more clarity and context. Notwithstanding this, we cannot say that any particular risk control on its face would affect innovation one way or the other at this time. As we have stressed throughout our response, the key component likely impose unnecessary costs and burdens to the industry and tends to be over- and under inclusive in its regulatory intent thus creating an environment that is inflexible for the industry to respond to changing conditions in the global marketplace and stifles innovation is the adoption of narrow "one-size-fits-all" regulation. As the TAC's Pre-Trade Functionality Subcommittee points out, the utmost care should be held so as "to create rules that protect market integrity without unnecessarily impeding the technological creativity and dynamism of the marketplace."[27]

Thus, as we have stressed throughout our response, CME Group supports a principles-based regime, rather than a more prescriptive rules-based approach, as it has proven itself as a model that facilitates competitive innovation in a robust, but sensible regulatory environment. For the better part of over 15 years the futures industry has equipped itself with comprehensive and highly advanced risk based controls and surveillance systems that continue to adapt to changing technology and market behavior. These tools have been instrumental in protecting our markets from market abuse and disruption despite the changing futures industry landscape. It is this collective standard of excellence by all levels of the industry supply chain that is a testament to the integrity, resiliency, and progression of the futures markets.

[27] *See supra* note 2 at pg 1.

119. Should the Commission consider any pre-trade risk controls, post-trade reports, or system safeguards appropriate exclusively to market makers or to ATSs used by market makers? If so, please describe such controls or safeguards.

Given the breadth of automated trading systems and strategies used by market makers and other participants, and the dynamic evolution of markets and technology, any effort by the Commission to promulgate prescriptive rules to one specified type of market participant in this regard is likely to be counterproductive to, among other things, the development of deep and liquid markets and/or market quality. As noted above, the Commission should consider establishing principles of an effective supervisory regime that require market participants to establish and effectively implement pre- and post-trade risk management and supervisory procedures that are appropriate to the nature of their business and are reasonably designed to control access, effectively monitor trading and prevent errors as well as other inappropriate activity that poses a material risk of causing a significant market disruption. The industry has committed significant effort over the past several years to examine and articulate best practices in this regard which should inform the Commission's considerations in this area. We do not see the purpose in targeting one type of market participant from another and believe that such actions would have unintended adverse consequences in the form of discouraging the provision of liquidity to U.S. markets.

120. Should the Commission or Congress revisit its approach to issuing civil monetary penalties for violations of the Act, particularly as they relate to automated trading environments? Currently, the maximum civil monetary penalty the Commission may issue is capped at $140,000 "per violation." Is such a civil monetary penalty sufficient to deter acts that constitute violations of the Act, given that an individual violation could impose costs to the market and the public well in excess of $140,000?

Sections 6(c) and 6(d) of the CEA, as amended by Section 753(a) of the Dodd-Frank Act, sets forth the maximum civil monetary penalty for manipulation or attempted manipulation violations is $1,000,000 per violation, and the amount set for the maximum civil monetary penalty for all other violations is $140,000 per violation.

CME Group does not believe that the migration to an electronic trading environment warrants the Commission to revisit its civil monetary penalties that may be assessed for violations of the CEA separate and unique from violations committed as a result of misconduct via open outcry. We believe that the environment in which misconduct may have occurred should be agnostic and that the penalty assessed be relative to the facts and circumstances determined on a case by case basis. There is no evidence to support the current civil monetary penalty structure is any less of a deterrent to individuals or firms that implement an automated trading system than open outcry or manual electronic traders. Moreover, there is no empirical evidence to support the notion that high frequency trading strategies and market participants utilizing automated trading systems are more likely to engage in "undesirable trading practices" such as spoofing, market manipulation, disruptive trading practices or fraudulent activity than non-automated traders.

While under certain, very rare circumstances a single violation of the CEA may result in costs to the market and/or the public in excess of $140,000, this fact is no more a reality now than it was prior to the advent of electronic trading. Furthermore, in addition to the civil monetary penalty the Commission may seek to impose per violation, the Commission has additional mechanisms of effective relief it may pursue when appropriate, including, but not limited to: (i) preliminary and permanent injunction barring future violations of the CEA and CFTC regulations; (ii) an order suspending, revoking, or restricting a person's registration with the CFTC; (iii) an order directing that a defendant disgorge ill-gotten gains;

and/or (iv) an order directing that a defendant make restitution.[28] Finally, 7 U.S.C. § 13 provides additional recourse for the federal government that include criminal punishments of significant jail time and/or fines for specific violations of the CEA. All of these punitive mechanisms at the government's disposal and in their current form are well tailored to have the deterrent effect desired and to seek appropriate justice for wrongful conduct.

121. Please describe the documentation (or categories of documents) that would demonstrate that a market participant operating an ATS has implemented each risk control addressed in this Concept Release, including, for example, computer code, system testing results, certification processes and results, and calculations.

CME Group does not believe that each risk control identified in the Concept Release should be generally instituted in a "one-size-fits-all" approach to automated trading systems. Please also see CME Group's answers to Questions 61 through 64 and 116.

122. Would a fee (collected by, for example, the DCM or SEF) on numbers of messages exceeding a certain limit be more appropriate than a hard limit on the number or rate of messages?

123. Should such a penalty be based on a specified number or rate of messages or on the ratio of messages to orders filled over a specified time period?

The CME Globex Messaging Efficiency Program is designed to encourage responsible messaging practices and discourage excessive messaging that does not contribute to market quality. Firms that exceed these thresholds pay a daily technology surcharge.[29]

124. Recent disruptive events in securities markets illustrate the importance of effective communication between exchanges' information technology systems. The Commission requests public comments regarding relevant systems in its regulated markets, including both DCMs and SEFs. What data transfers or other communications between exchanges are necessary for safe, orderly, and well-functioning derivatives markets? What additional measures, if any, would help promote the soundness of such systems (e.g., testing requirements, redundancy standards, etc.)?

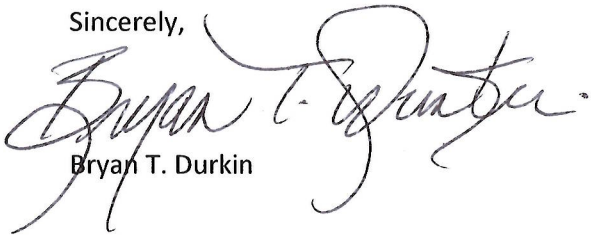
CME Group believes that effective communication between Exchanges is important during significant events and as such, is working with the industry to put mechanisms in place that foster enhanced communication protocols.

* * *

[28] International Monetary Fund, *United States: Publication of Financial Sector Assessment Program Documentation - Detailed Assessment of Implementation of the IOSCO Objectives and Principles of Securities Regulation*, p. 51 (May 2010)
[29] http://www.cmegroup.com/globex/resources/cme-globex-messaging-efficiency-program.html.

We appreciate the opportunity to submit these comments in response to the Concept Release. We are happy to discuss any questions the Commission might have with respect to the comments contained in this letter and we are otherwise available to further assist the Commission in connection with its efforts on this rulemaking. Please feel free to contact me at (312) 435-3687 or via e-mail at Bryan.Durkin@cmegroup.com or Joseph Adamczyk at (312) 648-3854 or via e-mail at Joseph.Adamczyk@cmegroup.com.

Sincerely,



Bryan T. Durkin

cc: Chairman Gary Gensler
Commissioner Mark Wetjen
Commissioner Bart Chilton
Commissioner Scott O'Malia

Appendix

APPENDIX A

CME Globex Risk and Volatility Mitigation Tools

The CME Globex electronic trading platform incorporates numerous automated risk management and volatility mitigation mechanisms to protect market integrity and market participants.

Price Banding

- To help ensure fair and orderly markets, CME Globex subjects all order to price verification upon entry using a process called price banding. Price banding is designed to prevent the entry of orders at clearly erroneous prices, such as a bid at a limit price substantially above the market, thereby mitigating the potential for a market disruption.
- Futures price Banding: For each product, CME Group establishes a Price Band Variation parameter which is a static value that is symmetrically applied to the upside for bids and downside for offers relative to a reference price. The reference price, referred to as the Banding Start Price, is a dynamically calculated value based on market information such as last trade price, best bid and offer price or the indicative opening price. Orders entered at prices beyond the Price Band Variation parameter relative to the reference price are rejected by the Globex engine.
- Options Price Banding: Options price banding functionality is similar to futures price banding except that the Banding Start Price may reference theoretical option prices based on established option pricing models in addition to last trade price. Additionally, the width of the price bands may be either a static value for a particular option series of a dynamic value that adjusts based on the option's delta or a delta-adjusted percentage of the option's theoretical price.

Protection Points for Market & Stop Orders

- CME Group employs proprietary functionality that applies a limit price (protection point) to each market order entered on the CME Globex platform and to each stop order entered without a limit price. This functionality prevents orders from being filled at significantly aberrant price levels because of the absence of sufficient liquidity to satisfy the order at the time the market order is entered or the stop order is triggered.
- The protection points for each product are generally defined as one half of the product's "non-Reviewable Range," a value that is established in connection with the exchanges' Trade Cancellation and Price Adjustment rules. The protection point is measured from the best bid price for sell market orders, the best offer price for buy market orders, and the stop trigger price for stop orders. Any quantity on the order that is unfilled at the protection point level becomes a resting limit order at the price.

Maximum Order Size Protection

- Maximum order price protection is embedded Globex functionality that precludes the entry of an order into the trading engine if the order's quantity exceeds a pre-defined maximum quantity. Orders entered for a quantity greater than the prescribed maximum quantity are rejected by the Globex engine. This functionality helps to avoid market disruptions by preventing the entry of erroneous orders for quantities above the designated threshold.

Stop Logic Functionality

- Stop Logic functionality is CME Group proprietary functionality that serves to mitigate artificial and disruptive market spikes which can occur because of the continuous triggering, election, and trading of stop orders in an illiquid market condition. On CME Globex, if elected stop orders would result in execution prices that exceed pre-defined thresholds, the market automatically enters a reserve period for a prescribed number of seconds; the length of the pause ranges from five to 20 seconds and varies based on the characteristics of the product and time of day at which the stop logic even is triggered. During the reserve period, new orders are accepted and an indicative price is published, but trades do not occur until the reserve period expires, thereby providing an opportunity for participants to respond to the demand for liquidity.

Velocity Logic Functionality

- Velocity Logic is a patented, proprietary functionality within the Globex trading engine that is designed to detect significant price moves of Futures contracts occurring within a predetermined period of time. Velocity Logic is capable of detecting market movements originating from any type of order accepted on Globex. If a sub-second, extreme market move occurs as a result of order entry, Velocity Logic will reserve the instrument in question and pause applicable option markets. The market will then automatically enter a reserve period for a prescribed number of seconds; the length of the pause ranges from 5 to 20 seconds and varies based on the characteristics of the product and time of day at which the stop logic event is triggered. During the reserve period, new orders are accepted and an indicative price is published, but trades do not occur. When the reserve period expires, the market will re-open and trading will resume.

Globex Credit Controls

- CME Group requires clearing firms to employ CME Globex Credit Control functionality which provides automated pre-trade risk controls at the trading firm level without introducing additional order processing latency. The specific credit limits for each trading firm are established by the Clearing Firm Risk Administrator.
- Clearing Firm Risk Administrators are able to select automated real-time actions if the established risk limits are hit, including e-mail notification, blocking of non risk-reducing orders and the cancellation of working orders; the Administrator may also set levels at which early warning notifications will be automatically generated.
- CME Globex Credit Controls provide protection against high level risk arising from adverse execution activity and are intended to complement rather than replace the risk management tools used by clearing firms to manage risk at the more granular trader and account level.

Risk Management Interface

- The Risk Management Interface (RMI) is both an API and GUI that supports granular, pre-trade risk management. Clearings firms can leverage Drop Copy to feed real time executions into their proprietary risk systems. The proprietary risk systems can in turn leverage the RMI API to trigger blocking or cancelations based on the clearing firm's independent calculations. Certification is required to support the RMI API, and access to the RMI API is limited to Clearing Firms' certified proprietary and third-party risk management applications.

The RMI API allows Clearing Firms (or third party risk system providers) to programmatically s end instructions to:

- Block/Unblock order entry at the execution firm/account/derivative type (future or option)/side/product levels;
- Query current block/unblock instructions; and
- Cancel working orders, including Good Til Cancel (GTC) and Good Til Date (GTD) order types

The RMI GUI is a web-based user interface that allows Clearing Firms to:

- Block/Unblock order entry at the same levels as the API; and
- View current blocks

Kill Switch

- CME Globex Kill Switch is a GUI designed to allow clearing firms a one-step shutdown of all their CME Globex activity at the SenderComp ID (Tag 49) level. When CME Globex Kill Switch functionality is activated by the permissioned firm, all order entry is blocked and all working orders are cancelled for either a selected subset or the entire firm's SenderComp IDs.
    - All Clearing Firms may access the Kill Switch which appears as a separate tab in the same GUI where Globex Credit Controls reside.
    - Clearing firms may also authorize Globex execution firms to leverage the Kill Switch for their own business. Clearing firms' orders always take precedence over non clearing firms' instructions.
    - Customers subject to a Kill Switch action are prevented from submitting any message that could modify or result in an order.
    - Customers subject to a Kill Switch action trying to submit orders receive a reject message with entity level (clearing or execution firm) and administrator role information.

Market Performance Protection

- Sustained excessive messaging to the trading engine can cause disruptive latencies that impair market efficiency and negatively impact the market access of other participants; such messaging may also be indicative or a potentially malfunctioning automated order entry system. To mitigate these risks and protect the market and market participants, CME Group employs automated controls at the session (connection) level to monitor for excessive messaging.
- Messaging Volume Controls: If a connection exceeds the CME Group established message per second threshold over a rolling three-second window, then subsequent messaging, other than order cancellations, will be rejected by the trading engine until the average message per second rate falls below the threshold.
- Mass Quote Governor: Mass quoting functionality, used exclusively by CME Group approved market makers, allows bids and offers on a large number or options to be entered simultaneously in a single order message, thereby increasing quoting efficiency. The Mass Quote Governor functionality measures the number of quotes per second for each session and will reject new mass quote messages and cancel resting quotes if the number of messages exceeds the allotted quoted per second limit over a defined number of seconds. This functionality

prevents excessive mass quote messaging that could otherwise result in disruptive quote processing inefficiencies for customers.

Market Maker Protections

- Market Maker Protection functionality provides CME Group registered options market makers using Mass Quotes[1] functionality the ability to set various parameters which help to mitigate their quote execution exposure. These protections include limits on the number of quotes executed in their entirety, the number of separate executions, the number of unique instruments traded and the net quantity of instruments traded. When the market maker's defined protection values are met or exceeded within a 15 second interval, the protections are triggered and outstanding quotes are automatically cancelled. Additionally, market makers can set delta protection values to limit exposure. These protection help to reduce the potential for disruptive trades by facilitating greater liquidity and mitigating the possibility of a party taking on excessive exposure.

Self-Match Prevention

- Self-Match Prevention functionality allows market participants the option to prevent, where appropriate, buy and sell orders for the same account, or accounts with common beneficial ownership, from matching opposite one another. Market participants that choose to employ this functionality must populate a new FIX tag (Tag 7928) on all orders sent to CME Globex which allows the match engine to detect buy and sell orders at the same executable price level in a particular contract and cancel the resting orders on one side of the market if both orders have the same executing firm number and Self-Match Prevention ID, thus preventing self-trades.

Cancel on Disconnect Protection

- Cancel on Disconnect functionality is an opt-in service that allows for the automatic cancellation of resting day orders when a user's connection to Globex involuntarily drops.

Drop Copy Risk Management Services

- CME Group's Drop Copy service allows customers to receive, via a FIX messaging interface, real-time copies of Globex execution reports, acknowledgement and reject messages. This enables firms to fee the data to their internal risk systems, allowing firms to monitor risk on a real time basis. The Drop Copy service also allows for monitoring of aggregate activity guaranteed by one or more clearing firms upon approval of the clearing firms.

FirmSoft Order Management Tool

- FirmSoft is a browser-based order management tool which provides real-time access to information on working and filled Globex orders, as well as order modification history. Access to FirmSoft can be granted based on one or more Trader IDs, sessions and/or account numbers.
- FirmSoft also allows users to cancel an individual order, a group of orders, or all working orders and mass quotes. The "Cancel All" or "Kill Button" functionality provides important risk mitigation functionality at all times including during system failures.

[1] For additional information on Mass Quotes *See* http://www.cmegroup.com/confluence/display/EPICSANDBOX/Mass+Quotes.

Risk Protection Policies, Programs, and Rules

Access and Controls

- All direct connections to CME Globex require the execution of a Customer Connection Agreement that includes, among other provisions, a requirement that the connection be guaranteed by a clearing member firm which agrees to be financially responsible for all orders sent to the Globex platform through the connection.
- Any clearing member firm providing CME Globex access to its customers must comply with all Credit Control requirements set forth in the Customer Connection Agreement which include requirements that there be separation between trading and credit control functions; that the clearing firm be able to set, monitor and adjust credit control parameters such as quantity, position, and exposure limits; that the clearing firm be able to set pre-execution controls th4rough automated means or by requiring an employee to take action to accept orders; and that the clearing firm be able to revoke a trader's access to the market.
- The Customer Connection Agreement requires the entity obtaining the connection to agree to comply with and be subject to the rules of the CME Group exchanges. Additionally, clearing members guaranteeing a connection to Globex are responsible for ensuring that the order routing/front-end audit trail for all electronic orders is maintained for a minimum of five years.

Certification and Testing

- CME Group requires that all entities connecting directly to CME Globex perform application testing and be certified by CME Group with regard to a board array of interface and functionality requirements before accessing the production environment. CME Group provides customers with dedicated testing and certification environments which, in combination with the certification requirements, mitigate the risk of customer systems adversely affecting CME Group markets or the customer's own business.
- The CME Globex Certification environment mirrors production functionality and is used by customers to perform certification testing for core Globex functionality, maintenance testing and development testing for new customer system features or functionality.
- The CME Globex New Release environment is used by customers to preform development and certification testing with respect to the new Globex functionality as well as to test new products prior to their production launch

Risk Management

- All CME Group exchanges have a Risk Management rule (Rule 982) that requires clearing member firms to have written risk management policies and procedures in place to ensure they are able to perform basic risk and operational functions at all times including: monitoring credit risks of customers and proprietary trading activity; limiting the impact of significant market moves through the use of tools such as stress testing or position limits; maintaining the ability to monitor account activity on an intraday basis; and ensuring that order entry systems include the ability to set automated credit controls or position limits or otherwise require a firm employee to enter orders. The CME Clearing Risk Management Department periodically conducts reviews of clearing firm risk management policies, procedures, and capabilities and how well those risk management programs correspond to the firm's lines of business.

Trade Cancellation and Price Adjustment Rules

- All CME Group exchanges have a Trade Cancellation and Price Adjustment rule (Rule 588) that is designed to balance market participants' legitimate expectations of trade certainty with the adverse effects on market integrity of executing trades and publishing trade information that is inconsistent with prevailing market conditions. This rule authorizes the Globex Control Center ("GCC") to adjust trade prices or cancel trades when such action is necessary to mitigate market disrupting events caused by the improper or erroneous use of the electronic trading system r by system defects. In order to enhance trade certainty and mitigate the creation of additional exposures, erroneous trades are price adjusted rather than cancelled whenever possible.
- Rule 588 codified an explicit non-reviewable price range for each futures product and an explicit methodology for determining the non-reviewable price range for each options product. The non-reviewable range is applied above and below the fair-value price determined by the GCC based on relevant market information. Transactions that occur outside of the non-reviewable range may be price-adjusted by the GCC pursuant to a transparent methodology for establishing the adjusted price or cancelled by the GCC. Notwithstanding any other provisions of the rule, the GCC has the authority to adjust trade prices or cancel any trade if it determines that allowing the trade to stand as executed would have a material, adverse effect on the integrity of the market.
- Rule 588 also provides that a party entering an order that results in a price adjustment or trade cancellation is responsible for demonstrated claims of realized losses incurred by persons whose trade prices were adjusted or cancelled, provided that the harmed party took reasonable actions to mitigate any losses.

Price Limits and Circuit Breakers

- Numerous CME Group products have rules that establish daily price limits and/or circuit breakers in order to promote market confidence and mitigate risks to the market infrastructure by allowing market participants time to assimilate information and mobilize liquidity during periods of sharp and potentially destabilizing price swings. Circuit breaks are calibrated at defined levels and completely halt trading for a defined period of time or for the balance of the day's trading session. Price limits allow trading to continue, but only within the defined limits.

CME Globex Messaging Efficiency Program

- The CME Globex Messaging Efficiency Program is designed to encourage responsible messaging practices and discourage excessive messaging that does not contribute to market quality. Under the program, CME Group establishes messaging benchmarks based on a per-product Volume Ratio, which is defined as the ratio of the number of messages submitted to the volume executed in a given product. Generally, the Program will be administered at a CME Group executing firm level, but CME Group may, in its reasonable discretion, decide to apply the Program at a more granular level (i.e. iLink session, account or Tag 50). Further, CME Group may aggregate executing firms for purposes of determining whether a Product Group Benchmark has been exceeded in circumstances where a single entity is submitting messages via more than one executing firm number. Entities that exceed these thresholds and fail to correct their messaging practices pay a surcharge. This policy benefits all market participants by discouraging excessive messaging, which in turn helps to ensure that the trading system maintains the responsiveness and reliability that supports efficient trading.

User Identification and Automated Trading System Identification

- All orders must be submitted to CME Globex with a user identification tag (Tag 50 ID) that represents the party who input the order into the Globex system. The tag must be unique at the clearing firm level. In the case of an ATS, the Tag 50 identifies the person or team or persons who operate, administer, and/or monitor the ATS. If the ATS operator is responsible for multiple algorithms which operate in the same product, then each specific algorithm must be assigned a unique Tag 50 ID. Additionally, if the client receives preferential exchange fees, the name and other identifying information of the operator(s) must be registered with the exchange; in the case of an ATS operator this registration includes an ATS attribute that is attached to orders entered by that operator in the exchange's audit trail systems. Additionally, the Globex Control Center and Market Regulation Department have the authority to require that a customer with significant messaging register with the exchange, irrespective of whether the customer receives preferential fees.
- CME Group further requires that all users populate new tags associated with each order. The tags identify whether the particular order originates from an automated trading system or is manually entered, the geographic origin from which the order was submitted to the trading system, and the identification of the front-end system and version/release of the software used to enter the order.
- The user identification rules substantially aid the prompt evaluation and investigation of potentially problematic activity.

APPENDIX B

Trade Execution Reports

Execution Report – Fill Notice (complete and partial fills)

The **Execution Report - Fill Notice (tag 35-MsgType=8, tag 39-OrdStatus=1 or 2)** message is sent upon fill or partial fill of client order.

Tag	FIX Name	Req	Valid Values	Format	Description
1	Account	Y*		String (12)	Unique account identifier. **Note:** This tag value is always uppercase, regardless of the case in the inbound message tag. Client systems are not required to submit capitalized account values to CME Globex.
6	AvgPx	Y		Price (20)	Always '0'.
11	ClOrdID	Y*		String (20)	CME Globex returns this value from the original New Order message up to 20 bytes.
14	CumQty	Y*		Qty (9)	Contains cumulated traded quantity throughout lifespan of an order. This value does not reset if order is cancel/replace.
17	ExecID	Y		String (40)	CME Globex assigned message identifier; unique per instrument per trading session.
20	ExecTransType	Y	0	Char (1)	Always '0'.

Tag	FIX Name	Req	Valid Values	Format	Description
31	LastPx	Y*		Price (20)	Price at which order was filled. For cabinet trades this tag will contain '0'.
32	LastQty	Y*		Qty (9)	Quantity filled.
37	OrderID	Y		Int (17)	CME Globex assigned order identifier, unique across all iLink sessions and market segments.
38	OrderQty	C		Qty (9)	Quantity of order. **This field must contain an integer**. **Note:** For spread trade Execution Reports, this tag is sent in the Execution Report – Fill Notice (35=8, 39=1 or 2) for the spread only and not the legs of the spread.
39	OrdStatus	Y	1=Partial fill 2=Complete fill	Char (1)	Indicates if fill is for part or all of order quantity.
40	OrdType	Y*	1=Market order (with protection) 2=Limit order 3-Stop order (with protection) 4=Stop-Limit order	Char (1)	Order type. See Order Management for complete details. The state of an order type can change over the life of an order. For example, a submitted stop order (3) can turn into a market order (1) when the stop price level has been crossed.

Tag	FIX Name	Req	Valid Values	Format	Description
					Also refer to Order Types for Futures and Options.
41	OrigClOrdID	N		String (20)	Last accepted ClOrdID in the order chain. If a value is included in tag 41 on order entry, the same value is returned. If not, the tag will contain '0'.
44	Price	C		Price (20)	Price per single contract unit. All Execution Report messages sent in response to Market orders (with protection) and Stop orders (with protection) will include tag 44-Price populated with the Protection Price Limit (best available price +/- the protection points). If the order is not completely filled, the remaining Open Quantity will rest on the order book at the Protection Price Limit. **Note:** For spread trade Execution Reports, this tag is sent in the Execution Report – Fill Notice (35=8, 39=1 or 2) for the spread only and not the legs of the spread.

Tag	FIX Name	Req	Valid Values	Format	Description
48	SecurityID	Y*		Int (12)	Identifier of the instrument defined in tag 107-SecurityDesc.
54	Side	Y	1=Buy 2=Sell	Char (1)	Side of order.
55	Symbol	Y		String (6)	This tag contains the instrument group code of the instrument.
59	TimeInForce	C	0=Day 1=Good Till Cancel (GTC) 3=Fill and Kill 6=Good Till Date (GTD)	Char (1)	Specifies how long the order remains in effect. If not present, DAY order is the default. For GTD, ExpireDate is also required. For FAK, MinQty is also required. See Order Types for Futures and Options or Order Management for more information. Note: For spread trade Execution Reports, this tag is sent in the Execution Report – Fill Notice (35=8, 39=1 or 2) for the spread only and not the legs of the spread.
60	TransactTime	Y*		UTC TimeStamp (21)	UTC format YYYYMMDD-HH:MM:SS.sss e.g. 20091216-19:21:41.109
78	NoAllocs	N	1	string(1)	Returned on

Tag	FIX Name	Req	Valid Values	Format	Description
					Execution Report if sent on inbound message.
79	AllocAccount	N		char(10)	Returned on Execution Report if sent on inbound message. **Note:** This tag value is always uppercase, regardless of the case in the inbound message tag. Client systems are not required to submit capitalized account values to CME Globex.
75	TradeDate	Y*		LocalMktDate (8)	Indicates date of trade reference in this message in YYYYMMDD format.
107	SecurityDesc	Y*		String (20)	Instrument identifier. e.g. "ESM0'
150	ExecType	Y	1=Partial fill 2=Complete fill	(Char (1)	Indicates the type of execution report.
151	LeavesQty	C		Qty (9)	Amount of contracts remaining for execution after this fill. **Note:** For spread trade Execution Reports, this tag is sent in the Execution Report – Fill Notice (35=8, 39=1 or 2) for the spread only and not the legs of the spread.

Tag	FIX Name	Req	Valid Values	Format	Description
167	SecurityType	N	FUT=Future OPT=Option	String (3)	Indicates instrument is future or option.
337	ContraTrader	N	TRADE	String (8)	Will contain 'TRADE'.
375	ContraBroker	N	CME000A	String (8)	Will contain 'CME000A'.
393	TotalNumSecurities	N		Int (3)	Contains the number of Leg Fill Acknowledgment messages sent with the spread summary. Sent for spread fill message only.
432	ExpireDate	C		LocalMktDate (8)	**Required** only if tag 59-TimeInForce=Good Till Date (GTD). **CME Globex does not support tag 126-ExpireTime.** **Only the expiration date can be set. Orders expire at the end of the trading session of the specified date**. **Note:** For spread trade Execution Reports, this tag is sent in the Execution Report – Fill Notice (35=8, 39=1 or 2) for the spread only and not the legs of the spread.
1028	ManualOrderIndicator	Y*	Y=manual N=automated	Boolean(1)	Value sent on inbound message from client system indicating the order as sent manually or generated by

Tag	FIX Name	Req	Valid Values	Format	Description
					automated trading logic.
1031	CustOrderHandlingInst	N	A = Phone simple B = Phone complex C = FCM-provided screen D = Other-provided screen E = Client-provided platform controlled by FCM F = Client-provided platform direct to exchange G = FCM API or FIX H = Algo Engine J = Price at Execution (price added at initial order entry, trading, middle office or time of give-up) W = Desk¿Electronic X = Desk¿Pit Y = Client¿Electronic Z = Client-Pit	String (1)	Defines source of original order. Returned on Execution Report if sent on inbound message.
442	MultiLegReportingType	N	1=Outright 2=Leg of spread 3=Spread	Int (1)	Indicates if acknowledgment message is sent for an outright, leg of spread or spread.
527	SecondaryExecID	N		String (40)	Unique identifier that allows linking of spread summary fill notice with leg fill notice and trade

Tag	FIX Name	Req	Valid Values	Format	Description
					cancel messages.
548	CrossID	N		String (32)	Identifier for a cross order.
549	CrossType	N	3=Cross order	Int (2)	Identified transaction type if other than standard order execution.
810	UnderlyingPx	C		Price (20)	Reserved for future use.
811	OptionDelta	C		Float (6,2)	Reserved for future use.
1057	AggressorIndicator	C	Y=Match aggressor N=Resting at match	)Char (1)	Indicates if order was incoming or resting for the match event. Default=not present. **Note:** For spread trade Execution Reports, this tag is sent in the Execution Report - Fill Notice (35=8, 39=1 or 2) for the spread only and not the legs of the spread.
1188	Volatility	C		String (20)	Reserved for future use.
1189	ExpirationTimeValue	C		Float	Reserved for future use.
1190	RiskFreeRate	C		Price (20)	Reserved for future use.
7928	SelfMatchPreventionID	N		String (12)	Use of this tag indicates client does not wish to trade against itself on CME

Tag	FIX Name	Req	Valid Values	Format	Description
					Globex.
9717	CorrelationClOrdID	N		String (20)	Unvalidated value returned as submitted if sent by client system on inbound message. See tag 9717-CorrelationClOrdID note in the New Order message specification for further details.

Y: Required by FIX protocol, Y*: Required by CME Globex (not by FIX protocol), N: Not Required, C: Conditionally

Execution Report – Trade Cancel

The **Execution Report - Trade Cancel (tag 35-MsgType=8, tag 39-OrdStatus=H)** message notifies client system of trade cancellation.

Tag	FIX Name	Req	Valid Values	Format	Description
1	Account	Y*		String (12)	Unique account identifier. **Note:** This tag value is always uppercase, regardless of the case in the inbound message tag. Client systems are not required to submit capitalized account values to CME Globex.
6	AvgPx	Y	0	Price (20)	Always '0'.
11	ClOrdID	Y*		String (20)	Unique order identifier assigned by client system. Client system must maintain uniqueness of this value for the life of the order.
14	CumQty	Y		Qty (9)	Contains cumulated traded quantity throughout lifespan of an order. This value does not reset if order is cancel/replaced.
17	ExecID	Y*		String (40)	CME Globex assigned execution report message identified; unqiue per instrument per trading session.
19	ExecRefID	Y*		String (9)	Contains unique ID for the trade being cancelled. These are the last 9 characters of tag 17-ExecID.

Tag	FIX Name	Req	Valid Values	Format	Description
20	ExecTransType	Y	1=Cancel	Char (1)	Identifies transaction type.
31	LastPx	Y*		Price (20)	Price of the canceled trade.
32	LastQty	Y*		Qty (9)	Quantity of canceled trade.
37	OrderID	Y		Int (17)	CME Globex assigned order identifier; unique across all iLink sessions and market segments.
39	OrdStatus	Y	H=Trade Cancelled	Char (1)	Identifies trade status as canceled.
41	OrigClOrdID	N		String (20)	The last accepted ClOrdID in an order chain. If the value is included in tag41-OrigClOrdID, the same value is returned; however, if no value is sent, a value of '0' is returned in the Execution Report (tag 35-MsgType=8) Cancellation message, else tag 41-OrigClOrdID is not sent.
48	SecurityID	Y*		Int (12)	Identifier of the instrument defined in tag 107.
54	Side	Y	1=Buy 2=Sell	Char (1)	Side of order.
55	Symbol	Y		String (6)	This tag contains the instrument group code.

Tag	FIX Name	Req	Valid Values	Format	Description
60	TransactTime	Y*		UTC Timestamp (21)	UTC format YYYYMMDD-HH:MM:SS.sss e.g. 20091216-19:21:41.109
75	TradeDate	Y*		LocalMktDate (8)	Indicates date of trade referenced in this message in YYYYMMDD format. Absence of this field indicates current day (expressed in local time at place of trade).
78	NoAllocs	N	1	Char (1)	Returned on Execution Report if sent on inbound message.
79	AllocAccount	N		String (10)	Returned on Execution Report if sent on inbound message. **Note:** This tag value is always uppercase, regardless of the case in the inbound message tag. Client systems are not required to submit capitalized account values to CME Globex.
107	SecurityDesc	Y*		String (20)	Instrument identifier used on iLink to uniquely identify an instrument. Future Example: GEZ8 Option Example: GEZ9 C9375
150	ExecType	Y	H=Trade Bust Ack	Char (1)	Indicates type of Execution Report.
167	SecurityType	N	FUT=Future OPT=Option	String (3)	Indicates instrument is future or option.

Tag	FIX Name	Req	Valid Values	Format	Description
393	TotalNumSecurities	N		Int (3)	Number of leg trade elimination messages for a given counterparty. The value will be '0' (zero) for outrights.
442	MultiLegReportingType	N	1=Outright 2=Leg of spread 3=Spread	Int (1)	Indicates if acknowledgment message is sent for an outright, leg of spread, or spread.
527	SecondaryExecID	N		String (40)	Unique identifier that allows linking of spread summary fill notice with leg fill notice and trade cancel messages.
810	UnderlyingPx	C		Price (20)	Reserved for future use.
811	OptionDelta	C		Float (6,2)	Reserved for future use.
1188	Volatility	C		String (20)	Reserved for future use.
1189	ExpirationTimeValue	C		Float	Reserved for future use.
1190	RiskFreeRate	C		Price (20)	Reserved for future use.
1028	ManualOrderIndicator	Y*	Y=manual N=automated	Boolean(1)	Value sent on inbound message from client system indicating the order as sent manually or generated by automated trading logic.
7928	SelfMatchPreventionID	N		String (20)	Use of this tag indicates client does

Tag	FIX Name	Req	Valid Values	Format	Description
					not wish to trade against itself on CME Globex.
9717	CorrelationClOrdID	Y*		String (20)	Unvalidated value returned as submitted if sent by client system on inbound message. See tag 9717-CorrelationClOrdID note in the New Order message specification for further details.

Y: Required by FIX protocol, Y*: Required by CME Globex (not by FIX protocol), N: Not Required, C: Conditionally

Order Entry Acknowledgments

Execution Report – Order Creation, Cancel, or Modify

The **Execution Report - Order Creation, Cancel or Modify (tag 35-MsgType=8, OrdStatus=0, 4 or 5)** message is sent in response to:

- New Order
- Order Cancel Request
- Order Cancel/Replace Request

Tag	FIX Name	Req	Valid Values	Format	Description
1	Account	Y*		String (32)	Unique account identifier. **Note:** This tag value is always uppercase, regardless of the case in the inbound message tag. Client systems are not required to submit capitalized account values to CME Globex.
6	AvgPx	Y	0	Price (20)	Always '0'.
11	ClOrdId	Y*		String (20)	Unique order identifier assigned by client system. Client system must maintain uniqueness of this value for the life of the order.
14	CumQty	Y		Qty (9)	Contains cumulated traded quantity throughout lifespan of an order. This value resets to zero if order is cancel/replaced.
17	ExecID	Y		String (40)	CME Globex assigned execution report message identifier; unique per instrument per trading session.
20	ExecTransType	Y	0=New	Char (1)	Identifies transaction type as 'new' (i.e., new order, order cancel or cancel/replace accepted).
37	OrderID	Y		Int (17)	CME Globex assigned order identifier; unique across all

Tag	FIX Name	Req	Valid Values	Format	Description
					iLink sessions and market segments.
38	OrderQty	Y*		Qty (9)	Order quantity submitted by client. **The format of this field is different from FIX protocol specifications.** **This field must be an integer**.
39	OrdStatus	Y	0=New Order Ack 4=Cancel Ack 5=Modify Ack	Char 91)	Identifies order status as accepted, cancelled or replaced.
40	OrdType	Y*	1=Market order (with protection) 2=Limit order 3=Stop order (with protection) 4=Stop-Limit order K=Market-Limit order	Char (1)	Order type. The state of an order type can change over the life of an order. For example, a submitted stop order (3) can turn into a market order (1) when the stop price level has been crossed. Also refer to Order Types for Futures and Options in Electronic Trading Concepts.
41	OrigClOrdID	N		String (20)	Last accepted ClOrdID in the order chain. Unvalidated value returned as submitted by client system on Order Cancel Request or Order Cancel-Replace Request message. If a value is include in tag 41-OrigClOrdID, the same value is returned; however, if no value is sent, a value of '0' is returned in all Execution Report (tag 35-MsgType=8) messages, except the Execution Report-Order Status Request.
44	Price	N		Price (20)	Required for limit or stop-limit orders. Designates the price per

Tag	FIX Name	Req	Valid Values	Format	Description
					single contract unit. The decimal, and if applicable the negative sign of the price are each one character. Client systems should not supply more than 7 characters to the right of the decimal. See Fractional Pricing for products that tick fractionally but must be submitted in decimal.
48	SecurityID	Y*		Int (12)	Identifier of the instrument defined in tag 107-SecurityDesc.
54	Side	Y	1=Buy 2=Sell	Char (1)	Side of order.
55	Symbol	Y		String (6)	This tag contains the instrument group code of the instrument.
59	TimeInForce	N	0=Day 1=Good Till Cancel (GTC) 3=Fill and Kill 6=Good Till Date	Char (1)	Specifies how long the order remains in effect. If not present, DAY order is the default. For GTD, ExpireDate is also required. For FAK, MinQty is also required. See Order Types for Futures and Options and Order Management for more information.
60	TransactTime	Y*		UTC Timestamp (21)	UTC format YYYYMMDD-HH:MM:SS.sss e.g. 20091216-19:21:41.109
78	NoAllocs	N		String(1)	Returned on Execution Report if sent on inbound message.

Tag	FIX Name	Req	Valid Values	Format	Description
79	AllocAccount	N		Char(10)	Returned on Execution Report if sent on inbound message. **Note:** This tag value is always uppercase, regardless of the case in the inbound message tag. Client systems are not required to submit capitalized account values to CME Globex.
107	SecurityDesc	Y*		String (20)	Instrument identifier. Future Example: GEZ8 Option Example: GEZ9 C9375
99	StopPx	N		Price (20)	Designates stop trigger price specified by the individual entering the order or cancel/replace.
110	MinQty	N		Qty (9)	Minimum quantity of an order to be executed. This tag is used only when tag 59-TimeInForce=3 (Fill and Kill). The value of MinQty must be between 1 and the value in tag 38-OrderQty. **The format of this tag is different from FIX protocol specifications.** **This tag must be an integer.**
150	ExecType	Y	0=New Order Ack 4=Cancel Ack 5=Modify Ack	Char (1)	Indicates type of execution report.
151	LeavesQty	Y		Qty (9)	Amount of contract units open for further execution. **The format of this tag is different from FIX protocol specifications.** **This tag must be an integer.**

Tag	FIX Name	Req	Valid Values	Format	Description
167	SecurityType	N	FUT=Future OPT=Option	String (3)	Indicates instrument is future or option.
378	ExecRestatementReason	N	8=Exchange (GCC) 100=Cancel on Disconnect 103=Cancel due to Self Match Prevention 104=Cancel from CME Globex Credit Controls (GC2) violation 105=Cancel from FirmSoft 106=Cancel from Risk Management API (RMI)	Int (3)	Identifies origin of the order elimination. This tag will not be sent on cancellations triggered by an iLink Order Cancel Request.
210	MaxShow	N		Int (9)	Also know as an iceberg. See Order Display Quantity in Electronic Trading Concepts. Maximum quantity of an order to be shown in the order book at any given time. The value of MaxShow must be a fixed number N between 1 and value in tag 38-OrderQty. If MaxShow is reduced (due to matches) to 0, then MaxShow is reset to the lesser of N or the number in tag 38-OrderQty remaining.
432	ExpireDate	C		LocalMktDate (8)	**Required** only if tag 59-TimeInForce=Good Till Date (GTD).

Tag	FIX Name	Req	Valid Values	Format	Description
					CME Globex does not support tag 126-ExpireTime. Only the expiration date can be set. Orders expire at the end of the trading session fo the specified date.
1028	ManualOrderIndicator	Y*	Y=manual N=automated	Boolean(1)	Value sent on inbound message from client system indicating the order as sent manually or generated by automated trading logic. **This tag will contain the resting value attached with the order regardless of how the cancel itself was submitted.**
1031	CustOrderHandlingInst	N	A = Phone simple B = Phone complex C = FCM-provided screen D = Other-provided screen E = Client-provided platform controlled by FCM F = Client-provided platform direct to exchange G = FCM API or FIX H = Algo Engine J = Price at Execution (price added at initial order entry, trading, middle office or time of give-up) W = Desk-Electronic X = Desk-Pit Y = Client-	String (1)	Defines source of original order. Returned on Execution Report - Order Creation (tag 35-MsgType=8, tag 39-OrdStatus=0) message if sent on New Order message.

Tag	FIX Name	Req	Valid Values	Format	Description
			Electronic Z = Client-Pit		
7928	SelfMatchPreventionID	N		String (12)	Use of this tag indicates client does not wish to trade against itself on CME Globex.
9717	CorrelationClOrdID	N		String (20)	Unvalidated value returned as submitted if sent by client system on inbound message. See tag 9717-CorrelationClOrdID note in the New Order message specification for further details. **Note:** for solicited order cancellation by client system, CME Globex returns the value of tag 9717-CorrelationClOrdID on the Order Cancel Execution Report as submitted on the Order Cancel Request. **Note:** for order cancellation by FirmSoft, CME Globex always returns the values of tag 9717-CorrelationClOrdID on the Order Cancel Execution Report from the value of tag 11-ClOrdID on the original Execution Report (tag35-msgType=8, tag 39-OrdStatus=0) New Order Acknowledgment message.
548	CrossID	N		String (32)	Sent on Execution Report to allow correlation of execution responses to the New Order Cross.
549	CrossType	N	3=RFC order	Char (1)	The CME Globex platform uses this tag to validate instrument eligibility. This value is also return on the Execution Report for New Cross Orders only.
961	HostCrossID	N		String (32)	Unique ID generated at the

Tag	FIX Name	Req	Valid Values	Format	Description
					Cross level. Returned on the Execution Report for New Cross Orders only.

Y: Required by FIX protocol, Y*: Required by CME Globex (not by FIX protocol), N: Not Required, C: Conditionally

Execution Report – Order Elimination

The Execution Report - Order Elimination (tag 35-MsgType=8, tag 39-OrdStatus=4 or C) message is sent at order expiration.

Tag	FIX Name	Req	Valid Values	Format	Description
1	Account	Y*		String (12)	Unique account identifier. **Note:** This tag value is always uppercase, regardless of the case in the inbound message tag. Client systems are not required to submit capitalized account values to CME Globex.
6	AvgPx	Y		Price (2)	Always '0'.
11	ClOrdID	Y*		String (20)	Unique order identifier assigned by client system. Client system must maintain uniqueness of this value.
14	CumQty	Y		Qty (9)	Contains cumulated traded quantity throughout lifespan of an order. This value does not reset if order is cancelled.
17	ExecID	Y		String (40)	CME Globex assigned message identifier; unique per instrument per trading session.
20	ExecTransType	Y	0=New	Char (1)	Identifies transaction type as 'new' (i.e., new order, order cancel or cancel/replace accepted).
37	OrderID	Y		Int (17)	CME Globex assigned order identifier; unique across all iLink sessions and market segments.

Tag	FIX Name	Req	Valid Values	Format	Description
38	OrderQty	Y*		Qty (9)	Order quantity submitted by client. **The format of this field is different from FIX protocol specifications. This field must be an integer.**
39	OrdStatus	Y	C=Expired	Char (1)	Identifies type of order elimination.
40	OrdType	Y*	1=Market order (with protection) 2=Limit order 3=Stop order (with protection) 4=Stop-Limit order K=Market-Limit order	Char (1)	Order type. See Order Management for additional information.
41	OrigClOrdID	N		String (32)	The last accepted ClOrdID in an order chain. If a value is included in tag 41-OrigClOrdID, the same value is return; however, if no value is sent, a value of '0' is returned in the Order Elimination message.
44	Price	N		Price (20)	Price per single contract unit.
48	SecurityID	Y*		String (12)	Identifier of the instrument define in tag 107-SecurityDesc.
54	Side	Y	1=Buy 2=Sell	Char (1)	Side of order.
55	Symbol	Y		String (6)	This tag contains the instrument group code for the instrument.

Tag	FIX Name	Req	Valid Values	Format	Description
59	TimeInForce	N	0=Day 1=Good Till Cancel (GTC) 3=Fill and Kill (Immediate or Cancel) 6=Good till Date (GTD)	Char (1)	Specifies how long the order remains in effect. If not present, DAY order is the default. For GTD, ExpireDate is also required. For FAK, MinQty is also required. See Order Types for Futures and Options or Order Management for more information.
60	TransactTime	Y*		UTC Timestamp (21)	UTC format YYYYMMDD-HH:MM:SS.sss e.g. 20091216-19:21:41.109
78	NoAlloc	N	1	Char (1)	Returned on Execution Report if sent on inbound message.
79	AllocAccount	N		String (10)	Returned on Execution Report if sent on inbound message. **Note:** This tag value is always uppercase, regardless of the case in the inbound message tag. Client systems are not required to submit capitalized account values to CME Globex.
107	SecurityDesc	Y*		String (20)	Instrument identifier. Future Example: GEZ8
110	MinQty	C		Qty (9)	Sent in the Order Elimination message if the originating order was an FAK/FOK/MinQty that

Tag	FIX Name	Req	Valid Values	Format	Description
					contained tag 110-MinQty. Minimum quantity of an order to be executed. This tag is used only when tag 59-TimeInForce=3 (Fill and Kill). The value of MinQty must be between 1 and the value in tag 38-OrderQty. **The format of this tag is different from FIX protocol specifications. This tag must be an integer**.
150	ExecType	Y	4=Cancel Ack C=Elimination Ack	Char (1)	Indicates type of execution report.
151	LeavesQty	Y	0		Quantity available for further execution. Always '0' for order elimination.
167	SecurityType	N	FUT=Future OPT=Option	String (3)	Indicates type of security as future or option.
432	ExpireDate	N		LocalMktDate (8)	**Required** only if tag 59-TimeInForce=Good Till Date (GTD). **CME iLink 2.X does not support tag 126-ExpireTime.** **Only expiration date can be set.** Orders expire at the end of the trading session.
1028	ManualOrderIndicator	Y*	Y=manual N=automated	Boolean (1)	Value sent on inbound message from client system indicating the order as sent manually or generated by automated trading logic.

Tag	FIX Name	Req	Valid Values	Format	Description
1031	CustOrderHandlingInst	C	A=Phone simple B=Phone complex C=FCM-provided screen D=Other-provided screen E=Client-provided platform controlled by FCM F=Client-provided platform direct to exchange G=FCM API or FIX H=Algo Engine J=Price at Execution (price added at initial order entry, trading, middle office or time of give-up) W=Desk – Electronic X=Desk – Pit Y=Client – Electronic Z=Client - Pit	String (1)	Sent in the Order Elimination message if the originating order contained this tag. Defines source of original order.
7928	SelfMatchPreventionID	N		String(12)	Use of this tag indicates client does not wish to trade against itself on CME Globex.
9717	CorrelationClOrdID	N		String (20)	Unvalidated value returned as submitted if sent by client system on inbound message. See tag

Tag	FIX Name	Req	Valid Values	Format	Description
					9717-CorrelationClOrdID note in the New Order message specification for further details.

Y: Required by FIX protocol, Y*: Required by CME Globex (not by FIX protocol), N: Not Required, C: Conditionally

APPENDIX C

Supported Order Types and Functionality on CME Globex – By Product Line

Order Types	Agriculture	Equities	FX	Interest Rates		Energy	Metals	Real Estate	Weather
				CME	CBOT				
Limit	F, O	F, O	F, O	F, O	F, O	F, O	F, O	F	F
Market with Protection	F, O	F, O	F, O	F, O	F, O	F, O	F, O	F	F
Market to Limit	F, O	F, O	F, O	F, O	F, O	F, O	F, O	F	F
Stop Limit	F	F	F	F	F	F	F	F	F
Stop with Protection	F	F	F	F	F	F	F	F	F
Minimum Quantity	F, O	F, O	F, O	F	F, O	F	F	F	F
Hidden Quantity	F, O	F, O	F, O	F	F, O	F, O	F, O	F, O	F

Functionality	Agriculture		Equities	FX	Interest Rates	Energy	Metals	Real Estate	Weather
	CME	CBOT Grains							
Cross Order	O		O	O	O	O	O		
Mass Quote	O	O	O	O	O	O	O		
UDS: Covereds	O	O	O	O	O	O	O		
UDS: Combos	O	O	O	O	O	O	O		

KEY: F = Available for futures O = Available for options