

Part II, Item 1 (Activities of the Broker-Dealer Operator and its Affiliates)

(a) Are business units of the Broker-Dealer Operator permitted to enter or direct the entry of orders and trading interest (e.g., quotes, conditional orders, or indications of interest) into the NMS Stock ATS?

YES

If yes, name and describe each type of business unit of the Broker-Dealer Operator that enters or directs the entry of orders and trading interest into the ATS (e.g., NMS Stock ATS, type of trading desks, market maker, sales or client desk) and, for each business unit, provide the applicable MPID and list the capacity of its orders and trading interest (e.g., principal, agency, riskless principal).

The Over-the-Counter ("OTC") Listed International Sales and Trading unit of the JPMS equities business is able, on a principal basis, to enter directly into JPM-X (using the "JPMS" MPID) both firm orders and trading interest in the form of conditional orders (collectively, "Firm/Conditional Orders"). The OTC Listed International Sales and Trading unit (i) facilitates client trading on an agency, riskless principal, or principal basis, including electronic and portfolio trading, and hedges the resulting risk and (ii) acts as a market maker or block positioner in U.S. and non-U.S. equities, equity listed options, OTC options, equity swaps, exchange-traded funds, preferred stocks, credit products, and equity structured products.

The OTC Listed International Sales and Trading unit includes the following trading desks:

- (i) Americas Execution Services, which primarily conducts and facilitates customer trading on both an agency and a principal basis in U.S. exchange-listed, OTCBB, and pink sheet securities and acts as a market maker or block positioner in certain U.S. exchange-listed securities;
- (ii) Automated Liquidity Provider, which is an electronic market making desk that places two-sided orders in equities and ETFs via exchanges and other venues (Order Flow Type P-2 in Tier 4, described in response to Part III, Item 13(a), consists entirely of Firm/Conditional Orders routed by this desk);
- (iii) Americas Credit Indices, which trades high grade credit derivatives and associated hedges;
- (iv) Block Liquidity Management, which books block transactions with clients;
- (v) Boston Sales and Trading, which primarily receives and handles domestic (mainly block and program) equity orders (with executions done via coordination with JPMS' block trading desk, proprietary direct market access connectivity, and/or other market access tools) and provides market commentary, as well as access to JPM corporate marketing and corporate access events;
- (vi) Central Liquidity Book, which manages and hedges client facilitation positions;
- (vii) Corporate Trading, which trades equities, futures, equity listed options, equity OTC options,

equity swaps, and equity structured products and facilitates open market activities for corporate clients;

(viii) Electronic Client Trading, which primarily coordinates customer access to, and the monitoring and support of, JPMS' direct-to-market, algorithmic, and agency-only trading product;

(ix) Emerging Markets Global Credit, which hedges Emerging Markets Credit Risk positions with ETFs;

(x) Equity Finance Collateral Management, which handles collateral management for the equity finance business;

(xi) Equity Finance Trading, which finances client and counterparty equity positions through swap transactions;

(xii) Exchange Traded Fund ("ETF") Flow, which conducts and facilitates customer trading on both an agency and a principal basis in U.S. exchange-listed ETF securities, acts as a block positioner in certain U.S. exchange-listed ETF securities, and engages in domestic and international creation/redemptions of ETFs, basket swaps, passive index arbitrage, term swaps, and put/call combos;

(xiii) Exotic, which trades equities, futures, equity listed options, exotic equity options, equity swaps, and equity structured products;

(xiv) Flow Index, which trades equities, equity indices, futures, equity listed options, equity vanilla OTC options, swaps, and equity structured products;

(xv) Franchise, which primarily conducts and facilitates customer trading, on both an agency and a principal basis, in U.S. exchange-listed, OTCBB, and pink sheet securities and also acts as a market maker or block positioner in certain U.S. exchange-listed, OTCBB, and pink sheet securities;

(xvi) Equity Index Structuring, which is responsible for creating investible indices based on equities or on a cross-asset basis;

(xvii) Index Swaps, which provides financing solutions to clients, makes markets in Exchange for Physicals on any Americas index, single stock, or ETF, sources inventory through derivative trades to lend to prime brokerage clients, makes markets and provides liquidity in dividends, and provides customized basket solutions to clients;

(xviii) International Trade, which primarily conducts and facilitates customer trading on both an agency and a principal basis in international securities (both ADRs and "locals") and acts as a market maker or block positioner in certain ADRs;

(xix) North America Delta One Swap, which engages in financing client and counterparty swap transactions related to custom baskets and ETFs, facing institutional clients on swaps and hedging the client swaps by executing in the market and with counterparties;

(xx) North America Credit Markets Preferred ADM, which facilitates client flow in fixed income products, including preferred equities, and hedges the resulting risk;

(xxi) Program Trading, which trades baskets on an agency basis and handles G-VWAP baskets, shortened settlement, and blind risk bid orders for clients, following client instructions such as in-line-with-the-market, market-on-close, market-on-open, VWAP, and TWAP orders;

(xxii) Securitized Product Group, which takes positions in securitized product ETFs via ETF create/redeems to hedge fixed income client-facing positions;

(xxiii) Single Stock Flow Volatility, which trades equities, equity indices, futures, equity listed options, equity vanilla OTC options, swaps, and equity structured products; and

(xxiv) Syndicate, which engages in underwriting activities that range from initial public offerings, follow-on equity issues, convertible issues, and private placements; ~~and~~

~~(xxv) One Touch Sales Trading, which provides coordinated sales trading coverage for both high-touch and low-touch products for clients that request the coverage model.~~

In addition, the following units of the JPMS equities business are able, on an agency, riskless principal, or principal basis, to enter or direct the entry of Firm/Conditional Orders into a JPMS algorithmic trading strategy or JPMS' smart order routing technology (collectively, the "algorithms/SOR"), which in turn is able to enter, or to be directed by the units below to enter, Firm/Conditional Orders into JPM-X (using the "JPMS" MPID):

1. OTC Listed International Sales and Trading, which is described above;
2. American Depositary Receipt ("ADR") Cross Trading, which primarily conducts dealer swaps between ADRs and U.S. stocks;
3. Convertible Bond Sales and Trading, which enters into convertible bond transactions with clients and hedges the resulting risk;
4. Fixed Income Sales and Trading, which provides liquidity to high-yield and distressed credit clients and hedges the resulting risk, including the following trading desks:
 - (i) High Yield Trading, which trades high yield debt and associated hedges;
 - (ii) High Yield Loan Trading Distressed, which trades high yield distressed loans; and

(iii) North America Credit Markets Preferred Stock, which trades preferred stocks;

5. Commodities Trading, which provides liquidity to commodities clients and hedges the resulting risk;

6. Equity Finance, which may buy or sell stocks in connection with its facilitation of stock borrows and loans; and

7. WMIS Capital Markets, which handles order flow derived from Wealth Management business lines on an agency basis and is able to source liquidity from other units of the JPMS equities business that in turn are able to access JPM-X via the algorithms/SOR as described above.

(b) If yes to Item 1(a), are the services that the NMS Stock ATS offers and provides to the business units required to be identified in Item 1(a) the same for all Subscribers?

YES

(c) Are there any formal or informal arrangements with any of the business units required to be identified in Item 1(a) to provide orders or trading interest to the NMS Stock ATS (e.g., undertaking to buy or sell continuously, or to meet specified thresholds of trading or quoting activity)?

NO

(d) Can orders and trading interest in the NMS Stock ATS be routed to a Trading Center operated or controlled by the Broker-Dealer Operator?

NO

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 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;

(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, and 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 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 ECS 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 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 who route, or 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 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 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 in 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-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 requests to access JPM-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 requests 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 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 or 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 23 (Market Data)

- (a) Identify the sources of market data used by the NMS Stock ATS (e.g., proprietary feed from a national securities exchange, feed from the securities information processor ("SIP")), and how the ATS uses market data from these sources to provide the services that it offers, including how the ATS uses market data to determine the NBBO and protected quotes, and display, price, prioritize, execute, and remove orders and trading interest on the ATS.*

JPMS determines the NBBO and protected quotes and prices, prioritizes, and executes Firm/Conditional Orders in JPM-X based on market data received from direct feeds through Redline, a third-party market data provider, that (a) uses proprietary feeds from all national securities exchanges other than [Long-Term Stock Exchange, Members Exchange, MIAx PEARL Equities](#), NYSE American, NYSE Chicago, and NYSE National and (b) uses the Securities Information Processors (the "SIP") for the aforementioned exchanges and ADF. Redline or JPMS will switch to extracting equivalent data from the SIP where a proprietary feed is unavailable, unstable, experiencing unacceptable latencies, or detected to be providing quotes that appear to have quality issues. When a direct feed is affected, the SIP is used for market data from the affected market, and Redline or JPMS will continue to use direct feeds from the unaffected markets to determine the NBBO. In the event of any disruption of services or other issues with any of the direct feeds, JPMS reserves the right to execute transactions in JPM-X based on market data from the SIP for any (or all) market center(s). As described in response to Part III, Item 20, JPMS may suspend trading in an NMS stock if the market data received by JPM-X for the stock from the SIP is unavailable, unstable, experiencing unacceptable latencies, or detected to be providing quotes that appear to have quality issues.

- (b) Are the sources of market data and how the NMS Stock ATS uses market data for the services that it offers the same for all Subscribers and the Broker-Dealer Operator?*

YES