

**Part I, Item 8 – Identifying Information**

Attach as Exhibit 1, 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.

**Primary Business Name: GOLDMAN SACHS & CO. LLC**

**BD Number:**

**361 BD - AMENDMENT**

~~07/11/2023~~ 09/26/2023

**BD - DIRECT OWNERS/EXECUTIVE OFFICERS**

Are there any indirect owners of the *applicant* required to be reported on Schedule B?

☐ Yes ☒ No

**Ownership Codes: NA - less than 5%      B - 10% but less than 25%      D - 50% but less than 75%**  
**A - 5% but less than 10%      C - 25% but less than 50%      E - 75% or more**

Full Legal Name	DE/FE/I	Title or Status	Date Acquired	Own. Code	Control Person	PR	CRD #(or S.S.No., IRS Tax #, Emp. ID)
BROADBERY, MICHAEL MARY	I	CHIEF COMPLIANCE OFFICER	11/2018	NA	N	N	6947899
COLEMAN, DENIS PATRICK III	I	MANAGING DIRECTOR, MANAGER	01/2022	NA	Y	N	2782373
DOYLE, BRIAN RICHARD	I	MANAGING DIRECTOR, CFO	11/2019	NA	N	N	6003685
GREEFF, BRIAN MICHAEL	I	CO-PRINCIPAL OPERATIONS OFFICER	09/2023	NA	N	N	4273392
HEMPSELL, RICHARD IAN	I	MANAGING DIRECTOR, PRINCIPAL OPERATIONS OFFICER	02/2022	NA	N	N	6001487
HORAN, ERICKA T	I	MANAGING DIRECTOR, MANAGER	02/2022	NA	Y	N	4902526
MATTHIAS, THOMAS FAIRBANKS	I	CHIEF COMPLIANCE OFFICER	09/2017	NA	N	N	2872690
MCCASKILL, MARK	I	MANAGING DIRECTOR, PRINCIPAL OPERATIONS OFFICER	06/2022	NA	N	N	3272131
RUEMLER, KATHRYN HELEN	I	MANAGING DIRECTOR, CLO	03/2021	NA	N	N	7250761
SOLOMON, DAVID MICHAEL	I	MANAGING DIRECTOR, MANAGER	04/2017	NA	Y	N	1616414
THE GOLDMAN SACHS GROUP, INC.	DE	CLASS A MEMBER	04/2017	E	Y	Y	13-4019460
WALDRON, JOHN EDWARD	I	MANAGING DIRECTOR, CEO, MANAGER	12/2018	NA	Y	N	2569337

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## Part II, Item 7.d – Protection of Confidential Trading Information

- 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.

Subject to the written safeguards and procedures described above, access to Participant confidential trading information is limited to those Persons with a "need to know" such information, as defined in response to Part II, Item 7.a. In particular, with respect to GSCO, Ocean and GSI, such access by personnel and systems is permissioned when necessary to perform duties and responsibilities for Sigma X2. Persons with access to Participant confidential trading information, including the basis for such access, are outlined below.

### OCEAN PERSONNEL

To perform operational, compliance, surveillance, recordkeeping, and regulatory reporting responsibilities, certain designated Ocean employees (approximately a dozen) require access to Sigma X2 trading information. Particular Ocean business personnel include:

**Ocean Operations** - Dedicated Operations personnel are responsible for the day-to-day technical and market operations of Sigma X2. To perform these responsibilities, Operations personnel have access to intraday and historical order and execution event data via various system applications, including OceanView, and have access to client set up data via the Configuration API.

**Ocean Compliance** - Dedicated Compliance personnel are responsible for surveillance of Sigma X2 using the SMARTS application and for managing access requests and entitlements for Ocean systems. Such Compliance personnel also are responsible for Ocean's compliance with the Ocean Information Barriers and Conflict Management Policies and Procedures. To perform these responsibilities, such Compliance personnel have access to intraday and historical order and execution event data.

**Ocean CORE Technology** - Dedicated CORE Technology personnel are responsible for development and maintenance of software related to the core/matching functionality of Sigma X2. To perform these responsibilities, CORE Technology personnel have access to intraday and historical order-event data via CORE stream.

**Ocean Surrounding Technology** - Surrounding Technology personnel have responsibilities for the development, maintenance, and operation of downstream applications that consume data from Sigma X2 for purposes of surveillance, regulatory reporting, and recordkeeping. Personnel have access to intraday and historical order-event data via various system applications, including OceanView. Personnel also have access to client set up data via the Configuration API.

**Ocean Business and Product Management** - Dedicated Business and Product Management personnel are responsible for overarching management and coordination of Ocean teams (Operations/Compliance/CORE/Surrounding). For these purposes, such personnel have access to intraday and historical order-event data via various systems applications, including OceanView.

### GSCO EMPLOYEES: OCEANVIEW LIAISONS & DEDICATED GSET ENGINEERS

**Designated "OceanView Liaisons":** Supervisory, GSET Engineers, Operations and Compliance - A defined and limited group of designated GSCO employees who have responsibilities for providing supervisory, operational, or compliance support specific to Sigma X2 have access to the order book via Ocean's "OceanView" GUI. Support responsibilities may include liaising with Ocean, performing various technical functions, and troubleshooting.

**Dedicated GSET Engineers** - A designated subset of engineers dedicated to the Sigma X2 business who perform execution quality and mark-out profile analysis requiring information access on a (T+1) delayed basis. For these purposes, such personnel have access to Participant identities and execution information but do not have real-time access to the Sigma X2 order book.

### GSCO EMPLOYEES: OTHER SUPPORT

Support employees referenced below are not entitled to access the Sigma X2 order book.

**Execution Coverage** - Through an order management system, designated sales employees have access to order and execution information for the Indirect Subscribers to whom they provide coverage. Access to Indirect Subscriber order information is necessary for the purpose of providing sales and execution services, and their access to such information is no different than their ability to see orders that are routed to other market venues. Designated sales employees also have access to delayed (at least T+1) and aggregated execution information for the Direct and/or Indirect Subscribers to whom they provide coverage.

~~GSET Engineers - Certain engineering employees who are designated liaisons with Ocean, perform various technical functions and troubleshoot and repair system issues.~~ As discussed above, pursuant to an agreement with GSCO, Ocean operates and supports the technology platform for Sigma X2 subject to the oversight of GSCO as the Broker-Dealer Operator (See Part II, Item 6.b., above). Certain ~~other~~ engineering employees monitor Sigma X2's performance for purposes of measuring execution quality, performing mark-out profile analyses (as described further in Part III, Item 13), and related analytical functions. These employees have development and maintenance responsibilities for GSCO trading platforms, execution algorithms, order routing, data stores, and systems that feed GSCO middle and back office and have visibility into order routing destinations (whether principal and/or client flow), including routing to Sigma X2.

Operations - GSCO Operations employees perform various operational support functions including regulatory reporting and trade booking. Such employees can access Participant trading execution information in order to provide operational support, or perform specific responsibilities such as trade booking and regulatory reporting.

Supervisory Coverage - Designated employees who perform supervisory oversight of GSET business activities and Sigma X2. These designated supervisory employees have as needed access to order and execution information to provide supervisory oversight responsibilities.

Legal, Compliance, Internal Audit/Compliance Testing "Control Side Employees" - Designated employees assigned to GSCO's various Compliance, Legal, and Internal Audit/Compliance Testing divisions and who have control side, audit, and regulatory responsibilities may access Participant information to provide regulatory and compliance support, and address regulatory examinations and inquiries where warranted.

Segmentation Governance Working Group - Certain designated employees from Compliance, Dedicated GSET Engineers, Designated OceanView Liaisons, Execution Coverage, and Supervision, all described above, meet on a periodic basis to review and discuss Participants' Counterparty Classification designations (as described in Part III, Item 13). This group reviews and discusses the results of the GSCO objective mark-out analysis (as described in Part III, Item 13).

#### GSI PERSONNEL

GSI, as an Indirect Subscriber to Sigma X2, has access to its own principal and client trading information. Similar to the coverage team for GSCO Execution, GSI employees have access to order and execution information for the clients on whose behalf they provide coverage, including execution services in Sigma X2 that are facilitated by GSCO acting as agent for GSI. ~~Also, certain senior level GSET managers, who are based in GSI and are responsible for business planning, strategy and overall management of the GSET business globally, have access to delayed (at least T+1), daily statistical reports that contain aggregated Participant execution data and Sigma X2 aggregate market share information. While these senior managers have accountability for GSET operations globally, they are not involved in day-to-day operations of GSCO or Sigma X2. These senior GSET managers have access to such data in order to understand the scope and scale of Sigma X2 as one of GSET's execution service offerings, and in furtherance of their responsibilities to evaluate and make decisions regarding GSET's global business plan and strategy.~~

#### GSCO AND GSI SYSTEMS

GSCO has systems, applications and databases that contain Participant confidential trading information. Specifically, with regard to systems, GSCO has order and execution management systems, algorithms, a SOR and a DMA System that have real-time order and execution information to support the transmission of orders, executions and related information to and from Sigma X2.

Participant confidential trading information is maintained in GSCO central databases as well as the applications used to access those database, e.g., SMARTS and OceanView. These databases and applications contain real-time and delayed order and execution information. The information in these databases is used to comply with books and records requirements, regulatory reporting requirements, and for monitoring and surveillance. GSCO also derives information from these databases to satisfy Participants' requests for their individual activity in Sigma X2, as described in Part III, Item 13.d, as well as to provide Participants with aggregated and anonymized information about overall activity in Sigma X2, as described in Part III, Item 26. Finally, GSCO Execution Coverage may also receive information from these databases regarding the activity of the specific Participants for whom they provide coverage.

GSI also has systems, applications and databases that contain Participant confidential trading information (real-time and delayed order and execution information); namely, the orders in NMS Stocks sent to, and executions received from, GSCO, which acts as agent for GSI in connection with Sigma X2 activity. GSI uses the information in a manner similar to GSCO, i.e., for the same above-described purposes.

Both GSCO and GSI limit access to their systems, applications and databases to persons with a "need to know" such information to perform their specific duties and responsibilities as defined in Part II, Item 7.a. This policy, which is global, is enforced through entitlement access procedures.

#### OCEAN SYSTEMS

Ocean, in its role of hosting, operating and supporting the technology platform for Sigma X2, also maintains systems, applications and databases that contain Participant confidential trading information. For example, Ocean maintains the

Sigma X2 order book, SMARTS, and OceanView, which include real-time and delayed order and execution information. Separately, Ocean also maintains applications and databases that contain real-time and delayed order and execution information to assist GSCO with other functions including regulatory reporting (e.g., OATS and trade reporting) and surveillance.

Like GSCO and GSI, Ocean has a "need to know" policy and entitlement access procedures.