

Part II, Item 6 (Activities of Service Providers)

(a) Does any employee of the Broker-Dealer Operator or its Affiliate that services both the operations of the NMS Stock ATS and any other business unit or any Affiliate of the Broker-Dealer Operator ("shared employee") have access to confidential trading information on the NMS Stock ATS?

YES

If yes, identify the business unit, Affiliate, or both that the shared employee services, and provide a summary of the role and responsibilities of the shared employee at the ATS and the business unit, Affiliate, or both that the shared employee services.

Confidential trading information consists of data regarding open or partially open Firm/Conditional Orders in JPM-X ("real-time data") and data regarding fully or partially completed Firm/Conditional Orders in JPM-X, including executions and cancellations ("historical data"). Confidential trading information, however, does not include post-execution reporting under applicable reporting rules or regulations. Confidential trading information also does not include aggregated data resulting from the combination of the JPM-X historical data associated with a Subscriber's Firm/Conditional Order with data regarding other Firm/Conditional Orders of the Subscriber or other JPMS clients, whether or not such Firm/Conditional Orders were routed to JPM-X ("Aggregated Data"). Aggregated Data is created by ECS Liquidity Product Specialists, who can aggregate any JPM-X historical data, or trading personnel in a business unit identified in response to Part II, Item 1(a), who can aggregate only JPM-X historical data regarding that unit's or a subset of that unit's Firm/Conditional Orders. Aggregated Data includes JPM-X historical data from only the prior trading day or earlier. Aggregated Data sourced only from JPM-X historical data does not provide Subscriber-specific or symbol-specific information. Aggregated Data can be used (i) by JPMS to provide market color or trend analyses externally and/or to internal principal or agency trading desks (e.g., JPMS prepares, and makes available online, a monthly summary of JPM-X activity that includes aggregate statistics such as the average trade size for each order flow type described in response to Part III, Item 13(a)); (ii) by JPMS to advertise, report on, or enhance the quality of its execution or other services offered to clients (e.g., JPMS has included in marketing materials aggregate VWAP slippage statistics that incorporate execution data from JPM-X and other venues to which Subscribers' VWAP orders were routed); and (iii) by third parties so they can provide JPMS with analytics (regarding, e.g., its market share or other performance metrics on a client-by-client basis). Such data sets are sufficiently aggregated and/or anonymized that they protect the confidentiality of Subscribers' trading strategies and are not themselves confidential trading information. Moreover, the use of such data sets, depending on the context, may be subject to confidentiality restrictions under agreements with recipients of the data sets and/or JPMC policies and procedures.

No employee or contingent worker ("workforce member") of JPMS or its affiliates is dedicated solely to servicing the operations of JPM-X. Shared workforce members with some level of access to confidential trading information on JPM-X include those described below to the extent they have a need to know such information to perform their respective responsibilities in

connection with the operations of JPM-X (#1-5) or JPMS' compliance with applicable law in operating JPM-X (#6). Persons authorized to access confidential trading information are prohibited from using confidential trading information for purposes other than those described below.

(1) Electronic Client Solutions ("ECS") Liquidity Product Specialists (workforce members of JPMS) responsible for the development and day-to-day operation of JPMS' smart order routing technology (the "SOR") and JPMS' alternative trading systems, including JPM-X, who can access real-time data and historical data so they can monitor the performance of JPM-X, prepare aggregated data sets as described above, detect any Subscriber behavior resulting in a materially negative impact to the operation of JPM-X or to other Subscribers or indicating a need to change a Subscriber's order flow type or tier assignment, work to resolve issues related to the foregoing that may arise, develop further product initiatives, and respond to client inquiries and regulatory requests;

(2) the ECS Client Coverage, ECS Connectivity Product, and ECS Sales groups (workforce members of JPMS), which provide client services to ECS clients, including JPM-X Subscribers, and can access real-time data, only at a summary level (e.g., aggregated order quantities by client or symbol), and historical data so they can field inquiries from clients regarding orders routed to JPM-X by or on behalf of the clients;

(3) ECS supervisors and senior management (workforce members of JPMS) responsible for the ECS business, including the JPM-X offering and its operation, who can access real-time data, only at a summary level (e.g., aggregated order quantities by client or symbol), and historical data so they can appropriately supervise and manage the JPMS workforce members described in (1) and (2) above;

(4) Middle Office personnel (workforce members of JPMS affiliates worldwide) responsible for processing transactions effected by JPMS and its affiliates, including trades in JPM-X, who can access historical data so they can monitor the post-trade processing of transactions executed in JPM-X, including with respect to the clearance, settlement, and allocation of such transactions, and work to resolve any processing issues that may arise;

(5) Personnel in technology and ~~equities electronic trading agency~~ quantitative research groups (workforce members of JPMS) responsible for providing technical support and developing and maintaining electronic trading applications and infrastructure across JPMS, including the applications and infrastructure on which JPM-X relies, who can access real-time and historical data when necessary in the course of their work to provide technical support and develop and maintain the applications and infrastructure (including, in the case of the equities electronic trading quantitative research group, to develop quantitative models employed by the applications and to analyze the performance of these applications and their underlying models);

(6) Personnel in technology groups, Compliance, and Regulatory Management (workforce members of JPMS affiliates worldwide) responsible for facilitating JPMS' and its affiliates'

compliance with applicable law, including with respect to the operation of JPM-X, who can access historical data so they can maintain JPMS' and its affiliates' compliance with laws applicable to the operation of JPM-X, including through surveillance and the preparation of regulatory reports and responses to regulatory requests; and

(7) Business unit trading personnel who route Firm/Conditional Orders to the algorithms/SOR or JPM-X for execution (workforce members of JPMS), who can access JPM-X data regarding only that unit's or a subset of that unit's Firm/Conditional Orders so they can monitor such Firm/Conditional Orders.

(b) Does any entity, other than the Broker-Dealer Operator, support the services or functionalities of the NMS Stock ATS ("service provider") that are required to be explained in Part III of this form?

YES

If yes, both identify the service provider and provide a summary of the role and responsibilities of the service provider in response to the applicable Item number in Part III of this form, as required. List the applicable Item number here. If there are services or functionalities that are not applicable to Part III, identify the service provider, the services and functionalities, and also provide a summary of the role and responsibilities of the service provider here.

Lucera, a third-party connectivity provider, is described in Part III, Item 6; Equinix, Inc., a third-party data center provider, maintains the Equinix NY4 New York IBX Data Center, the data center in which the JPM-X matching system is located, as described in Part III, Item 6; and Redline, a third-party market data provider, is described in Part III, Item 23.

(c) If yes to Item 6(b), does the service provider, or any of its Affiliates, use the NMS Stock ATS services?

YES

If yes, identify the service provider, or the Affiliate as applicable, and the ATS services that the service provider or its Affiliates use.

JPMS understands that Redline, a third-party market data provider used by JPM-X, is affiliated with Goldman Sachs & Co., a Subscriber that routes Firm/Conditional Orders directly to JPM-X.

(d) If yes to Item 6(c), are the services that the NMS Stock ATS offers and provides to the entity required to be identified in Item 6(c) the same for all Subscribers?

YES

Part II, Item 7 (Protection of Confidential Trading Information)

- (a) *Describe the written safeguards and written procedures to protect the confidential trading information of Subscribers to the NMS Stock ATS, including:*
- i. written standards controlling employees of the ATS that trade for employees' accounts; and*
 - ii. written oversight procedures to ensure that the safeguards and procedures described above are implemented and followed.*

JPMs has established written safeguards and procedures that restrict (i) access to JPM-X Firm/Conditional Order information to individuals responsible for the operation of JPM-X and/or JPM-X's compliance with applicable law and (ii) the personal trading of such individuals. JPMs also has adopted and implemented written oversight procedures intended to ensure that the above safeguards and procedures are followed. Access to Subscribers' confidential trading information is restricted as described below.

Systems with Real-Time and Historical Data. Real-time and historical data is accessible via a front-office graphical user interface ("GUI") and database, each of which can be used to view the status of, and generate reports regarding, Firm/Conditional Orders routed to JPM-X; order management systems used to route Firm/Conditional Orders to the algorithms/SOR or JPM-X; and the servers upon which the GUI, database, order management systems, algorithms/SOR, JPM-X matching engine run. The algorithms/SOR and JPM-X matching engine generate and access such data for the purpose of routing Firm/Conditional Orders and matching and executing Firm/Conditional Orders, respectively. Access to these systems through which real-time and historical data is accessible is restricted, via permissioned electronic logins, to ECS Liquidity Product Specialists responsible for the development and day-to-day operation of JPM-X and personnel in technology and equities electronic trading agency-quantitative research groups responsible for providing technical support and developing and maintaining the applications and infrastructure on which JPM-X relies. Limited access to such systems is provided to the Client Coverage, ECS Connectivity Product, and ECS Sales groups providing client services to JPM-X Subscribers and to ECS supervisors and senior management responsible for the JPM-X offering and its operation, but their access is restrict via permissioned electronic logins, to real-time data at a summary level (e.g., aggregated order quantities by client or symbol) and historical data. Limited access to such systems also is provided to JPMS business unit trading personnel who route, for whom the algorithms/SOR routes, Firm/Conditional Orders to JPM-X, but their access is restricted, via permissioned electronic logins, to information regarding their respective unit's or a subset of that unit's Firm/Conditional Orders.

Systems with Historical Data. Historical data is accessible via a database used to view the status of, and generate reports regarding, Firm/Conditional Orders that were routed to JPM-X and either executed or cancelled; a GUI used to view JPM books and records; Middle Office systems for the post-trade processing of transactions; and the servers upon which the database, GUI, JPMS' books and records systems, and Middle Office systems run. Access to these systems through which historical data is accessible is restricted, via permissioned electronic logins, to the ECS Liquidity Product Specialists described above; technology and equities electronic trading agency-quantitative research groups described above; ECS Client Coverage, ECS Connectivity

Product, and ECS Sales groups described above; Middle Office personnel responsible for processing trades JPM-X; and personnel in technology groups, Compliance, and Regulatory Management responsible for facilitating JPMS' compliance with applicable law with respect to the operation of JPM-X. Limited access to such systems also is provided to JPMS business unit trading personnel who route, or for whom the algorithms/SOR routes, Firm/Conditional Orders to JPM but their access is restricted, via permissioned electronic logins, to information regarding their respective unit's or a subset of that unit's Firm/Conditional Orders.

Policies and Procedures

The above restrictions are maintained in part through written procedures requiring the escalation and approval of request access JPM-X data and the periodic review of such access. Moreover, JPMC has adopted written policies and procedure (the "Personal Account Dealing Policy" or "PAD Policy") requiring (i) employees and contingent workers subject to the PA Policy ("PAD Workforce Members") to disclose accounts that can hold and transact in the purchase or sale of publicly trad securities and over which PAD Workforce Members or related persons can exercise discretion ("Covered Accounts") and review and certify annually as to the accuracy and completeness of all Covered Account details, (ii) JPMC to monitor transaction details for Covered Accounts, (iii) PAD Workforce Members to preclear purchases, sales, pledges, and gifts of publicly traded and privately held financial instruments, and (iv) managers to review trading requests to prevent the impro use of material non-public information or other confidential information, conflicts of interest, and other applicable trading restrictions. Written supervisory procedures applicable to the JPMS U.S. Equities Division (the "WSPs") require reviews, documented at least on a monthly basis, to make certain that (i) new employees receive training with respect to the PAD Policy, (ii) employees have obtained preclearance appropriately, (iii) trading subject to the PAD Policy has been appropriately monitored, and (iv) escalated personal trading violations have been followed up on appropriately.

JPMS' written procedures for limiting access to confidential trading information, pursuant to JPMS' obligations under Regulation ATS Rule 301(b)(10), include a section of the WSPs regarding JPMS' alternative trading systems. The section requires reviews, documented at least on a quarterly basis, (i) to verify the appropriateness of the access afforded to those described in response to Part II, Item 6 who are authorized to view JPM-X data via front office and books and records systems and (ii) to approve, or verify the appropriate approval of, all new requests to access JPM-X order data via such systems.

In addition, JPMC policies and procedures require that confidential trading information be shared only on a "need to know basis (i.e., shared only with a person with a legitimate business need, in the normal exercise of the person's employment duties, for knowing or having access to the information) and prohibit the unauthorized or improper use of material non-public information and the front-running of client orders. Only the workforce members identified in response to Part II, Item 6 are deemed by JPMS to have such a need to know Subscribers' confidential trading information.

- (b) *Can a Subscriber consent to the disclosure of its confidential trading information to any Person (not including those employees of the NMS Stock ATS who are operating the system or responsible for its compliance with applicable rules)?*

YES

If yes, explain how and under what conditions.

JPMS has received requests from Subscribers to provide confidential trading information pertaining to their respective Firm/Conditional Orders to third parties that provide analyses of trading information. A Subscriber, at any time, can provide JPMS with notice of the Subscriber's consent to the disclosure of confidential trading information pertaining to the Subscriber's executed and cancelled Firm/Conditional Orders, or the executed and cancelled portions thereof, to such third parties by contacting the Subscriber's JPMS sales representative. JPMS will commence such disclosure as soon as reasonably practicable following receipt of the Subscriber's notice.

- (c) *If yes to Item 7(b), can a Subscriber withdraw consent to the disclosure of its confidential trading information to any Person (not including those employees of the NMS Stock ATS who are operating the system or responsible for its compliance with applicable rules)?*

YES

If yes, explain how and under what conditions.

A Subscriber, at any time, can provide JPMS with notice of the withdrawal of the Subscriber's consent to the disclosure described in response to Part II, Item 7(b) by contacting the Subscriber's JPMS sales representative. JPMS will discontinue such disclosure as soon as reasonably practicable following receipt of the Subscriber's notice.

- (d) *Provide a summary of the roles and responsibilities of any Persons that have access to confidential trading information, the confidential trading information that is accessible by them, and the basis for the access.*

The shared workforce members described in response to Part II, Item 6(a) are the only individuals who have access to Subscriber confidential trading information on JPM-X. The information to which such individuals have access and the basis for their access are described in response to Part II, Item 6(a). The systems described in response to Part II, Item 7(a) are the only systems that have access to Subscriber confidential trading information on JPM-X.

Part III, Item 13 (Segmentation; Notice)

(a) *Are orders and trading interest in the NMS Stock ATS segmented into categories, classifications, tiers, or levels (e.g., segmented by type of participant, order size, duration, source, or nature of trading activity)?*

YES

If yes, explain the segmentation procedures, including (i) a description for how orders and trading interest are segmented; (ii) identify and describe any categories, classification, tiers, or levels and the types of orders and trading interest that are included in each; (iii) provide a summary of the parameters for each segmented category and length of time each segmented category is in effect; (iv) any procedures for overriding a determination of segmented category; and (v) how segmentation can affect order interaction.

Subscriber Firm/Conditional Order flow is assigned to an order flow type, each of which corresponds to a tier used for purposes of determining priority (given JPM-X's use of price/tier/time priority as described in response to Part III, Item 11(c)). JPMS assigns a Subscriber's Firm/Conditional Order flow to an order flow type based upon an initial review of information received from the Subscriber at onboarding. The order flow types and corresponding tiers are provided below. For the avoidance of doubt, "institutional investor client flow" does not include "U.S.-registered broker-dealer client flow" (and vice versa), and neither of them includes JPMS flow or JPMS affiliates' flow. Fills resulting from JPMS principal trading desk flow accessing JPM-X via the algorithms/SOR (Order Flow Type P-1 in Tier 4) may be provided to JPMS clients on a riskless principal basis. As noted in response to Part II, Item 1(a), Order Flow Type P-2 in Tier 4 consists entirely of Firm/Conditional Orders routed by JPMS' Automated Liquidity Provider desk.

Tier 1 (Order Flow Type I-1) -- Institutional investor client flow and JPMS affiliates' flow accessing JPM-X via the algorithms/SOR;

Tier 2 (Order Flow Type I-2) -- Institutional investor client flow with direct access to JPM-X;

Tier 3 (Order Flow Type I-3) -- U.S.-registered broker-dealer client flow (both agency and principal) accessing JPM-X via the algorithms/SOR;

Tier 4 (Order Flow Type P-1) -- Internal (JPMS) principal trading desk flow accessing JPM-X via the algorithms/SOR;

Tier 4 (Order Flow Type P-2) -- Internal (JPMS) electronic liquidity provider flow with direct access to JPM-X;

Tier 5 (Order Flow Type I-4 / ELP) -- Flow of external broker-dealers categorized as electronic liquidity providers with direct access to JPM-X; and

Tier 5 (Order Flow Type I-5) -- Flow of external broker-dealers not categorized as electronic liquidity providers (both agency and principal) with direct access to JPM-X.

There is no specific length of time that an order flow type or tier assignment for a Subscriber will remain in effect; however, JPMS conducts a quarterly review of the trading activity in JPM-X of a sample set of Subscribers to confirm the accuracy of the Subscribers' order flow type and tier assignments, and JPMS reserves the right to review and add, remove, or revise an order flow type or tier assignment for a Subscriber at any time. Based on a review of a Subscriber's trading activity (including, e.g., discussions with the Subscriber about changes in its business or observed changes in order flow characteristics), ECS Liquidity Product Specialists can request that the Subscriber modify its order flow and/or trading behavior to conform to its assigned order flow type or, if such a modification seems unlikely, determine to amend the Subscriber's order flow type assignment. JPMS would notify the Subscriber in the event of a change in the order flow type or tier assignment for the Subscriber. JPMS may change an order flow type or tier assignment for a Subscriber as described in response to Part III, Items 13-14 but does not otherwise override such an assignment once made.

The segmentation of order flow described above affects order interaction insofar as, in looking for matching opportunities for a Subscriber's Firm/Conditional Orders, JPM-X complies with the Subscriber's counterparty preferences regarding the order flow types or tiers with which the Subscriber would like to interact, as described in response to Part III, Item 14. In addition, Firm/Conditional Orders, once found eligible for crossing, are matched by JPM-X on the basis of price/tier/time priority, which means, e.g., that at a given price level, orders in lower numbered tiers have priority over orders in higher numbered tiers, as described in response to Part III, Item 11(c). Accordingly, of two equally priced orders, the one that is in the lower numbered tier will have priority over the one that is in the higher numbered tier regardless of the times at which the orders were received by JPM-X. As between firm orders and conditional order messages at the same price, firm orders always have priority over conditional order messages irrespective of their tier or when they were received by JPM-X.

(b) If yes to Item 13(a), is the segmentation of orders and trading interest the same for all Subscribers and the Broker-Dealer Operator?

YES

(c) Does the NMS Stock ATS identify orders or trading interest entered by a customer of a broker-dealer on the NMS Stock ATS as a customer order?

YES

(d) If yes to Item 13(a), does the NMS Stock ATS disclose to any Person the designated segmented category, classification, tier, or level of orders and trading interest?

YES

If yes, provide a summary of the content of the disclosure, when and how the disclosure is communicated, who receives it, and whether and how such designation can be contested.

JPMS informs Subscribers of their assigned order flow type and tier classification at onboarding and upon request. A request by a Subscriber to contest such an assignment can be communicated through a JPMS sales representative and will be reviewed by ECS Liquidity Product Specialists.

(e) If yes to Item 13(d), are the disclosures required to be identified in 13(d) the same for all Subscribers and the Broker-Dealer Operator?

YES

Part III, Item 15 (Display)

(a) Does the NMS Stock ATS operate as an Electronic Communication Network as defined in Rule 600(b)(23) of Regulation NMS?

NO

(b) Are Subscriber orders and trading interest bound for or resting in the NMS Stock ATS displayed or made known to any Person (not including those employees of the NMS Stock ATS who are operating the system)?

YES

If yes, explain the display procedures, including how and when Subscriber orders and trading interest are displayed, how long orders and trading interest are displayed, what information about orders and trading interest is displayed, and the functionality of the Broker-Dealer Operator and types of market participants that receive the displayed information.

The anonymized, aggregated quantities of resting buy firm orders and resting sell firm orders, per symbol, available in each tier of the Order Book at (i) the National Best Bid, (ii) National Best Offer, or (iii) NBBO midpoint (based on the sources of market data described in response to Part III, Item 23), with non-peg limit orders that could be executed at more than one of the above prices aggregated with orders at the most aggressive of those prices, are made known to the SOR with a frequency of up to once per second. The SOR uses this information solely to decide whether to route firm orders to JPM-X and does not share the information with any other trading system or desk. Any Subscriber that accesses JPM-X via the algorithms/SOR can opt out of the inclusion of the Subscriber's orders in the feed described above, in which case the SOR would not rely upon the feed when routing the Subscriber's orders.

In addition, Firm/Conditional Orders are made known to the SOR when they are routed through it. When JPMS trading algorithms and Subscribers route conditional orders to JPM-X, JPM-X may send firm-up invitations back to the JPMS trading algorithms and Subscribers via the SOR. As described in response to Part III, Item 9, a firm-up invitation includes the symbol, quantity, and price of the associated same-side conditional order that prompted the firm-up invitation. The SOR does not retain information about Firm/Conditional Orders resident in the Order Book other than Firm/Conditional Orders that the SOR itself determined to route to JPM-X.

(c) If yes to Item 15(b), are the display procedures required to be identified in 15(b) the same for all Subscribers and the Broker-Dealer Operator?

YES