

Part II: Activities of the Broker-Dealer Operator and its Affiliates

Item 1: Broker-Dealer Operator Trading Activities on the ATS

- 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 ☐ No

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 JPMS equities business units listed below are able, on an agency, riskless principal, or principal basis, to enter or direct the entry of firm orders into JPMS algorithmic trading strategies and JPMS' smart order routing technology (the "SOR," or, collectively with the JPMS algorithmic trading strategies, the "algorithms/SOR"). As described in Part III, Item the algorithms/SOR is able to enter or direct the entry of firm orders and trading interest in the form of conditional orders (collectively, "Firm/Conditional Orders") into JPB-X (using the "JPMS" MPID) based on the algorithms/SOR's own routing determinations or, with respect to the initial conditional order only, the routing determinations of the JPMS business units

The JPMS business units with such access to JPB-X are as follows:

1. Over-the-Counter ("OTC") Listed International Sales and Trading, which (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, including 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;~~

(ii) Americas Credit Indices, which trades high grade credit derivatives and associated hedges;

(~~iii~~^{iv}) Block Liquidity Management, which books block transactions with clients;

(~~i~~^{iv}) 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;

(~~v~~ⁱ) Central Liquidity Book, which manages and hedges client facilitation positions;

(~~vi~~ⁱⁱ) 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~~ⁱ) 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;

(~~viii~~^{ix}) Emerging Markets Global Credit, which hedges Emerging Markets Credit Risk positions with ETFs;

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

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

(~~xi~~ⁱⁱ) 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~~ⁱ) Exotic, which trades equities, futures, equity listed options, exotic equity options, equity swaps, and equity structured products;

(~~xiii~~^{iv}) Flow Index, which trades equities, equity indices, futures, equity listed options, equity vanilla OTC options, swaps, and equity structured products;

(~~xivⁱ) 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;~~

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

(xvi~~i~~) 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, make markets and provides liquidity in dividends, and provides customized basket solutions to clients;

(xvii~~i~~) 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;

(xviii~~i~~) 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;

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

(xx~~i~~) Program Trading, which trades baskets on an agency basis and handles G-VWAP baskets, shortened settlement, a 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;

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

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

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

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 JPB-X via the algorithms/SOR as described above.

Item 2: Affiliates Trading Activities on the ATS

- a. Are Affiliates of the Broker-Dealer Operator permitted to enter or direct the entry of orders and trading interest into the NMS Stock ATS?

☒ Yes ☐ No

If yes, name and describe each type of Affiliate that enters or directs the entry of orders and trading interest into the ATS (e.g., broker-dealer, NMS Stock ATS, investment company, hedge fund, market maker, principal trading firm), and, for each Affiliate, provide the applicable MPID and list the capacity of its orders and trading interest (e.g., principal, agency, riskless principal).

The JPMS affiliates listed below are able, for their own or client accounts, (i) to enter or direct the entry of firm orders into JPMS' algorithms/SOR and (ii) to route firm orders to one or more of the JPMS business units identified in response to Part II, Item 1(a), which in turn are able to enter or direct the entry of firm orders into the algorithms/SOR. As described in Part III, Item 5, the algorithms/SOR is able to enter or direct the entry of Firm/Conditional Orders into JPB-X (using the "JPMS" MPID) based on the algorithms/SOR's own routing determinations or, with respect to the initial conditional order only, the routing determinations of the JPMS affiliates or JPMS business units. As non-FINRA members, the affiliates listed below do not have their own MPIDs.

1. Bear Stearns Asset Management Inc. ("BSAM") (regulated by the U.S. Securities and Exchange Commission ("SEC")), which is registered with the SEC as an investment adviser; BSAM and affiliated investment advisers comprise J.P. Morgan Asset Management, the investment management business of J.P. Morgan Asset & Wealth Management

2. ~~China International Fund~~ JPMorgan Asset Management (China) Company, Limited (regulated by the China Securities Regulatory Commission ("CSRC"), the People's Bank of China, and the State

Administration for ~~Industry & Commerce~~ Market Regulation of the People's Republic of China), which issues and sells funds and engages in investment management and other businesses approved by CSRC

3. Highbridge Capital Management LLC (regulated by the SEC, Securities and Futures Commission in Hong Kong, and Financial Conduct Authority in the United Kingdom ("FCA-UK")), which is a registered investment adviser and has developed a diversified investment platform, including hedge funds, daily liquidity products, and other similar investment products

4. J.P. Morgan Alternative Asset Management Inc. (regulated by the SEC), which is a U.S. investment advisory branch of J.P. Morgan Asset Management

5. J.P. Morgan Investment Management Inc. ("JPMIM") (regulated by the SEC, FCA-UK, Securities and Exchange Board India, Financial Supervisory Service in South Korea, and Financial Services Agency of Japan), which is registered with the SEC as an investment adviser; JPMIM and affiliated investment advisers comprise J.P. Morgan Asset Management

6. J.P. Morgan Private Investments Inc. (regulated by the SEC), which is an investment adviser registered with the SEC and operates within the Asset & Wealth Management line of business

7. J.P. Morgan Securities (Asia Pacific) Limited (regulated by the Hong Kong Monetary Authority and Securities and Futures Commission in Hong Kong), which engages in investment banking (corporate finance advisory and debt/equities securities origination and trading), market making of government bills and bonds, and the trading and marketing of FX, rate, money market, derivatives, cash equities, convertible bonds, distressed, and high yield assets

8. J.P. Morgan Securities Asia Private Limited (regulated by the Monetary Authority of Singapore), which holds a Capital Markets Services license to deal in securities and advise on corporate finance

9. J.P. Morgan Securities Australia Limited (regulated by the Australian Securities and Investments Commission), which a market, clearing, and settlement participant on the ASX and engages in stockbroking, equity research and services in the ETO market for wholesale clients and makes markets in and advises on equity swaps, OTC options, and exchange listed warrants

10. JPMorgan Asset Management (Asia Pacific) Limited (regulated by the Securities and Futures Commission in Hong Kong), which provides investment management services

11. J.P. Morgan Securities (Far East) Limited (regulated by the Securities and Futures Commission in Hong Kong), which is a broker

and lead underwriter in PRC and engages in securities dealing and investment banking activities in its Seoul Branch

12. J.P. Morgan Securities plc (regulated by the FCA-UK and Prudential Regulation Authority in the United Kingdom), the principal activity of which is to be a booking and processing entity for investment banking activities initiated by other JPMorgan Chase & Co. ("JPMC") entities

13. J.P. Morgan (Suisse) SA (regulated by the Swiss Financial Market Supervisory Authority), which serves Swiss and international clients across the Private Banking and Investor Services lines of business

14. JPMorgan Asset Management (Europe) S.a.r.l. (regulated by the Commission de Surveillance du Secteur Financier), which is an investment management and management company

15. 55I, LLC (regulated by the SEC), which is a registered investment adviser and provides advisory services associated with tax harvesting solutions as well as ongoing trading and rebalancing services for clients

16. J.P. Morgan Markets Limited (regulated by the FCA-UK), which engages in global credit and equities trading

17. JPMorgan Asset Management (Japan) Limited (regulated by the Financial Services Agency of Japan), which engage in investment trust management, non-discretionary investment advisory services and discretionary investment management services, and the offering of beneficiary certificates of investment trusts and shares of non-Japanese pooled funds

18. JPMorgan Asset Management (Singapore) Limited (regulated by the Monetary Authority of Singapore), which engages in fund management

19. JPMorgan Asset Management (Taiwan) Limited (regulated by the Financial Supervisory Commission and Investment Commission of Ministry of Economic Affairs in Taiwan), which is an investment manager and securities investment trust

20. JPMorgan Asset Management (UK) Limited (regulated by the FCA-UK), which is a discretionary investment adviser

21. JPMorgan Chase Bank, National Association (regulated by the Office of the Comptroller of the Currency, Board of Governors of the Federal Reserve System, and Federal Deposit Insurance Corporation in the United States; Hong Kong Monetary Authority and Securities and Futures Commission in Hong Kong; Monetary Authority of Singapore; and FCA-UK and Prudential Regulation Authority in the United Kingdom), which is a wholly owned bank subsidiary of JPMC

22. JPMorgan Chase Funding Inc. (regulated by the Board of Governors of the Federal Reserve System), which may engage in activities permitted for a financial holding company as set forth in Board Regulation Y

~~23. JPMorgan Gestion, Sociedad Gestora de Instituciones de Inversion Colectiva, S.A. (regulated by the Spanish Securities Market Commission), which is a Spanish management company of collective investment schemes~~

234. JPMorgan Securities Japan Co., Ltd. ("JPMSJ") (regulated by the Financial Services Agency of Japan), which underwrites and trades securities, offers and brokers securities transactions, advises clients on business strategies, capital structures, and financial strategies, and engages in M & A derivative transactions booked outside of JPMSJ

245. Security Capital Research & Management Incorporated ("SCRM") (regulated by the SEC), which is registered with the SEC as an investment adviser; SCRM and affiliated investment advisers comprise J.P. Morgan Asset Management

256. J.P. Morgan SE (regulated by the German Federal Financial Supervisory Authority, German Central Bank, and European Central Bank), which is a wholly owned bank subsidiary of JPMC

26. First Republic Investment Management, Inc. (regulated by the SEC), which is a registered investment advisor offering private wealth management services

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 ☐ No

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, including end of trading on trade date, or earlier. Aggregated Data can include any JPB-X historical data or some subset of JPB-X historical data. 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 or senior management (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 JPMC 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: (i) the operations and support of JPB-X; (ii) #1-5) or JPMS' risk management and compliance with applicable law in operating JPB-X; (iii) assisting clients, senior management, and business units that send orders to JPB-X; or (iv) developing or maintaining JPMS's infrastructure and applications, including those related to JPB-X. In particular, as detailed below, limited groups of workforce members have access to all real-time and historical data in JPB-X (1), and limited groups of workforce members

have access to all historical data from JPM-X (2). Separately, there are groups that have access to real-time and/or historical data regarding subsets of orders and executions that occur in JPB-X to perform their respective responsibilities (3) (#6). Persons authorized to access confidential trading information are prohibited from using confidential trading information for purposes other than those described below.

(1) The following groups have access to all real-time and all historical data in JPB-X for the purposes described below:

- a) 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 the JPB-X order book, which contains all real-time data and historical data. This access allows ECS Liquidity Product Specialists to ~~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; and
- b) Personnel in technology groups (workforce members of JPMS) responsible for providing technical support or developing and maintaining applications, e.g., trading applications and other applications or services that support trading personnel described below, or infrastructure across JPMS, including the applications and infrastructure on which JPB-X relies, can access real-time and historical data regarding orders and executions that occur in JPB-X as necessary in the course of their work to provide support and develop and maintain the applications and infrastructure.

(2) The following groups have access to all historical data from JPB-X for the purposes described below:

- a) Operations personnel (workforce members of JPMS affiliates worldwide) responsible for processing and providing operational support for 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 and provide operational support for transactions executed in JPB-X, including with respect to the clearance, settlement, and

- allocation of such transactions, and work to resolve any processing or other operational issues that may arise; and
- b) Personnel in Conduct Compliance and Operational Risk, Business Control Management, and technology groups (workforce members of JPMS affiliates worldwide), who can access historical data so they can maintain (i) JPMS' and its affiliates' compliance with laws applicable to the operation of JPM-X, including through supervision, surveillance and the preparation of regulatory reports and responses to regulatory request; and (ii) related systems.

(3) The following groups have access to real-time and/or historical data regarding subsets of orders and executions that occur in JPB-X for the purposes described below:

a) The ECS Client Coverage, ECS Product, 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 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;

b)(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 and historical 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~~ECS Liquidity Product Specialists, ECS Client Coverage, ECS Product, ECS Connectivity, and ECS Sales groups;

~~(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;~~

c)(5) ~~Personnel in technology groups, the equities electronic trading Analytics, Automation and Optimization quantitative research groups, Electronic Trading quantitative research groups, and the Markets Business Intelligence Group (together, the "Equities 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 JPB-X relies, who can access real-time and/ or historical data regarding JPB-X activity occurring through the upstream systems or desks they support when necessary in the course of their work to provide technical support and/or develop and maintain the applications and infrastructure (including, in the case of (i) the equities eElectronic Ttrading quantitative research group, to, e.g., develop quantitative models employed by the applications and to analyze the performance of these applications and their underlying models, (ii) the Analytics, Automation, and Optimization quantitative research group to, e.g., maintain the applications that support trading personnel described below and the integrity of data used by such applications; and (iii) the Markets Business Intelligence Group to, e.g., provide senior management with aggregated trading analytics);~~

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~~d) Personnel in Operations and Business Control Management (described in section 2 above), who can access real-time data on a limited basis in connection with their responsibilities described above; (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;~~

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~~c(7) Business unit sales and trading personnel who route firm orders to the algorithms/SOR for execution (workforce members of JPMS and its affiliates worldwide), who can access JPB-Xreal-time and historical data regarding orders and executions that occur in JPB-X regarding only that unit's or a subset of that unit's Firm/Conditional Orders so they can monitor such Firm/Conditional Orders, field inquiries regarding their orders, including those Firm/Conditional Orders routed to JPB-X, or provide technical support for related trading application; and~~

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~~f(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~~

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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 all real-time and historical data regarding Subscribers' JPB-X Firm/Conditional Order information to individuals identified in categories 1 and 2 of the response to Part II, Item 6(a) above responsible for the operation of JPB-X and/or JPB-X's compliance with applicable law and (ii) the personal trading of such individuals with access to Subscriber confidential trading information identified in Part II, Item 6(a). 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 regarding all orders and executions that occur in JPB-X 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 personnel described in category 1 in response to Part II, Item 6(a) above (for the reasons stated therein). Access, through the above referenced systems to real-time and/or historical data regarding subsets of orders and executions that occur in JPB-X 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

permitted 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 permitted electronic logins, to personnel described in sub-parts (a) through (f) of category 3 of the response to Part II, Item 6(a) above (for the reasons stated therein) information regarding their respective unit's or a subset of that unit's Firm/Conditional Orders.

Systems with Historical Data. In addition to the systems noted above, JPMS maintains systems that include only historical data, i.e., these systems do not include real-time data. These systems include a GUI used to view JPMS' transaction data; Middle Office systems for the post-trade processing of transactions; and the servers upon which these systems run. Access to these systems, through which all historical data is accessible, is restricted, via permitted electronic logins, to the personnel described in category 2 in response to Part II, Item 6(a) above (for the purposes stated therein). 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 permitted electronic logins, to the ECS Liquidity Product Specialists described above; technology groups, equities electronic trading quantitative research groups and the Markets Business Intelligence Group described above; ECS Client Coverage, ECS Connectivity Product, and ECS Sales groups described above; Middle Office personnel responsible for processing trades in JPB-X; 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 permitted 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 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 certain front office and ~~books-and-recordstransaction data processing~~ 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~~confidential information and/or 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.

Part III: Manner of Operations

Item 7: Order Types and Attributes

- a. Identify and explain each order type offered by the NMS Stock ATS. In your explanation, include the following:

- i. priority, including the order type's priority upon order entry and any subsequent change to priority (if applicable); whether and when the order type can receive a new time stamp; the order type's priority vis-à-vis other orders on the book due to changes in the NBBO or other reference price; and any instance in which the order type could lose execution priority to a later arriving order at the same price;
- ii. conditions, including any price conditions (e.g., how price conditions affect the rank and price at which it can be executed; conditions on the display or non-display of an order; or conditions on executability and routability);
- iii. order types designed not to remove liquidity (e.g., post-only orders), including what occurs when such order is marketable against trading interest on the NMS Stock ATS when received;
- iv. order types that adjust their price as changes to the order book occur (e.g., price sliding orders or pegged orders) or have a discretionary range, including an order's rank and price upon order entry and whether such prices or rank may change based on the NBBO or other market conditions when using such order type; when the order type is executable and at what price the execution would occur; whether the price at which the order type can be executed ever changes; and if the order type can operate in different ways, the default operation of the order type;
- v. whether an order type is eligible for routing to other Trading Centers;
- vi. the time-in-force instructions that can be used or not used with each order type;
- vii. the circumstances under which order types may be combined with another order type, modified, replaced, canceled, rejected, or removed from the NMS Stock ATS; and
- viii. the availability of order types across all forms of connectivity to the NMS Stock ATS and differences, if any, in the availability of an order type across those forms of connectivity.

Conditional and Firm Orders. The algorithms/SOR and Subscribers that access JPB-X directly can route to JPB-X (i) conditional orders and (ii) if any of the conditional orders match with other conditional orders in JPB-X, firm orders routed in response to firm-up invitations received directly from JPB-X (in the case of the SOR with respect to orders designated for Close Price Match and in the case of Subscribers that access JPB-X directly) or from JPB-X via the SOR (in the case of JPMS algorithmic trading strategies).

Matching Types. JPB-X accepts Firm/Conditional Orders designated for the following two matching types:

- Volume-Weighted Average Price Match ("VWAP Price Match"), which matches orders, using the conditional order process described in Part III, Item 9, and crosses them at a VWAP price determined by JPB-X over the course of a pre-determined match period; and
- Close Price Match, which matches orders, using the conditional order process described in Part III, Item 9, and crosses them at the security's official closing price as determined by the closing auction at the primary exchange for the security.

Firm/Conditional Orders designated for each matching type are maintained in separate order books within JPB-X and do not interact with each other.

Firm/Conditional Order Types. JPB-X accepts (1) limit and market Firm/Conditional Orders for the VWAP Price Match matching type and (2) market-on-close Firm/Conditional Orders for the Close Price Match matching type. A limit Firm/Conditional Order is a Firm/Conditional Order to buy or sell stock at a specific price or better. A market Firm/Conditional Order is a Firm/Conditional Order to buy or sell stock at the best available price. A market-on-close Firm/Conditional Order is a Firm/Conditional Order to buy or sell stock at its closing price as determined by the primary exchange for the stock. JPB-X does not offer post-only Firm/Conditional Order types, and none of the above Firm/Conditional Order types is eligible for routing to other Trading Centers. The above Firm/Conditional Order types cannot be combined (i.e., a Firm/Conditional Order cannot be more than one Firm/Conditional Order type).

Time-In-Force Instructions. For both VWAP Price Match and Close Price Match matching types, JPB-X only accepts a "day" time-in-force instruction. A day Firm/Conditional Order is a Firm/Conditional Order intended to rest in an order book maintained by JPB-X until the Firm/Conditional Order is executed or cancelled at the end of the trading day or earlier. A blank time-in-force field is treated as a "day" time-in-force instruction.

Modifications, Replacements, and Cancellations. The algorithms/SOR and Subscribers that access JPB-X directly can modify, replace, or cancel day Firm/Conditional Orders routed to JPB-X, whether designated for VWAP Price Match or Close Price Match, as described below. The modification or replacement of a day conditional order results in the entry of a replacement conditional order with a new time stamp and lower priority in time than the original conditional order, unless the modification is a reduction in the quantity of the conditional order, in which case the replacement conditional order has a new time stamp but the same priority in time that the original conditional order

had prior to its replacement. Note, however, that conditional orders designated for Close Price Match cannot be modified, replaced, or cancelled once the Close Price Match matching time is reached. The algorithms/SOR and Subscribers that access JPB-X directly can cancel or reduce the quantity of a firm-up order prior to its execution.

Rejections. JPB-X rejects (i) short sale exempt Firm/Conditional Orders, (2) short sale Firm/Conditional Orders designated for Close Price Match, (3) Firm/Conditional Orders priced at or above \$1.00 per share if priced in a sub-penny increment, (4) Firm/Conditional Orders priced below \$1.00 per share if priced in an increment of less than \$.0001, (5) odd lot Firm/Conditional Orders designated for the VWAP Price Match, ~~and~~ (6) Firm/Conditional Orders that exceed limits imposed by JPMS pursuant to its obligations under SEC Rule 15c3-5, and (7) beginning on October 30, 2023, any order type and/or orders with any time-in-force instructions not identified above (for example, pegged orders).

Eligibility for Matching and Execution. A Firm/Conditional Order is ineligible for matching in JPB-X unless the price, minimum quantity, and counterparty preference instructions associated with the Firm/Conditional Order, if any, are satisfied. Conditional orders, but not firm orders, can have minimum match size requirements. As described in response to Part III, Item 9, when JPB-X sends a firm-up invitation, JPB-X cancels the corresponding conditional order, irrespective of the conditional order's minimum quantity instruction. As also described in response to Part III, Item 9, a firm-up order is ineligible for execution in JPB-X during the order's applicable firm-up period.

Matching of VWAP Price Match Orders. As described in response to Part III, Item 11, once JPB-X matches firm-up orders designated for VWAP Price Match and the match period has elapsed, the firm-up orders are crossed, at the VWAP determined by JPB-X. In the event of (1) the cancellation of a firm-up order by the algorithms/SOR or a Subscriber that accesses JPB-X directly, (2) a response to a production issue, (3) the National Best Bid moving lower than or becoming equal to the limit of a matched sell order or the National Best Offer moving higher than or becoming equal to the limit of a matched buy order, (4) the triggering of a Rule 201 price test, or (5) the stock closing at the primary exchange, JPB-X will terminate the match period and issue partial fills before cancelling all matched firm-up orders. The quantity of a matched order's fill will be proportional to the duration of the match period and the price of the fill will be the VWAP over the duration of the match period (or, if a Rule 201 price test is in effect, at a price that is allowed by the rule). In addition, JPB-X does not execute a cross in any NMS stock that is subject to a regulatory or trading halt (a "Halt"), although, as described in response to Part III, Item 20, JPB-X will

continue to accept Firm/Conditional Orders in such an NMS stock and instructions to modify, cancel, or replace Firm/Conditional Orders in that NMS stock using the priority logic described in response to Part III, Item 11(c). Firm-up orders that were matched but for which the match period has not elapsed will be cancelled by JPB-X immediately after the Halt goes into effect. If a Halt in an NMS stock occurs during regular trading hours while a firm-up period for one or more conditional orders in that security is underway, JPB-X rejects any firm-up order received during the firm-up period while the halt is in place.

Matching of Close Price Match Orders. As described in response to Part III, Item 11, once JPB-X matches firm-up orders designated for Close Price Match in a NMS stock, they are crossed, based on time priority, at the closing price as determined by the closing auction and published by the primary exchange for the NMS stock after the exchange closes. As described in response to Part III, Item 20, when a Halt is in effect for an NMS stock, JPB-X will continue to accept and match conditional orders designated for Close Price Match and to accept instructions to modify, cancel, or replace conditional orders in that NMS stock using the priority logic described in response to Part III, Item 11(c) but will not execute orders if the primary exchange does not publish a close price as determined by the closing auction for the stock, in which case JPB-X will cancel the unexecuted orders immediately after JPMS determines that the primary exchange has not published a close price as determined by the closing auction for the stock and has been delayed in doing so as a result of the Halt. Firm-up orders that were matched but have not yet been executed will be cancelled by JPB-X immediately after the Halt goes into effect.

Changes in NBBO. Although a change in the NBBO would not affect the relative priority of matched firm-up orders that remain eligible for execution after the change, the change could affect whether a firm-up order designated for VWAP Price Match with a price instruction associated with it is eligible for execution and the execution price at which orders that remain eligible for execution are crossed

Item 11: Trading Services, Facilities and Rules

c. Explain the established, non-discretionary rules and procedures of the NMS Stock ATS, including order interaction rules for the priority, pricing methodologies, allocation, matching, and execution of orders and trading interest, and other procedures governing trading, such as price improvement functionality, price protection mechanisms, short sales, locked-crossed markets, the handling of execution errors, and the time-stamping of orders and executions.

JPB-X rejects (i) short sale exempt Firm/Conditional Orders, (2) short sale Firm/Conditional Orders designated for Close Price Match, (3) Firm/Conditional Orders priced at or above \$1.00 per share if priced in a sub-penny increment, (4) Firm/Conditional Orders priced below \$1.00 per share if priced in an increment of less than \$.0001, (5) odd lot Firm/Conditional Orders designated for the VWAP Price Match, ~~and~~ (6)

Firm/Conditional Orders that exceed limits imposed by JPMS pursuant to its obligations under SEC Rule 15c3-5, and (7) beginning on October 30, 2023, any order type and/or orders with any time-in-force instructions not identified in Part III, Item 7 above (for example, pegged orders).

A Firm/Conditional Order is ineligible for matching in JPB-X unless the price, minimum quantity, and counterparty preference instructions (see Part III, Items 13-14) associated with the Firm/Conditional Order, if any, are satisfied. Conditional orders, but not firm orders, can have minimum match size requirements. As described in response to Part III, Item 9, a firm-up order is ineligible for execution in JPB-X during the order's applicable firm-up period.

VWAP Price Match Rules and Procedures:

When two or more conditional orders designated for VWAP Price Match on opposite sides are eligible for matching in JPB-X, JPB-X matches them based on one-to-one random matching logic and sends firm-up invitations to the algorithms/SOR or Subscribers (as described in response to Part III, Item 9). Specifically, when assessing all eligible conditional orders able to be matched, JPB-X will, beginning with the side with fewer orders, randomly choose one conditional order on one side and one conditional order on the other side. A conditional order routed by the algorithms/SOR or directly by a Subscriber can be cancelled by the algorithms/SOR or Subscriber, respectively, before the conditional order is matched. Short sale conditional orders are not eligible for matching when a price test under Rule 201 of Regulation SHO is in effect.

Once the firm-up period described in Part III, Item 9 has elapsed, JPB-X matches the firm-up orders it received during the firm-up period (subject to the eligibility criteria for the firm-up orders discussed above and the firm-up orders' participation instructions). If either firm-up order quantity is less than the firm-up invitation quantity, JPB-X will match the firm-up orders (for the quantity that will satisfy the smaller firm-up order) at the end of the match period and cancel back any residual (see example below). A pre-determined default match period commences upon the earlier of (i) JPB-X's receipt of firm-up orders corresponding to all firm-up invitations sent by JPB-X or (ii) the expiration of the firm-up period. The default match period is currently five minutes for all firm-up orders.

As noted above, for the VWAP Price Match, JPB-X will commence the five minute match period with a match quantity that will satisfy the smaller firm-up order. For example, JPB-X can match a Conditional Order to buy 1000 shares of ABC designated for the VWAP Price Match (“Order 1”) with a Conditional Order to sell 500 shares of ABC designated for the VWAP Price Match (“Order 2”) with a match quantity of 500 shares. If Order 1 firms up with 500 shares and Order 2 firms up with 300 shares, JPB-X will commence the five minute match period with a final match quantity of 300 shares. JPB-X will indicate the final match quantity of 300 shares on the firm-up order acknowledgement for Order 1 and Order 2 and will indicate the cancellation of 200 shares for Order 1 at the end of the match period.

During the match period, JPB-X monitors market data reported via the SIP (see Part III, Item 23) and any changes to parent order attributes. Once the match period elapses, JPB-X crosses the matched firm-up orders at the VWAP (if one exists and it is within the matched orders' price limits, if any), determined by JPB-X based on executed trades reported via the SIP during the match period. Trade prices reported pursuant to the UTP Plan with the following sale conditions will be excluded when calculating the VWAP for the match period: Price Variation Trade, Market Center Official Close, Next Day Market Center Official Open, Extended trading hours (Sold Out of Sequence), Average Price Trade, Sold (out of sequence), Derivatively priced, Qualified Contingent Trade (QCT). Trade prices reported pursuant to the CTA Plan with the following sale conditions will be excluded when calculating the VWAP for the match period: Average Price Trade, Price Variation Trade, Market Center Official Close, Next Day Trade (Next Day Clearing), Market Center Official Open, Extended Hours Trade, Extended Hours Sold (Out of Sequence), Sold (Out of Sequence), Derivatively Priced, and Qualified Contingent Trade. If there are no eligible trades in the security during the match period for VWAP Price Match firm-up orders and therefore a VWAP cannot be determined, the matched firm-up orders are cancelled without a fill.

In the event of (1) the cancellation of a firm-up order by the algorithms/SOR or a Subscriber that accesses JPB-X directly (2) a response to a production issue, (3) the National Best Bid moving lower than or becoming equal to the limit of a matched sell order or the National Best Offer moving higher than or becoming equal to the limit of a matched buy order, (4) the triggering of a Rule 201 price test, or (5) the stock closing at the primary exchange, JPB-X will terminate the match period and issue partial fills before cancelling all matched firm-up orders. The quantity of a matched order's fill will be proportional to the duration of the match period and the price of the fill will be the VWAP over the duration of the match period (or, if a Rule 201 price test is in effect, at a price that is allowed by the rule). For example, if the full match quantity is 5,000 shares over five minutes and one of the firm-up

orders is cancelled two minutes after the match period began, JPB-X will end the match period and will execute 2,000 shares. The price of the fill will be the VWAP over the duration of the match period up until the time of cancellation of the matched firm-up order.

JPB-X does not execute a cross in any NMS stock that is subject to a Halt (although, as described in response to Part III, Item 20, JPB-X will continue to accept Firm/Conditional Orders in such an NMS stock and instructions to modify, cancel, replace Firm/Conditional Orders in that NMS stock). Firm-up orders that were matched but for which the match period has not elapsed are cancelled by JPB-X immediately after the Halt goes in effect. If a Halt in an NMS stock occurs during regular trading hours while a firm-up period for one or more conditional orders in that security is underway, JPB-X rejects any firm-up order received during the firm-up period while the halt is in place.

Close Price Match Rules and Procedures:

A conditional order routed by the algorithms/SOR or directly by a Subscriber can be cancelled by the algorithms/SOR or Subscriber, respectively, before the Close Price Match matching time.

Following the Close Price Match matching time (see response to Part III, Item 4), JPB-X (i) matches conditional orders designated for Close Price Match on opposite sides that are eligible for matching in JPB-X based on time priority and (ii) sends firm-up invitations to the algorithms/SOR or Subscribers (as described in response to Part III, Item 9). JPB-X does not accept conditional orders or amendments or cancellations of conditional orders after the Close Price Match matching time. JPB-X accepts firm-up orders and amendments to firm-up orders (to reduce quantity) after the Close Price Match matching time, during the firm-up period. JPB-X does not accept cancellations of firm-up orders designated for Close Price Match from the algorithms/SOR or Subscribers.

Once the firm-up period described in Part III, Item 9 has elapsed, JPB-X matches the firm-up orders designated for Close Price match received during the firm-up period (subject to the eligibility criteria for the firm-up orders discussed above and the firm-up orders' participation instructions) based on the time priority previously afforded the corresponding same-side conditional orders that preceded the firm-up orders, respectively. Unmatched firm-up orders are cancelled back to the SOR or, for any unmatched firm-up orders routed directly by a Subscriber, the Subscriber. Once the official closing price as determined by the closing auction is published by the primary exchange for the NMS stock, JPB-X crosses the matched firm-up orders at that closing price as reported by the SIP (see Part III, Item 23). A Close Price Match firm-up order (a) will be cancelled if the primary exchange does not publish a close price as determined by the closing auction for the stock

an (b) may not be executed fully or at all if it is partially or fully cancelled as a result of a response to a production issue.

As described in response to Part III, Item 20, when a Halt is in effect for an NMS stock, JPB-X will continue to accept and match conditional orders designated for Close Price Match and to accept instructions to modify, cancel, or replace conditional orders in that NMS stock using the priority logic described in this response but will not execute orders if the primary exchange does not publish a close price as determined by the closing auction for the stock, in which case JPB-X will cancel the unexecuted orders immediately after JPMS determines that the primary exchange has not published a close price as determined by the closing auction for the stock and has been delayed in doing so as a result of the Halt. Firm-up orders that were matched but have not yet been executed will be cancelled by JPB-X immediately after the Halt goes into effect.

Additional Rules and Procedures for JPB-X Generally:

JPMS, at the request of a Subscriber or on JPMS' own initiative, may determine to review any transaction in JPB-X to assess whether it was adversely affected by a technical issue or "clearly erroneous" as defined by relevant regulators (e.g., under FINRA Rule 11891, "the terms of a transaction are 'clearly erroneous' when there is an obvious error in any term, such as price, number of shares, or other unit of trading, or identification of the security"). If JPMS determines that a transaction was adversely affected by a technical issue or clearly erroneous, whether or not as a result of JPMS or Subscriber error, JPMS, depending on the facts and circumstances, may work with the affected Subscriber(s) to resolve the error and may cancel (bust) the transaction or assume responsibility for one side of the transaction and work to cover the resulting position as soon as is practicable. JPB-X also may suspend matching in the event of volatile market conditions (e.g., wide bid/offer spreads).

JPB-X time stamps orders upon receipt and executions at the time they occur and reports them in milliseconds in accordance with applicable FINRA Order Audit Trail System and trade reporting rules. JPB-X determines queue position based on new order receipt times with microsecond precision, except in the case of a reduction in the quantity of an order in which case, the replacement order assumes the queue position of the original order.

Subscriber Firm/Conditional Order flow is assigned to an order flow type, each of which corresponds to a tier. 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 JPB-X via the algorithms/SOR (Order Flow Type P-1 in Tier 4) may be provided to JPMS clients on a riskless principal basis. (Unlike JPM-X, another NMS Stock ATS operated by JPMS, JPB-X does not have a Tier 5.)

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

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

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

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

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 JPB-X of a sample set of Subscribers to confirm the accuracy 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. 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, JPB-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.

Form ATS-N JPMS CRD # 79

Part I, Item 8—Identifying Information

Request: *Attach as Exhibit I, the most recently filed or amended Schedule A of Form BD for the Broker-Dealer Operator disclosing information related to direct owners and executive officers.*

Response:

Schedule A –Direct Owners

Full Legal Name	CRD / Tax ID	Entity Type	Roles	Date Role Acquired	Ownership %	Control Person	Public Reporting Company
J.P. Morgan Broker-Dealer Holdings Inc.	13-4110995	Domestic Entity	Stockholder	09/2010	75% or more	Y	N
Bartolomei, Danielle	4442543	Individual	Chief Compliance Officer- Broker Dealer	9/2023	Less than 5%	N	N
Bisesi, Brian J	3090554	Individual	Elected Manager and Member	02/2022	Less than 5%	Y	N
Choi, Michael	6597789	Individual	Chief Compliance Officer – Registered Investment Adviser	9/2023	Less than 5%	N	N
Collins, James	2725065	Individual	Chief Financial Officer	06/2008	Less than 5%	N	N
Dempsey, Michael	2830362	Individual	Treasurer	08/2013	Less than 5%	N	N
Freilich, Patrick Paul	2203801	Individual	Chief Legal Officer	05/2013	Less than 5%	N	N
Howard, William	6403910	Individual	Elected Manager and Member	02/2020	Less than 5%	Y	N
Jury, Claudia							
Klion, Roger	5082261	Individual	Chief Operating Officer	10/2020	Less than 5%	N	N
McCrum, Carrie	7675791	Individual	Elected Manager and	9/2023	Less than 5%	Y	N

Member

Rivas, Fernando	4803269	Individual	Elected Manager and Member	07/2022	Less than 5%	Y	N
Sieg, William Phillip	1066159	Individual	Elected Manager and Member	08/2021	Less than 5%	Y	N
Simmons, John E	2727754	Individual	Elected Manager and Member	02/2021	Less than 5%	Y	N
Sippel, Jason Edwin	1718602	Individual	CEO, Chairman, Elected Manager and Member	01/2013	Less than 5%	Y	N
Tepper, Eric David	2242377	Individual	Elected Manager and Member	08/2017	Less than 5%	Y	N