

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 JPB-X ("real time data") and data regarding fully or partially completed Firm/Conditional Orders in JPB-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 JPB-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 JPB-X ("Aggregated Data"). Aggregated Data is created by ECS Liquidity Product Specialists, who can aggregate any JPB-X historical data, or trading personnel in a business unit identified in response to Part II, Item 1(a) who can aggregate only JPB-X historical data regarding that unit's or a subset of that unit's Firm/Conditional Orders. Aggregated Data includes JPB-X historical data from only the prior trading day or earlier. Aggregated Data sourced only from JPB-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 has included in marketing materials aggregate statistics regarding JPB-X such as executed volume); (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 JPB-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 JPMS policies and procedures.

No employee or contingent worker ("workforce member") of JPMS or its affiliates is dedicated solely to servicing the operations of JPB-X. Shared workforce members with some level of access to confidential trading information on JPB-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 JPB-X (#1-5) or JPMS' compliance with applicable law in

operating JPB-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 the SOR and JPMS' alternative trading systems, including JPB-X, who can access real-time data and historical data so they can monitor the performance of JPB-X, prepare aggregated data sets as described above, detect any Subscriber behavior resulting in a materially negative impact to the operation of JPB-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 JPB-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 regarding subsets of orders and executions that occur in JPB-X so they can field inquiries from clients regarding orders routed to JPB-X by or on behalf of the clients;
- (3) ECS supervisors and senior management (workforce members of JPMS and its affiliates worldwide) responsible for the ECS business, including the JPB-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 JPB-X, who can access historical data so they can monitor the post-trade processing of transactions executed in JPB-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 groups,~~ equities electronic trading quantitative research groups and the Markets Business Intelligence Group (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 JPB-X relies, who can access real-time and/or 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 (i) 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, and (ii) the Markets Business Intelligence Group to, e.g., provide senior management with aggregated trading analytics);
- (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

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

(7) Business unit trading personnel who route firm orders to the algorithms/SOR for execution (workforce members of JPMS and its affiliates worldwide), who can access JPB-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; and

(8) Personnel in Model Risk Governance and Review (workforce members of JPMS and its affiliates worldwide) who can access historical data so they can perform model governance and model review functions, including conducting independent assessment and monitoring of the performance of Firm models that execute transactions in JPB-X.

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 JPB-X Firm/Conditional Order information to individuals responsible for the operation of JPB-X and/or JPB-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 JPB-X; order management systems used to route firm orders to the algorithms/SOR; and the servers upon which the GUI, database, order management systems, algorithms/SOR, and JPB-X matching engine run. The algorithms/SOR and JPB-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 JPB-X and personnel in technology and equities electronic trading quantitative research groups responsible for providing technical support and developing and maintaining the applications and infrastructure on which JPB-X relies. Limited access to such systems is provided to the ECS Client Coverage, ECS Connectivity Product, and ECS Sales groups providing client services to JPB-X Subscribers and to ECS supervisors and senior management responsible for the JPB-X offering and its operation, but their access is restricted, 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 for whom the algorithms/SOR routes Firm/Conditional Orders to JPB-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 report regarding, Firm/Conditional Orders that were routed to JPB-X and either executed or cancelled; a GUI used to view JPMS' 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~~ groups, equities electronic trading quantitative research groups described above; ECS Client Coverage, ECS Connectivity Product, and ECS Sales groups and the Markets Business Intelligence Group described above; Middle Office personnel responsible for processing trades in JPB-X; ~~and~~ personnel in technology groups, Compliance, and Regulatory Management responsible for facilitating JPMS' compliance with applicable law with respect to the operation of JPB-X; and Model Risk Governance and Review responsible for performing model governance and model review functions. Limited access to such systems also is provided to JPMS business unit trading personnel for whom the algorithms/SOR routes Firm/Conditional Orders to JPB-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.

Policies and Procedures

The above restrictions are maintained in part through written procedures requiring the escalation and approval of request to access JPB-X data and the periodic review of such access. Moreover, JPMC has adopted written policies and procedures (the "Personal Account Dealing Policy" or "PAD Policy") requiring (i) employees and contingent workers subject to the PAD Policy ("PAD Workforce Members") to disclose accounts that can hold and transact in the purchase or sale of publicly traded securities and over which PAD Workforce Members or related persons can exercise discretion ("Covered Accounts") and to 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 request to prevent the improper 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 JPB-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 JPB-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.

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