

An abstract geometric design featuring several thin, light blue lines that intersect at two circular nodes. One node is located in the upper left quadrant, and the other is in the middle right quadrant. The lines radiate from these nodes, creating a network-like structure. A large, solid dark blue shape, resembling a stylized wave or a large triangle, occupies the bottom third of the page.

Global Fund Accounting and Custody

SOC 1® Report

October 1, 2022–September 30, 2023

State Street Locations included in the scope of this report



- | | | |
|---------------------|--------------------|-------------------|
| 1 Irvine, CA | 9 Hong Kong | 17 Montreal |
| 2 Boston/Quincy, MA | 10 India | 18 Munich |
| 3 Dublin | 11 Kansas City, MO | 19 Sacramento, CA |
| 4 Edinburgh | 12 Kilkenny | 20 Sydney |
| 5 Frankfurt | 13 Krakow | 21 Tokyo |
| 6 Fukuoka | 14 London | 22 Toronto |
| 7 Gdansk | 15 Luxembourg | |
| 8 Hangzhou | 16 Melbourne | |

Global Fund Accounting and Custody

SOC 1® Report

October 1, 2022–September 30, 2023

This report is confidential and its use is limited to State Street,
the clients of State Street and their auditors.

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Section I



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Independent Service Auditor's Assurance Report

To the Management and Board of Directors of State Street Corporation

Scope

We have examined State Street Corporation's (State Street's) description entitled "State Street Global Fund Accounting and Custody system" (Description) throughout the period October 1, 2022 to September 30, 2023 of its system (System) for processing user entities' transactions and the suitability of the design and operating effectiveness of controls described therein to achieve the related control objectives stated in the Description (Control Objectives), based on the criteria identified in State Street's Assertion (Assertion). The Control Objectives and controls included in the Description are those that management of State Street believes are likely to be relevant to user entities' internal control over financial reporting, and the Description does not include those aspects of the System that are not likely to be relevant to user entities' internal control over financial reporting.

The Description indicates that certain Control Objectives can be achieved only if complementary user entity controls assumed in the design of State Street's controls are suitably designed and operating effectively, along with related controls at the service organization. Our examination did not extend to such complementary user entity controls, and we have not evaluated the suitability of the design or operating effectiveness of such complementary user entity controls.

State Street uses Duco, a third party subservice organization, as defined in the accompanying Section III A8 *Subservice Organizations*, to perform certain reconciliations that are relevant to client's internal controls over financial reporting. The Description includes only the Control Objectives and related controls of State Street and excludes the control objectives and related controls of Duco. The description also indicates that certain Control Objectives specified by State Street can be achieved only if complementary subservice organization controls assumed in the design of State Street's controls are suitably designed and operating effectively, along with the related controls at State Street. Our examination did not extend to such complementary controls of Duco, and we have not evaluated the suitability of the design or operating effectiveness of such complementary subservice organization controls.

The System uses information technology infrastructure support, centrally-managed information technology services and related controls provided by State Street's Information Technology and Global Security divisions (collectively, the "Component Subservice Organization"), a component of State Street. The Description includes only the Control Objectives and related controls of the System and excludes the Control Objectives and controls of the Component Subservice Organization.



Management of the Component Subservice Organization has prepared a separate description of the Services used by the System. This report should be read in conjunction with the separate State Street Information Technology General Controls SOC 1 Report.

The information included in the accompanying Section V *Other Information Provided by State Street* is presented by management of State Street to provide additional information and is not a part of State Street's Description. Such information has not been subjected to the procedures applied in our examination of the description of the System and of the suitability of the design and operating effectiveness of controls to achieve the related Control Objectives, and accordingly we express no opinion on it.

State Street's responsibilities

State Street has provided the accompanying Assertion about the fairness of the presentation of the Description and suitability of the design and operating effectiveness of the controls described therein to achieve the related Control Objectives. State Street is responsible for preparing the Description and Assertion, including the completeness, accuracy, and method of presentation of the Description and the Assertion, providing the services covered by the Description, specifying the Control Objectives and stating them in the Description, identifying the risks that threaten the achievement of the Control Objectives, selecting the criteria stated in the Assertion, and designing, implementing, and documenting controls that are suitably designed and operating effectively to achieve the related Control Objectives.

Service auditor's responsibilities

Our responsibility is to express an opinion on the fairness of the presentation of the Description and on the suitability of the design and operating effectiveness of the controls described therein to achieve the related Control Objectives, based on our examination. Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA). Our examination was also performed in accordance with International Standard on Assurance Engagements 3402, *Assurance Reports on Controls at a Service Organization*, issued by the International Auditing and Assurance Standards Board (IAASB). Those standards require that we plan and perform our examination to obtain reasonable assurance about whether, in all material respects, based on the criteria in management's Assertion, the Description is fairly presented, and the controls were suitably designed and operating effectively to achieve the related Control Objectives throughout the period October 1, 2022 to September 30, 2023. We believe that the evidence we have obtained is sufficient and appropriate to provide a reasonable basis for our opinion.

An examination of a description of a service organization's system and the suitability of the design and operating effectiveness of controls involves:

- Performing procedures to obtain evidence about the fairness of the presentation of the Description and the suitability of the design and operating effectiveness of the controls to achieve the related Control Objectives, based on the criteria in the Assertion.

- Assessing the risks that the Description is not fairly presented and that the controls were not suitably designed or operating effectively to achieve the related Control Objectives.
- Testing the operating effectiveness of those controls that management considers necessary to provide reasonable assurance that the related Control Objectives were achieved.
- Evaluating the overall presentation of the Description, the suitability of the Control Objectives, and the suitability of the criteria specified by the service organization in the Assertion.

We are required to be independent of State Street and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements related to our examination engagement. We have complied with such independence and other ethical requirements and applied the AICPA's Statements on Quality Control Standards.

We apply International Standard on Quality Control I and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements.

Inherent limitations

The Description is prepared to meet the common needs of a broad range of user entities and their auditors who audit and report on user entities' financial statements and may not, therefore, include every aspect of the System that each individual user entity may consider important in its own particular environment. Because of their nature, controls at a service organization may not prevent, or detect and correct, all misstatements in processing or reporting transactions. Also, the projection to the future of any evaluation of the fairness of the presentation of the Description, or conclusions about the suitability of the design or operating effectiveness of the controls to achieve the related Control Objectives, is subject to the risk that controls at a service organization may become ineffective.

Description of tests of controls

The specific controls tested and the nature, timing, and results of those tests are listed in the accompanying Section IV *State Street's Control Objectives and Related controls and Additional Information Provided by the Independent Service Auditor* (Description of Tests and Results).

Opinion

In our opinion, in all material respects, based on the criteria described in the Assertion:

- a. The Description fairly presents the System that was designed and implemented throughout the period October 1, 2022 to September 30, 2023.



- b. The controls related to the Control Objectives were suitably designed to provide reasonable assurance that the Control Objectives would be achieved if the controls operated effectively throughout the period October 1, 2022 to September 30, 2023 and if subservice organizations and user entities applied the complementary controls assumed in the design of State Street's controls throughout the period October 1, 2022 to September 30, 2023.
- c. The controls operated effectively to provide reasonable assurance that the Control Objectives were achieved throughout the period October 1, 2022 to September 30, 2023 if complementary subservice organization and user entity controls assumed in the design of State Street's controls operated effectively throughout the period October 1, 2022 to September 30, 2023.

Restricted use

This report, including the description of tests of controls and results thereof in the Description of Tests and Results, is intended solely for the information and use of management of State Street, user entities of State Street's Global Fund Accounting and Custody System during some or all of the period October 1, 2022 to September 30, 2023, and their auditors who audit and report on such user entities' financial statements or internal control over financial reporting and have a sufficient understanding to consider it, along with other information, including information about controls implemented by user entities themselves, when assessing the risks of material misstatements of user entities' financial statements. This report is not intended to be, and should not be, used by anyone other than these specified parties.

Ernst & Young LLP

November 9, 2023



Section II

State Street's Management Assertion

We have prepared the description of State Street's Global Fund Accounting and Custody system entitled, "State Street's Description of Its Global Fund Accounting and Custody System" (Description) for processing user entities' transactions throughout the period October 1, 2022 to September 30, 2023 for user entities of the system during some or all of the period October 1, 2022 to September 30, 2023, and their auditors who audit and report on such user entities' financial statements or internal control over financial reporting and have a sufficient understanding to consider the Description, along with other information, including information about controls implemented by subservice organizations and user entities of the system themselves, when assessing the risks of material misstatements of user entities' financial statements.

The Global Fund Accounting and Custody system uses State Street's Information Technology and Global Security divisions (Component Subservice Organization) to provide information technology infrastructure support and administers centrally managed information technology services and related controls for State Street's core applications (Services). The Description includes only the control objectives and related controls of the System and excludes the control objectives and controls of the Component Subservice Organization. The scope of this description did not include the controls over the Services of the Component Subservice Organization.

Management of the Component Subservice Organization has prepared a separate description of the services used by the System, which includes the aforementioned Component Subservice Organization controls. This Description should be read in conjunction with the separate State Street Information Technology General Controls SOC 1® report.

State Street uses a subservice organization to perform certain reconciliations that are relevant to clients' internal control over financial reporting. The Description includes only the control objectives and related controls of State Street and excludes the control objectives and related controls of the subservice organization. The Description also indicates that certain control objectives specified in the Description can be achieved only if complementary subservice organization controls assumed in the design of our controls are suitably designed and operating effectively, along with the related controls. The Description does not extend to controls of the subservice organization.

The Description indicates that certain control objectives specified in the Description can be achieved only if complementary user entity controls assumed in the design of State Street's controls are suitably designed and operating effectively, along with related controls at the service organization. The Description does not extend to controls of the user entities.

We confirm, to the best of our knowledge and belief, that:

- a) The Description fairly presents the State Street Global Fund Accounting and Custody system (System) made available to user entities of the System during some or all of the period October 1, 2022 to September 30, 2023 for processing their transactions as it relates to controls that are likely relevant to user entities' internal control over financial reporting. The criteria we used in making this assertion were that the Description:
- 1) Presents how the System made available to user entities of the system was designed and implemented to process relevant transactions, including, if applicable:
 - The types of services provided, including, as appropriate, the classes of transactions processed.
 - The procedures, within both automated and manual systems, by which those services are provided, including, as appropriate, procedures by which transactions are initiated, authorized, recorded, processed, corrected as necessary, and transferred to the reports and other information prepared for user entities of the System.
 - The information used in the performance of the procedures including, if applicable, related accounting records, whether electronic or manual, and supporting information involved in initiating, authorizing, recording, processing and reporting transactions; this includes the correction of incorrect information and how information is transferred to the reports prepared for user entities.
 - How the System captures and addresses significant events and conditions, other than transactions.
 - The process used to prepare reports and other information for user entities.
 - Services performed by a subservice organization, if any, including whether the carve-out method or the inclusive method has been used in relation to them.
 - The specified control objectives and controls designed to achieve those objectives, including, as applicable, complementary user entity controls and complementary subservice organization controls assumed in the design of the service organization's controls.
 - Other aspects of our control environment, risk assessment process, information and communications (including the related business processes), control activities, and monitoring activities that are relevant to the services provided , including processing and reporting transactions of user entities.
 - 2) Includes relevant details of changes to the System during the period covered by the Description.
 - 3) Does not omit or distort information relevant to the System, while acknowledging that the Description is prepared to meet the common needs of a broad range of user entities of the System and their user auditors, and may not, therefore, include every aspect of the System that each individual user entity of the System and its user auditor may consider important in the user entity's own particular environment.

- b) The controls related to the control objectives stated in the Description were suitably designed and operated effectively throughout the period October 1, 2022 to September 30, 2023 to achieve those control objectives, if subservice organizations applied the complementary subservice organization controls and user entities applied the complementary user entity controls assumed in the design of State Street's controls throughout the period October 1, 2022 to September 30, 2023. The criteria we used in making this assertion were that
- 1) The risks that threaten the achievement of the control objectives stated in the Description have been identified by management of the service organization.
 - 2) The controls identified in the Description would, if operating effectively, provide reasonable assurance that those risks would not prevent the control objectives stated in the Description from being achieved.
 - 3) The controls were consistently applied as designed, including whether manual controls were applied by individuals who have the appropriate competence and authority.

State Street

November 9, 2023



Section III

Description of State Street’s Global Fund Accounting and Custody System Applicable to the Processing of Client Transactions

A. Overview

1. Scope of this Report

This report describes State Street Corporation’s (“State Street” or the “Corporation”) Global Fund Accounting and Custody System relevant to accounting, custody, securities finance (Agency Lending and Prime Services [previously known as Enhanced Custody]) and financial reporting and its operations and related support areas for the period October 1, 2022 to September 30, 2023 in the following in-scope countries:

Australia	India	Luxembourg	United Kingdom (“U.K.”)
Canada	Ireland	People’s Republic of China including Hong Kong (“China”)	United States (“U.S.”)
Germany	Japan	Poland	

The report is designed to provide information for use by user entities (“clients”) of State Street and their independent auditors who audit the financial statements of an entity that uses State Street as a service organization.

This report is divided into five main sections:

- Section I contains the Independent Service Auditor’s Assurance Report on the Description of State Street’s Global Fund Accounting and Custody System Applicable to the Processing of User Entities’ Transactions provided by Ernst & Young LLP (“EY”), an independent registered public accounting firm.
- Section II contains the Service Organization Assertion provided by State Street.
- Sections III A and B provide an overview of State Street and its Operational Processes.
- Section IV A details control objectives and related controls identified by State Street and a description of the tests of selected controls performed by EY. Section IV B provides additional information on the test results of the selected controls. Section IV C provides a listing of reports tested for completeness and accuracy as described in Section IV A and Section IV B. Section IV D provides a detailed summary of those deviations identified in Section IV A.
- Section V contains other information provided by State Street.

EY’s testing did not extend to certain controls that were deemed to be outside the scope of this report as detailed in Section IV.

State Street's Information Technology ("IT") and Global Security divisions provide information technology infrastructure support and administer centrally managed information technology controls for State Street's core applications. State Street's Global Fund Accounting and Custody System relies on the controls performed by State Street's Information Technology and Global Security divisions to achieve the stated control objectives in Section IV of this report. The controls performed by the IT and Global Security divisions relate to physical security to data centers and computer rooms, logical security to production applications, databases and operating systems, change management, production processing and backup and restore. These controls are included in a separate SOC 1® report entitled *State Street Information Technology General Controls ("ITGC")* for the twelve month period ended September 30, 2023. The clients of State Street and their auditors should review State Street's ITGC SOC 1® report in conjunction with this report to gain a full understanding of State Street's Global Fund Accounting and Custody System.

The scope of this report does not include controls related to:

- Trade processing, income accruals, amortization/accretion, valuation or expense calculations maintained on off-line spreadsheets. Therefore, certain security types may not be included within the scope of this report for all control objectives. The extent of off-line processing varies within Global Accounting groups;
- Processes and controls related to asset conversions/migrations from other State Street accounting applications to Multicurrency Horizon ("MCH"); and
- Cash disbursements initiated outside of State Street's Global Delivery Transaction Services team or via Straight Through Processing ("STP").

The operations included within the scope of this report for State Street Trust and Banking Co., Ltd. ("SSTB"), a licensed trust bank in Japan, are limited to custody services for non-Japanese securities provided by State Street's Global Custody Operations Department using MCH. A separate State Street SOC 1® report is available in Japan covering SSTB's Trust Services utilizing the Recordkeeping System ("RKS") and the Japan Accounting and Reporting System ("JARS").

Effective January 1, 2023:

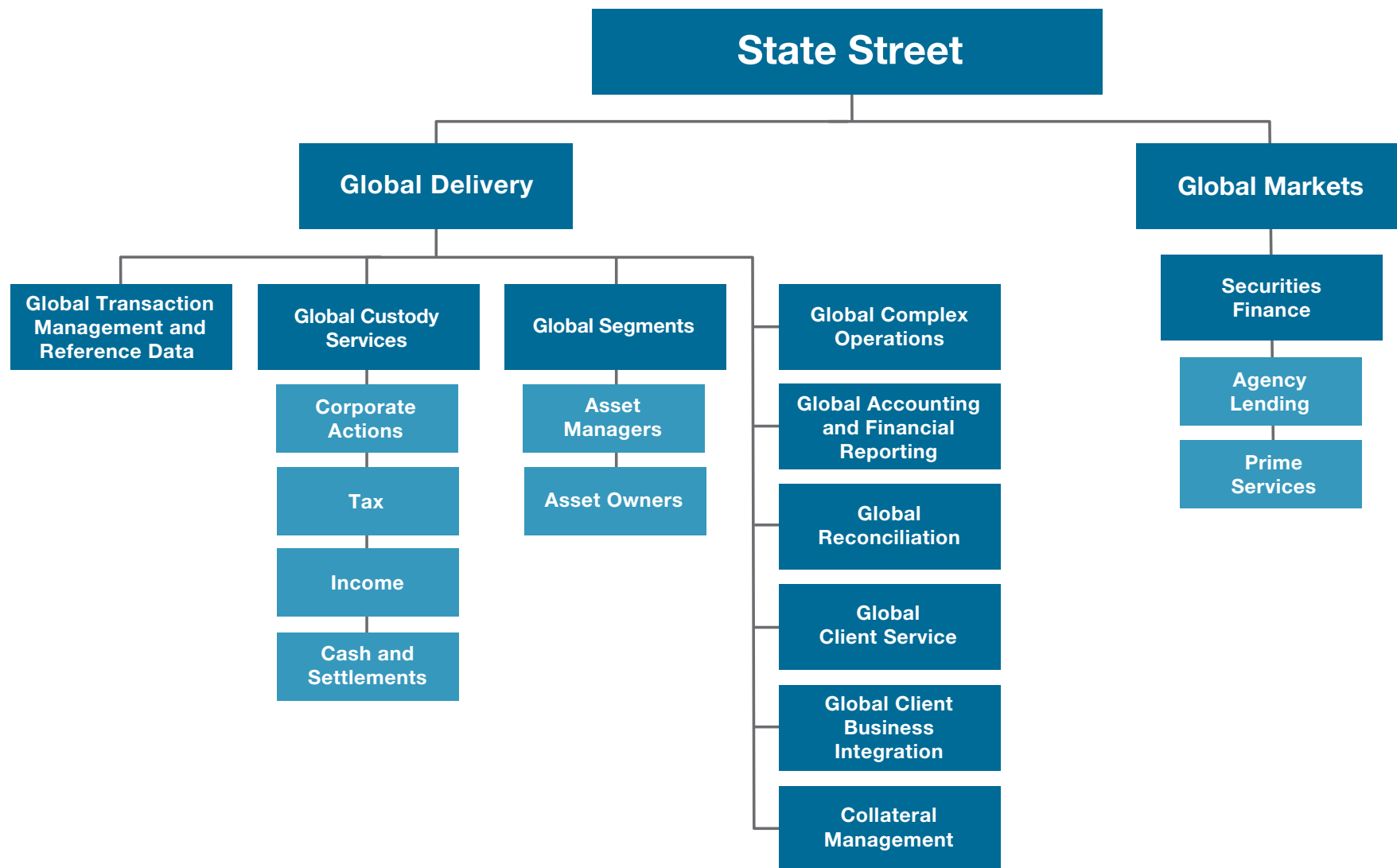
- Driverless Net Asset Value ("DNAV"), Event Driven Workflow, Mark-to-Market Workflow and Hedge Workflow are included in the scope of this report.

Clients domiciled in the following locations and serviced by the listed entities for the relevant services performed by in-scope locations are included within the scope of this report:

Location	Entity	Service(s)*
Brazil	State Street Bank and Trust Company	Custody Fund Accounting
Cayman Islands	State Street Cayman Trust Company, Ltd.	Custody Fund Accounting
Chile	State Street Bank and Trust Company	Custody Fund Accounting
Colombia	State Street Bank and Trust Company	Custody Fund Accounting
France	State Street Bank International GmbH, Paris Branch	Custody
Italy	State Street Bank International GmbH, Succursale Italia	Custody
Netherlands	State Street Bank International GmbH, Amsterdam Branch	Custody Fund Accounting
Singapore	State Street Bank and Trust Company, Singapore Branch	Custody Fund Accounting
South Africa	(formerly) State Street Southern African (Pty) Ltd.	Custody Fund Accounting
Switzerland	State Street Bank International GmbH, Munich, Zurich Branch	Custody Fund Accounting (excluding fund distributions)
United Arab Emirates	State Street Bank International GmbH, London branch	Custody Fund Accounting

*Custody services include transaction processing (securities, cash and collateral), corporate action processing, tax reclaims, income processing and security settlements.

Fund Accounting services include record keeping on MCH with accounting for all types of investments, i.e., equities, fixed income, derivatives, institutional loans, limited partnerships, etc., securities valuation and daily NAV calculation.



The above represents business areas which are in scope of the Global Fund Accounting and Custody SOC 1[®] report as of September 30, 2023.

2. State Street Overview

Businesses and Organization

State Street Corporation, referred to as the parent company, is a financial holding company organized in 1969 under the laws of the Commonwealth of Massachusetts. For purposes of this report, unless the context requires otherwise, reference to “State Street” means State Street Corporation and its subsidiaries on a consolidated basis. State Street conducts its business primarily through its principal banking subsidiary, State Street Bank and Trust Company (“State Street Bank”). State Street Bank traces its beginnings to the founding of the Union Bank in 1792. State Street Bank’s current charter was authorized by a special act of the Massachusetts Legislature in 1891, and its present name was adopted in 1960. State Street Bank operates as a specialized bank, referred to as a trust or custody bank, that services and manages assets on behalf of its institutional clients.

Including the U.S., State Street operates globally in more than 100 geographic markets. State Street’s operations are organized into two lines of business: Investment Servicing and Investment Management, which are defined based on products and services provided. The results of operations for these lines of business are not necessarily comparable with those of other companies, including companies in the financial services industry.

Investment Servicing, through State Street Investment Services, State Street Global Markets and State Street Alpha, provides investment services for institutional clients, including mutual funds, collective investment funds and other investment pools, corporate and public retirement plans, insurance companies, investment managers, foundations and endowments worldwide. Products include: back office products such as custody, accounting, regulatory reporting, investor services, performance and analytics; middle office products such as investment book of record, transaction management, loans, cash, derivatives and collateral services, record keeping, client reporting and investment analytics; investment manager and alternative investment manager operations outsourcing; performance, risk and compliance analytics; financial data management to support institutional investors; foreign exchange, brokerage and other trading services; securities finance, including Prime Services products; and deposit and short-term investment facilities.

Investment Management provides a broad range of investment management strategies and products for our clients through State Street Global Advisors. State Street’s investment management strategies and products for equity, fixed income and cash assets, including core and enhanced indexing, multi-asset strategies, active quantitative and fundamental active capabilities and alternative investment strategies span the risk/reward spectrum of these investment products. State Street’s Assets Under Management (“AUM”) is primarily weighted to indexed strategies. In addition, State Street provides a breadth of services and solutions, including environmental, social and governance investing, defined benefit and defined contribution products, and Global Fiduciary Solutions. State Street Global Advisors is also a provider of exchange-traded funds (“ETF”), including the SPDR® ETF brand.

State Street's clients include institutional investors, such as mutual funds, collective investment funds, undertakings for collective investment in transferable securities, hedge funds and other investment pools, corporate and public retirement plans, insurance companies, official institutions, foundations, endowments and investment managers. In both our asset servicing and asset management businesses, we endeavor to attract institutional investors controlling large and diverse pools of assets, as those clients typically have the opportunity to benefit from the full range of our expertise and service offerings and approximately 43,000 employees are focused on providing state-of-the-art services.

Financial Highlights

Total assets under custody and/or administration as of September 30, 2023, were \$40.02 trillion, including assets under custody of \$29.11 trillion, representing an increase of approximately 12.1% and 10.0%, respectively, from September 30, 2022. Total assets under management as of September 30, 2023, were approximately \$3.69 trillion, an increase of 12.9% from September 30, 2022. As of September 30, 2023, State Street Corporation's consolidated total assets were \$284.42 billion. Cash, liquid assets and other short-term investments, which have less credit risk and higher marketability than loan and other long-term assets, comprised approximately 29% of total consolidated assets. Loans, less allowance for credit losses, comprised approximately 12% of total consolidated assets. The short maturity structure of cash and money market assets enhances State Street's liquidity.

State Street manages its business to maintain high ratings on its debt, as measured by the major independent credit rating agencies. This not only minimizes borrowing costs, but also enhances State Street's liquidity by helping to ensure the largest possible debt market. As of September 30, 2023, State Street's senior debt was rated A by Standard & Poor's, A1 by Moody's Investor Services and AA- by Fitch, Inc.

Regulation

United States

State Street Bank is a state chartered bank and a member of the Federal Reserve System ("the Fed" or "FED"). State Street Bank's operations are supervised and examined by its primary regulators, the Federal Reserve Bank of Boston and the Massachusetts Commissioner of Banks. In addition, State Street Bank is subject to the rules and regulations of the United States Securities and Exchange Commission ("SEC") applicable to custodians, fund accountants, administrators and transfer agents of regulated investment companies and as an issuer of registered securities. Records maintained on behalf of the registered investment companies are subject to SEC examination.

State Street Bank is subject to government regulations for insured depository institutions under the Federal Deposit Insurance Corporation Improvement Act ("FDICIA") of 1991 regarding internal controls over financial reporting and compliance with certain designated laws and regulations.

Australia

State Street Australia Limited (“SSAL”) was issued an Australian Financial Services License (“AFSL”) effective March 10, 2004, and is regulated by the Australian Securities and Investments Commission (“ASIC”).

SSAL’s license authorizes SSAL to operate a custodial service. As part of the design, implementation and maintenance of controls, SSAL has taken into consideration the ASIC Regulatory Guides, particularly Regulatory Guide 133 (*Managed Investment and Custodial or Depository Services: Holding Assets*) and Regulatory Guide 104 (*Licensing: Meeting the General Obligations*).

State Street Bank and Trust Company Sydney Branch (“SSBTC Sydney Branch”) is a foreign authorized deposit-taking institution (“Foreign Bank”) and is regulated by the Australian Prudential Regulation Authority (“APRA”). State Street Bank and Trust Company (“SSBTC”), when operating in Australia, holds an Australian Financial Services Licence (“AFSL”) and is regulated by the ASIC. SSBTC Sydney Branch can take deposits and provide loans to Australian wholesale clients and is licensed to provide financial services to institutional investors, including investment servicing, custodial services and investment research and trading.

Canada

State Street Trust Company Canada (“SSTCC”), as a Canadian federal trust company, is primarily regulated by the Office of the Superintendent of Financial Institutions (“OSFI”). OSFI supervises and regulates banks, federally incorporated or registered trust and loan companies, insurance companies, cooperative credit associations, fraternal benefit societies and federal pension plans.

State Street Bank and Trust Company – Canada Branch (the “Branch”) is the Canadian branch of State Street Bank with locations in Toronto and Montreal. As an authorized foreign bank, the Branch is also regulated by OSFI.

State Street Fund Services Toronto Inc. (“SSFS”) is an unregulated business corporation that provides accounting and related activities to U.S.-managed funds, offshore mutual funds and investment partnerships, Canadian pension funds and investment funds.

China

State Street Technology (Zhejiang) Co., Ltd. (“SSTZ”), located in Hangzhou, is a wholly owned subsidiary of State Street. SSTZ was incorporated in China on June 12, 2003. SSTZ is a wholly foreign-owned enterprise formed under the Foreign Investment Law of the People’s Republic of China. The business scope of SSTZ includes computer software development; technology transfer; technical consultancy services; software maintenance services (for a limited number of external clients); information consultancy services (excluding futures and securities consultancy); undertaking of computer network projects; sale of self-developed software; engaging in data entry, data reconciliation and data processing business by way of service outsourcing; wholesale, import and export and commission agency (except auction) of computer software and the provision of the relevant after-sale services, maintenance and training services.

In addition to the information technology services, since March 2008, SSTZ has also provided business process outsourcing services to State Street.

State Street Bank and Trust Company, Hong Kong Branch (“SSHK”) is registered as an overseas company under the Hong Kong Companies Ordinance. It is also an Authorized Institution under the Banking Ordinance and is regulated by the Hong Kong Monetary Authority (“HKMA”). Effective December 7, 2007, SSHK became a Registered Institution to conduct Type 1 regulated activity (“Dealing in Securities”) in Hong Kong, and is regulated by the Securities and Futures Commission (“SFC”).

State Street Trust (HK) Limited (“SSTHKL”) is a trust company registered under section 78(1) of the Trustee Ordinance of Hong Kong. SSTHKL provides trustee and other related services for collective investment schemes that may be authorized by the SFC. SSTHKL is also a Trust or Company Service Provider licensee with Hong Kong Companies Registry.

Germany

State Street Bank International GmbH (“SSBI GmbH”) is a wholly owned subsidiary of State Street Holdings Germany GmbH (“SSHG”), which is owned by the parent of the consolidated group being State Street Europe Holdings Germany S.à r.l. & Co. KG (“SSEHG KG”), which is ultimately owned by State Street Bank & Trust Company and State Street Corporation.

Additionally, the European Central Bank (“ECB”) has designated SSEHG KG (including all its subsidiaries) as a “significant supervised entity” within the meaning of Article 6 (4) of the Single Supervisory Mechanism (“SSM”) Regulation. SSHG and SSBI GmbH within the supervised group are also subject to the ECB’s direct prudential supervision on a consolidated basis in accordance with Regulation (EU) No 575/2013. The Joint Supervisory Team, with participation of the respective national central banks and supervisory authorities, undertakes the supervisory function. Additional authorities are entrusted with certain supervisory functions in view of SSBI GmbH’s activities rendered abroad.

The license under which SSBI GmbH provides its services was issued by the Federal Banking Supervisory Office/Bundesaufsichtsamt für das Kreditwesen (predecessor of the German Financial Supervisory Authority, “BaFin”) in June 1994, authorizing SSBI GmbH to undertake banking business. Currently, permissible services under the license comprise those of Section 1 (1) Sent. 2 No. 1, 2, 4, 5 and 8 of the German Banking Act (Kreditwesengesetz, “KWG”) and financial services pursuant to Section 1 (1a) Sent. 2 KWG.

SSBI GmbH’s main business activity is the safe custody business, according to the provisions of Section 1 (1) Sent. 2 No. 5 KWG, for both domestic and foreign investment companies as well as for institutional clients. As an additional part of its main business, it conducts depositary business under the provisions of the German Investment Code (Kapitalanlagegesetzbuch, “KAGB”) at its Munich headquarters and Frankfurt Branch as well as under the provisions of the applicable national laws in its foreign branches in those jurisdictions. The

KAGB covers both Undertakings for Collective Investment in Transferable Securities (“UCITS”) and Alternative Investment Fund Managers (“AIFM”) aspects, stipulating compliance rules and regulating the relationship between the depositary and the German Capital Management Company, Kapitalverwaltungsgesellschaft (“KVG”) and the investor.

India

State Street Bank and Trust Company has 100% interest in State Street Syntel Services (Mauritius) Limited (“SSSSML”) and 51% interest in State Street HCL Holdings (U.K.) Limited (“SSHHUL”). SSSSML is a company registered in Mauritius that owns 100% of State Street Syntel Services Private Ltd. (“SSSSPL”) and SSHHUL is a company registered in the United Kingdom that owns 100% of StateStreet HCL Services (India) Private Limited (“SSHSIL”). SSSSPL and SSHSIL are both Indian companies that provide Business Process Outsourcing (“BPO”) services to State Street and its affiliates across multiple service lines. SSSSPL was established in February 2004, with locations in Mumbai and Pune, India. SSHSIL was established in January 2012, with locations in Chennai, Vijayawada, Pune and Coimbatore, India.

On October 1, 2023, State Street acquired full ownership of SSSSML.

State Street Corporate Services Mumbai Private Limited (“SSCSMPL”), is headquartered in Bangalore, India, and was incorporated as a private limited company in India on June 25, 2010. It has established facilities in Mumbai and Hyderabad as well. It is a wholly owned indirect subsidiary of State Street Bank and Trust (“SSBT”) with effect from December 1, 2021. SSCSMPL provides middle and back office services and corporate support services to State Street affiliates.

Ireland

State Street International (Ireland) Limited, State Street Custodial Services (Ireland) Limited and State Street Fund Services (Ireland) Limited are incorporated in Ireland under the Companies Acts 1963 to 2009. State Street International (Ireland) Limited is the parent of State Street Custodial Services (Ireland) Limited and State Street Fund Services (Ireland) Limited; each subsidiary is regulated by the Central Bank of Ireland under the Investment Intermediaries Act, 1995. The Central Bank of Ireland is responsible for the authorization and supervision of collective investment schemes and their service providers. State Street Custodial Services (Ireland) Limited is authorized to provide custody and trustee services to collective investment schemes, and State Street Fund Services (Ireland) Limited is authorized to provide fund administration to collective investment schemes.

Japan

State Street Trust and Banking Co., Ltd. (“SSTB”) is a licensed trust bank in Japan, primarily providing global custody agent, trust and outsourcing services. SSTB provides global custody services in Japan on behalf of State Street Bank as its agent, pursuant to an agency agreement between SSTB and State Street Bank with

Financial Services Agency (the “FSA”) approval. SSTB is regulated by the FSA, and is subject to requirements of the Banking Act, Act on Provisions of Trust Business by Financial Institutions and the Financial Instruments and Exchange Act (“FIEA”).

State Street’s Securities Finance business unit currently conducts certain agency lending support services for Japanese clients and operates within SSTB as well.

Luxembourg

State Street Bank International GmbH, Luxembourg Branch (“SSBIL”), registered with the R.C.S. Luxembourg under no. B148186, the Luxembourg branch of State Street Bank International GmbH, a limited liability company incorporated and existing under the laws of Germany (Gesellschaft mit beschränkter Haftung), having its registered office at Brienner Str. 59, D-8033 Munich and registered in the commercial register of the local court of Munich under registration number HRB 42872. SSBIL is authorized by the Commission de Surveillance du Secteur Financier (“CSSF”) to provide central administration and depository/custody services, which are conducted in accordance with the respective rules and regulations applicable to these funds as well as local banking regulations.

Poland

State Street Bank International GmbH Poland Branch sp. z o. o. is a branch of State Street Bank International GmbH. State Street Bank International GmbH’s Polish branch provides core fund accounting services to certain European affiliates of State Street across multiple service lines.

United Kingdom

State Street’s custody business operates through the London branch of State Street Bank, which is authorized and regulated by the Financial Conduct Authority (“FCA”) and limited regulation by the Prudential Regulation Authority (“PRA”). State Street’s Securities Finance business operates through the London branch of State Street Bank. State Street Bank and Trust Company, London Branch is a limited liability trust company incorporated in the United States that is authorized and regulated by Federal Reserve Board with limited regulation by the PRA and subject to regulation by the FCA. State Street Bank International GmbH, London Branch is a branch of State Street Bank International GmbH (“SSBI GmbH”), which is authorized by the German Financial Supervisory Authority and subject to limited regulation by the FCA and the PRA. SSBI GmbH appears on the European Central Bank register as a significant supervised entity under the Single Supervisory Mechanism. Global Delivery, a division of State Street Bank, is responsible for providing accounting and related services and activities for U.K. collective investment schemes. As these services and activities do not fall within the definition of investment business, they are accordingly not regulated by the FCA. However, in recognition that these clients are regulated, these services and activities are conducted in accordance with the respective rules and regulations appropriate for those schemes outlined in the Collective Investment Schemes sourcebook (“COLL”).

Insurance Coverage

The Corporate Insurance Department within Enterprise Risk Management (“ERM”) works with State Street management to evaluate and select insurance risk transfer coverage for State Street. All domestic insurers are rated by AM Best and have a rating of A– or better. State Street’s global insurance program, as of September 30, 2023, is comprised of the following policies:

- Financial Institution Bond including Computer Crime Coverage
- Directors’ and Officers’ Liability
- Professional Liability
- Cyber/Network Security and Privacy Liability
- Property
- Casualty

Standard of Conduct

The Standard of Conduct details the code of business conduct for State Street and all of its subsidiaries. The Standard of Conduct, together with policies that address specific topics or policies that are issued by individual business areas and corporate functions, establish a set of requirements and guidance regarding the way in which employees of State Street are to conduct themselves. Every employee is expected to remain informed about and to comply with the Standard of Conduct, related company policies and the regulatory and legal requirements that apply to State Street as a company and to each individual employee. The Standard of Conduct is described further in Section III A3 *State Street Governance and Structure – Corporate Compliance*.

Regulatory Environment

As described above in the *Regulation* section of this overview, State Street is a highly regulated entity subject to reporting obligations to, and examinations by, federal and state regulatory agencies in the U.S. and local regulatory agencies in the international jurisdictions in which State Street operates.

Control Environment

Many of State Street’s controls detailed within this report contribute to the prevention of fraud. For example, State Street’s Funds Transfer and Transaction Origination Policy (“FTTOP”) described in this report requires that a transaction originator’s identity and transaction authority be verified upon receipt of trade instructions and requests to transfer funds. State Street’s controls surrounding Anti-Money Laundering, Know Your Customer (“KYC”) and Identity Theft Prevention also contribute to the prevention of fraud. Additionally, each of the support divisions and areas described in Section III A3 of this overview contribute to State Street’s policies designed to prevent fraud.

As custodian and/or accounting agent, State Street follows “Proper Instructions” as defined and used in the applicable service agreement. As administrator or sub-administrator, State Street, under the direction and supervision of fund management and counsel, may prepare financial statements and may be responsible for coordination with fund management with respect to expense accruals and adjustments. Controls surrounding the preparation of draft shareholder reports in the United States are described in Sections III B and IV A of this report.

Sarbanes-Oxley Act of 2002

When requested by clients and to the extent State Street can do so, State Street provides sub-certifications to clients in connection with services provided by State Street to those clients in furtherance of their compliance with Sarbanes-Oxley Act of 2002 certification requirements. Such sub-certifications generally address (i) material changes and corrective actions with respect to significant deficiencies or material weaknesses in the internal controls described in the most recent Global Fund Accounting and Custody SOC 1® report, as well as (ii) instances of fraud involving State Street management or other individuals responsible for the internal controls described in the Global Fund Accounting and Custody SOC 1® report that have not been previously reported to clients.

Financial Crimes Compliance

State Street and its subsidiaries are committed to combating money laundering, terrorist financing, and other illicit financial activity (collectively referred to as “financial crime”) and complying fully with all applicable laws and regulations designed to combat financial crime in the jurisdictions in which it does business. State Street is also committed to complying with all sanctions that are legally binding on it and its business across all of the jurisdictions in which it operates.

State Street has appointed a Global Head of Financial Crimes Compliance Officer who leads a team of employees with experience in this area to oversee State Street’s Anti-Money Laundering and Sanctions compliance program (the “Global AML and Sanctions Program” or the “Global Program”). State Street’s Global AML and Sanctions Program is comprised of written anti-money laundering and sanctions policies, standards, procedures, internal controls and systems, which include but are not limited to the following: a customer identification program and procedures; procedures to collect and update, as appropriate, customer due diligence information; screening of customer and transactions against sanctions and other watch lists; processes to assess money laundering, terrorist financing and sanctions risks at the program, customer and product levels; processes and systems to monitor customer transactions and activity; processes and systems to identify and report suspicious activity; training of employees on AML and sanctions requirements; processes to retain required records; and regular independent testing conducted by Corporate Audit.

The Global AML and Sanctions Program is periodically evaluated, updated and enhanced in order to reflect changes to State Street business activities, as well as to ensure compliance with applicable supervisory standards and legal requirements. The global program is approved by the Board of Directors on an annual basis. State Street cooperates fully with law enforcement and regulatory investigations and inquiries.

Also included as part of State Street's Financial Crimes Compliance ("FCC") Program is the oversight of anti-bribery and corruption and fraud. The following policies are approved by the Core Compliance and Ethics Committee and the Global Financial Crimes Committee: Fraud Risk Management Policy; Global Gifts and Entertainment Policy; Global Anti-Bribery and Corruption Policy; and Global Political Contributions and Activities Policy.

Risk Assessment

State Street has established a robust risk assessment process to identify and evaluate the full scale and scope of its exposures, to analyze how its business activities might evolve as economic and market conditions change, and to help ensure that State Street is operating within the risk appetite defined by the Board of Directors. The Material Risk Identification ("MRI") Process is one of State Street's primary risk identification programs and utilizes a bottom-up approach to identify State Street's most significant risk exposures across all on- and off-balance sheet risk-taking activities, including credit, market, liquidity, interest rate, operational/technology, fiduciary, business, reputational, and regulatory risks. The primary output from the program is a firm-wide Material Risk Inventory, which is a comprehensive list of the risks that could significantly impact State Street, irrespective of their likelihood or frequency. The material risks are reviewed by management and the Board of Directors on an annual basis to ensure that significant changes to State Street's risk profile are captured on a timely basis. In addition, the quarterly MRI updates focus on identifying emerging risks and triggering events that could cause State Street's exposures to materialize. The Material Risk Inventory forms a holistic view of State Street's risk profile and is used as a foundational element in State Street's risk management and capital planning processes. ERM, and State Street's control functions more broadly, are responsible for providing review and challenge during the risk identification process to ensure that they are effectively capturing all key risks to which the business is exposed.

Monitoring

State Street management is responsible for continuously monitoring risk exposure across the company and assessing the design and operating effectiveness of its controls. The monitoring process is accomplished through a variety of ongoing activities, including risk monitoring activities performed by the First and Second Lines of Defense (described in Section III A3 *State Street Governance and Structure*), operational event reporting, credit exposure reporting, key risk and performance indicator reporting, and consolidated risk reporting to senior management, oversight committees and the Board of Directors. Management also reviews the results of separate evaluations performed by regulators and Corporate Audit and takes appropriate action to remediate any identified issues. State Street's Board of Directors and senior management provide overall oversight and management review of operating performance. State Street employs a three lines of defense model in which risk management is a shared responsibility among all lines of defense. Refer to the description of the three lines of defense in Section III A3 *State Street Governance and Structure – Enterprise Risk Management* for further details on State Street's approach to risk management and the related responsibilities.

Third-Party Risk Management

State Street leverages and relies on third-party providers for products and services to support its operations, services and initiatives. “Third-Party Provider” is broadly defined as any entity that has entered into a contractual relationship with State Street to support its business functions and activities. While using third-party services assists in obtaining necessary expertise, expanding product offerings, improving services and managing cost, it also introduces potential risks inherent with involvement of a third-party provider. Such risks need to be assessed prior to engaging with the third party and requires ongoing monitoring and management throughout the lifecycle of a third-party engagement. As a result, State Street has implemented a Third-Party Risk Management (“TPRM”) program for assessing and managing risks associated with the use of third-party products and services throughout the engagement lifecycle in a manner consistent with compliance and regulatory requirements.

TPRM is managed within a governance structure that includes oversight from State Street’s Board of Directors including the Technology and Operations Risk Committee, the Third Party and Outsourcing Risk Committee, and the three lines of defense as detailed in Section III A3 *State Street Governance and Structure – Enterprise Risk Management*. TPRM begins with an Inherent Risk Questionnaire (“IRQ”), which must be completed by the Business Unit Manager engaging the third party. The IRQ measures the level of inherent risk within a State Street function that is looking to leverage the products or services of a third party to support its business activities. Both the inherent risk rating for the product or service as well as the required due diligence to be performed on the proposed third party are driven by the level of inherent risk determined through the IRQ. The due diligence process includes a series of control review programs, which are completed by the third party to provide visibility on the design of the third party’s controls prior to contracting. The program has defined an ongoing monitoring program. The level of inherent risk determines the timeframe for re-assessment, including annual review and update of the IRQ, or whenever there are significant changes to the scope of products or services. Scheduled updates to control reviews with the third party occur on a frequency based on the level of inherent risk.

3. State Street Governance and Structure

State Street’s approach to risk management involves all levels of management, from the Board of Directors and its committees, including the Risk Committee, the Examining and Audit Committee, the Human Resource Committee, and the Technology and Operations Committee, to each business unit and each employee. Responsibility for risk oversight is allocated so that risk/return decisions are made at an appropriate level and are subject to robust and effective review and challenge. Risk management is the responsibility of each employee, and is implemented through a three lines of defense framework.

- 1. The First Line of Defense:** The business and functional units who perform day-to-day operational and/or support activities that may give rise to risk operate as the First Line of Defense (“FLOD”). The FLOD owns the risks associated with their activities and is responsible for establishing effective internal controls to manage such risks to an acceptable level and promoting a strong culture of risk awareness.

- 2. The Second Line of Defense:** Control functions independent of the FLOD, such as Enterprise Risk Management and Corporate Compliance, operate as the Second Line of Defense ("SLOD"). The SLOD is responsible for setting the corporate risk appetite limits, developing policies and procedures to evaluate whether risks remain within the appropriate limits, monitoring risk-taking, and providing credible review and challenge to the FLOD risk management practices. Refer to additional details in *Enterprise Risk Management* and *Corporate Compliance* sections below.
- 3. The Third Line of Defense:** Corporate Audit operates as the independent Third Line of Defense ("TLOD"). The TLOD is responsible for assessing the effectiveness of the First and Second Lines of Defense as it relates to managing risk and providing reporting to the Board of Directors and management. Refer to additional details in the *Corporate Audit* section below.

Enterprise Risk Management

The Chief Risk Officer leads ERM globally and has a dual reporting line directly to State Street's Chairman and Chief Executive Officer and the Risk Committee of the Board of Directors. The Chief Risk Officer is also a member of the Executive Committee, the Firm's most senior policy-making committee.

As part of its mandate, ERM maintains the Firm's Risk Appetite Framework, including the supporting risk policies and limits, that sets boundaries for firm-wide risk-taking and ensures business strategy, risk processes, and controls contain risk within acceptable bounds. To support this Risk Appetite Framework, ERM has implemented a comprehensive governance structure that provides focused oversight of material risks, establishes corporate risk guidelines and provides a formal mechanism to undertake the consistent identification, management and mitigation of risk. In fulfilling its monitoring and oversight responsibilities, ERM is responsible for proactively monitoring firm-wide risk-taking and has established regular processes for reporting on top risk exposures and emerging risk issues to senior management and the Board of Directors. In addition, ERM is responsible for developing, or ensuring the integrity of, the risk measurement methodologies and tools that are used to monitor the Firm's risk profile relative to its risk appetite. In situations where a material exposure is at risk of breaching the Firm's risk appetite, ERM is charged with taking the actions it deems appropriate to mitigate or reduce the potential impact to the Firm's earnings, capital or reputation. In the event of a risk appetite breach, ERM has established a formal escalation process to promptly inform the Management Risk and Capital Committee and the Board of Directors of any risk issues that could materially impact the Firm.

ERM manages its responsibilities globally through a three-dimensional organization structure, which includes:

- (1) Dedicated "vertical" business unit-aligned risk groups that support business managers with risk management, measurement and monitoring activities;
- (2) "Horizontal" risk groups that monitor risks that cross all of State Street's business units, such as operational risk and credit risk, or that develop, maintain, and assess the effectiveness of the infrastructure that is used to support all of ERM's activities, such as Centralized Modeling and Analytics; and

- (3) Risk oversight of international activities, which combines intersecting “verticals” and “horizontal” through a hub-and-spoke model to provide important regional and legal entity perspectives to the global risk framework.

Sitting on top of this three-dimensional organization structure is the Risk Superstructure, which is responsible for the aggregation of risk exposures across the vertical, horizontal and regional dimensions, for consolidated reporting, for setting the corporate-level Risk Appetite Framework and associated limits and policies, and for dynamic risk assessment across State Street. At its foundation is the Recovery and Resolution Planning function, responsible for developing and maintaining the firm-wide strategy for rapid and orderly resolution in the event of material financial distress or failure of State Street, the Centralized Modeling and Analytics function, which provides modeling and analytical support for ERM and Global Treasury, and Corporate Compliance, which establishes the firm-wide approach to identify, assess, monitor and report on compliance risk globally.

Corporate Compliance

Corporate Compliance maintains State Street’s Compliance Risk Management Policy, which establishes the firm-wide approach to identify, assess, monitor and report on compliance risk globally. Compliance risk is defined as the risk of legal or regulatory sanctions, material financial loss, or loss to reputation resulting from failure to comply with regulatory obligations.

State Street has defined two categories of compliance risk: core compliance risk and embedded compliance risk. Corporate Compliance is responsible for overseeing the management of core compliance risk, which are those instances where the primary risk exposure is the failure to comply with regulatory obligations, through the administration of the Core Compliance Oversight Program (“CCOP”). Corporate Compliance is also responsible for ensuring policies to address the management of material core compliance risks are developed and communicated, as necessary. Embedded compliance risk, defined as instances where compliance with regulatory obligations is a component of another risk exposure but not the prevailing risk (e.g., credit risk, technology risk), is managed through specialized risk management programs administered by Enterprise Risk Management.

The Chief Compliance Officer reports to the Chief Risk Officer and is responsible for overseeing the design, development and implementation of the CCOP globally. The Chief Compliance Officer meets regularly with the Examining & Audit Committee (“E&A Committee”) to discuss the effectiveness of the CCOP and has the authority to communicate directly with the E&A Committee on any issues relevant to the CCOP. Annually, the Chief Compliance Officer liaises with the Senior Risk Officers responsible for overseeing areas of embedded compliance risk to compile and report an opinion of compliance risk management practices for each area of embedded compliance risk to the E&A Committee.

State Street has a Standard of Conduct that describes the principles of business conduct expected of all employees of State Street and its subsidiaries globally.

The Standard of Conduct addresses a variety of business and personal conduct matters and sets forth the acceptable conduct required of all employees. The matters covered include:

- Our Values
- Ethical Decision-Making
- Expectations for Managers
- Speaking Up
- Reinforcing Our Standards
- Empowering Our People
- Workplace Safety
- Protecting Company Assets and Information
- Avoiding Conflicts of Interest
- Money Laundering and Sanctions
- Bribery and Corruption
- Fraud
- Working with Outside Parties
- Using Social Media and Public Forums

The Standard of Conduct at State Street is both a statement of ethical principles as well as a guide for employee conduct. Employees are required to comply with and annually certify to its provisions. As such, it is an essential part of State Street's risk management process. The Standard of Conduct is available to employees on both the internet (www.statestreet.com) and State Street's intranet.

Corporate Audit

Corporate Audit's mandate is to provide the Board of Directors and management with independent and objective assessments of the design and operating effectiveness of State Street's system of internal controls covering the integrity of the company's financial statements and reports, compliance with laws, regulations, and corporate policies and the effective management of risks faced by the company in executing on its strategic and tactical operating plans. Corporate Audit applies a systematic, disciplined approach to evaluate and recommend improvements to the design and operating effectiveness of State Street's global risk management, control and governance processes.

State Street's Corporate Audit Department is staffed by more than 270 professionals who report directly to the E&A Committee of the Board of Directors.

Corporate Audit issues formal audit reports to the executives responsible for the business area reviewed, as well as the various management levels reporting up to the Chief Executive Officer, including executives from Legal, Risk and Compliance. The E&A Committee of the Board of Directors receives copies of all audit reports as well as summaries of less than satisfactory and unrated reports.

Finance

The Finance division is responsible for financial accounting and reporting, regulatory reporting, subsidiary accounting, tax compliance and reporting, profit center and financial evaluations, as well as the development and review of State Street's financial accounting controls. The division executes its responsibilities through central corporate accounting, reporting and tax functions and through a network of area, division and subsidiary finance groups that have responsibility for business-unit-level accounting and controller activities.

Global Human Resources and Corporate Citizenship

The Global Human Resources and Corporate Citizenship ("GHRCC") function at State Street Corporation provides services designed to support the recruitment, ongoing development, and retention of employees across the firm. GHRCC develops and executes on their Human Capital Management ("HCM") strategy, which is intended to enable and support State Street's broader business strategy and key business priorities. GHRCC provides regular updates to the Board of Directors' Human Resources Committee, who oversees the overall HCM strategy.

GHRCC is comprised of Centers of Excellence globally in order to deliver on the HCM strategy and facilitate the employee experience:

- Talent Development and Learning
- Employee Relations and Conduct
- Talent Acquisition
- Global Employee Onboarding
- Global Total Rewards (includes Compensation, Benefits, Performance Management, and Global Mobility)
- Global Inclusion, Diversity and Equity
- Employee Engagement, Corporate Citizenship, and Culture
- Shared Services (including HR – Service Centers)

- HR Technology and Workforce Planning and Insights
- HR Business Partners
- Transformation/Organizational Design
- Internal Communications

Legal

The Legal division provides counsel that helps State Street successfully navigate complex legal and regulatory environments, maximize business opportunities, and minimize legal, regulatory, reputational and other risks. Legal division professionals strive to provide proactive and practical solutions to support the company's needs, at both the business line level and the corporate level.

4. Information Technology General Controls Overview

State Street relies upon the controls performed by State Street's IT and Global Security divisions to achieve the stated control objectives in Section IV. IT General Controls performed by State Street's Information Technology and Global Security divisions during the period October 1, 2022 to September 30, 2023 are included within State Street's ITGC SOC 1® report.

Global Security

The Global Security division's mission is to protect State Street's people, clients, assets, information, continuity of operations and reputation worldwide. The three teams within the division — Protective Services, Investigations, and Strategies and Initiatives — work together to adopt and enforce industry-leading practices to help create a safe and secure work environment for all employees and other personnel as well as meet or exceed regulatory and customer requirements.

The Global Security team provides leadership with centralized oversight and governance of security risk management, incident management, policy, administration, and operations. This includes security monitoring and compliance, physical security design, engineering and management, background investigations, cyber investigations and legal support as well as assistance with information security protection, incident response and overall security service delivery.

Information Technology

State Street's approach to IT has developed from a singular focus on meeting the needs of global institutional investors. Creating operational scale and efficiency is critical to State Street's ability to deliver value for clients, and as such, State Street has closely aligned its IT strategy with its business model. Members of IT leadership are embedded within the business lines, helping prioritize project development, to help ensure business goals are met and leveraging synergies wherever possible. State Street's IT division, led by the Office of the Chief

Information Officer ("CIO"), identifies, establishes and communicates the IT strategic vision and direction globally as well as oversees enterprise technology infrastructure, application development and maintenance, systems architecture and information security.

5. Applications

The functions of State Street's Global Fund Accounting and Custody system are supported by the applications listed below (listed alphabetically). The application names have been provided for definitional purposes to assist the user. Please refer to State Street's ITGC SOC 1® report for the relevant IT control objectives.

Application	Description
Acquisition Management ("AQM")	An application that schedules, retrieves and delivers market data vendor feeds to Alveo for processing with efficient Graphical User Interface ("GUI") driven monitoring, scheduling and exception management.
Alerts and Events Framework (also known as Digital Alerts Service ("DAS"))	An aggregation tool used to view alerts in real time from MyNAV, G/L Alerts and eHorizon at an aggregated level by pivots (e.g., CUSIP, fund) and provides the ability to research and resolve the relevant alerts in an aggregated manner.
Alveo	An application used to provide straight-through processing of market data vendor feeds for the automated maintenance of security masterfile data.
Automated Fund Workflow ("AFW")	An application used to automatically load core custody, accounting and other new fund information onto MCH.
Automated Wash Sales ("AWS")	An application used to perform wash sale analysis on securities. The application identifies potential wash sale loss deferrals and tracks the tax lots to relieve the wash sales when they are subsequently sold.
Bank Electronic Support System ("BESS")	An application used to process banking-related messages. BESS provides direct communication to the SWIFT network according to the standard protocol and message-level requirements established by SWIFT.
Bank Institutional Delivery System ("BID")	An application used to prepare trades for processing through the MCH application by matching affirms from the fund to confirms generated by the broker.
CApTAIN	An application used to communicate corporate action notifications and responses.
Cash Flow Module ("eCFM")	An application that provides straight-through processing and authorization of disbursements for vendor invoices, expense accruals and disbursement processing as well as automation of a number of stages in limited partnership processing, including the calculation of the periodic Cash Adjusted Market Value ("CAMV") as well as market value calculations.
Collateral Management Workstation ("CMW")	An application product used to manage credit exposure of trades that have associated collateral, including processing of critical counterparty risk-bearing transactions with intraday deadlines. CMW provides a rules-based workflow to identify eligibility and valuation of assets, and a reporting tool to manage and monitor collateralized client-counterparty agreement relationships.
Collateral Plus	An application that is intended to provide a new Collateral Management solution that integrates and feeds from multiple collateral management applications to further streamline operational complexity via straight-through processing of the overall collateral management lifecycle, including the management of credit exposure of trades that have associated collateral, including processing of critical counterparty risk-bearing transactions with intraday deadlines. Collateral Plus consists of the following integration: <ul style="list-style-type: none"> • COLLINE – Third-party application that provides core margin management including rules-based workflow to identify eligibility and valuation of assets, and a reporting tool to manage and monitor collateralized client-counterparty agreement relationships.
Continuous NAV (also known as Digital Rates and Yields ("DR&Y"))	An application which automates the calculation of daily and periodic income distributions and yield calculations and automatically posts them to MCH.

Application	Description
Corporate Action Monitoring System ("CAMS")	An application used to communicate corporate actions data to internal business units.
Data Management Hub – Unlisted Investment Transactions ("DMH-UIT")	An application which receives unlisted investment transaction instructions and automates the processing of such transactions, including the distribution to the applicable Unit Registry. DMH-UIT also automates the posting of unlisted investment transactions to MCH.
Derivatives Hub ("DHub")	An application that offers an end-to-end servicing solution and automates a number of stages in derivatives processing, including client reporting, electronic trade flow and the reconciliation of positions and cash flows between the middle and back offices. DHub captures trade activity, reconciles data from the industry utilities and dealers to client trade details and automates acquisition of vendor prices. DHub consists of functionalities to process listed derivatives, swaps as well as Over The Counters ("OTCs") and Contract For Differences ("CFDs").
Distribution, Metering and Entitlements ("DME")	An application that receives requests to distribute reference data from the Alveo application, obtains data and formats messages, then delivers them to downstream applications.
Dollar Market Logic ("DML")	An application used to manage the lending of client portfolio securities.
Dynamic Cash Allocation ("DCA")	An application, which is integrated with MCH to receive available cash balances, is used to allocate cash utilizing predetermined allocation algorithms across portfolios and managers for certain clients.
Enterprise Horizon ("eHorizon")	<p>Builds on the existing foundation of the MCH application, providing core fund accounting services, and adding new functionality. Unless otherwise noted, MCH and eHorizon are collectively referred to as "MCH" throughout this report.</p> <ul style="list-style-type: none"> • Amortization/accretion – Functionality within eHorizon that automates the determination to accrete discount or amortize premium on new security purchases based on client policy. • Custody Accounting Reconciliation System ("eHorizon CARS") – Functionality within eHorizon that automates the reconciliation of GSMAC and SMAC settled positions to MCH settled positions. • Dividend Review – Functionality within eHorizon that automates the validation of dividend activity in MCH to vendor confirms and provides exception-based alerts for tolerance breaks. • Master/feeder – Functionality within eHorizon that automates the allocation of income, expense and realized/unrealized gain/loss items from master funds to feeder funds. The functionality within MCH allows for the linking of feeder funds to master funds. • Fund of funds – Functionality within eHorizon that automates the allocation of per unit valuation from higher-tiered funds to lower-tiered funds. • Multi-basis – Functionality within eHorizon that allows multiple base calculations/structures (e.g., U.S. GAAP, U.S. Tax, AICPA, IFRS) for any fund or portfolio. Multi-basis allows specific calculations and rules (par rules, amortization rules, transaction costs, valuation, corporate actions rules, etc.) that post transactions to also post to the secondary set of books. • Pooling structures – Functionality within eHorizon that allows for the "virtual" or "notional" pooling of assets from different funds in one account (i.e., pool) with each fund maintaining its legal and economic ownership of the pool. • Trial Balance – Functionality within eHorizon that allows for reporting of fund account balances in a trial balance format. • Fixed Income Asset Control ("FIAC") – Functionality within eHorizon that receives current vendor market data from Alveo for modifications to the income accrual records and alerts users to changes in the security reference data. • Income Change – Functionality within eHorizon that automates the viewing of the Income Change and Rejected Accrual reports from MCH and provides exception based alerts for tolerance breaks in day over day income change. • General Ledger to Subsidiary Ledger Reconciliation – Functionality with eHorizon that automates the reconciliation of the eHorizon General Ledger balances to the eHorizon Subsidiary Ledger account balances. • Transfer Agent Reconciliation ("TA Recon") – Functionality within eHorizon that automates the reconciliation of capital stock activity and balances in eHorizon to the client's transfer agent, trustee or other servicing agent.

Application	Description
Enterprise Horizon ("eHorizon") <i>(continued)</i>	<ul style="list-style-type: none"> • General Ledger Alerts Service ("G/L Alerts") – Functionality within eHorizon that provides exception-based reporting by defining business rules and tolerances to accounting activity and generates alerts to be investigated and/or validated. • Mark-to-Market Workflow – Functionality within eHorizon that automates the posting of unrealized appreciation/depreciation related to all foreign holdings. This replaces the manual process that was previously completed through MCH. • Hedge Workflow – Functionality within eHorizon that automates hedge class allocations with exception based processing integration to MyNAV and Process Monitoring. • Event Driven Workflow ("EDW") – Functionality within eHorizon that moves daily processing from deadline based operations to event based operations to create an end to end state requiring minimal human intervention. The workflow leverages Process Monitor (module in MyView) and Realtime Trial to complete events called "milestones" which link together and trigger subsequent processing. <p>Please refer to the MCH application for more information.</p>
Enterprise Pricing Web ("EPW")	An application used to generate pricing data as applicable pricing exchanges close. EPW is a pricing service which is integrated with MCH and provides automated alerts and real-time pricing data.
Enterprise Servicing Platform ("ESP") (APRA)	An application used to support reporting requirements for Australian Prudential Regulation Authority ("APRA") reporting.
ETF Global Platform	An application that automates Exchange Traded Funds ("ETF") basket creation, in-kind trade instructions, and reporting.
Expense Manager	An application used to automate the calculation and posting of expense accruals, allocation of vendor invoices, vendor invoice approval and disbursement processing.
Financial Data Repository ("FDR")	FDR is a data repository of financial accounting data integrated from multiple sources such as MCH, eHorizon, and DHUB.
FundSuiteArc (U.S. and EMEA Instances)	An application used to produce shareholder reports for mutual funds and other investment vehicles. FundSuiteArc (U.S. and EMEA Instances) accepts data feeds from MCH and client-required third-party providers. The application has three primary modules: portfolios, financials and notes to financials.
FundSuite SX	An application used to produce shareholder reports for mutual funds and other investment vehicles. FundSuite SX accepts data feeds from MCH and client-required third-party providers. The application has three primary modules: portfolios, financials and notes to financials.
Global Corporate Action System ("GCAS")	An application that supports all aspects of the corporate action lifecycle from data acquisition and cleansing to communicating elections on voluntary events to the market. It allows for the automated set-up of corporate action events via both electronic feeds and manual input. The application tracks, reconciles and reports on corporate action events in all markets including the generation of corporate action pre-notifications, interim notifications and full notifications.
Global Income Control ("GIC")	<p>An application used by Global Income to monitor and reconcile income payments.</p> <ul style="list-style-type: none"> • Income Tracking System: Functionality used to facilitate the tracking of past-due income receivables across all markets.
Global One	A transaction processing application for the Prime Services business for State Street Securities Finance.
Global Securities Movement and Control ("GSMAC")	An application used to maintain inventory records for individual portfolio securities held by the subcustodian network, track physical movements of international securities and monitor trade activity through each stage of settlement.
Global Services Application ("GSA")	<p>Multiple business functions to support Global Delivery all on one technical platform.</p> <ul style="list-style-type: none"> • Securities Lending Claims Processing ("SLCP") – Functionality within GSA for claims issuance and tracking. • Security Recon Database ("SRD") – Functionality within GSA to monitor share position discrepancies between State Street and subcustodians.

Application	Description
Global Services Reconciliation ("GSR")	<p>A global application that performs the following cash and position reconciliations in support of Global Services and enables the management of resulting exceptions.</p> <ul style="list-style-type: none"> • Recon 1 – Reconciliation of ICASH Cash (Off-Book Settlements) and IBS/HOGAN Cash (On-Book Settlements) to MCH. Separate versions are run for U.S., Europe and APAC at the appropriate end of day. Components for this recon utilize EMS (automated matching program), CREU (online function for manual matching) and ReconPlus (data warehouse and online tool for unmatching). • Recon 2 – Reconciliation of IBS Secondary Nostro cash accounts (On-Book Settlements) to the subcustodian, CREST or CDS via MT940/950 SWIFT messages. Components for this recon utilize EMS (automated matching program), GRCN (online function for manual matching) and ReconPlus (data warehouse and online tool for unmatching). • Recon 3 – Reconciliation of ICASH (Off-Book Balances and actual settlements) to the subcustodian MT940s and MT950s. Recon 3 uses ReconPlus for automated and manual transaction matching and storing the balances. Balances are stored for accounts at subcustodians that do not send SWIFT messages. • MT535 Securities Position Recon – Reconciliation of GSMAC settled and registered positions to the subcustodian MT535s or positions from CREST or CDS.
Global Tax System ("GTS")	An application used to calculate tax information under German tax rules.
Global Transaction Manager ("GTM")	An application with exception-based workflow used to capture and process electronic transactions including securities, foreign exchanges and cash transactions for Custody-Only model clients to custody applications (i.e., SMAC/GSMAC) as well as transaction management clients.
Hogan	An application used to track demand deposit accounting ("DDA") activity and balances. Internal transfers between DDAs are processed via Hogan Online Memo Post Plus ("OMP") functionality.
Instruction Initiation Platform ("IIP") (previously known as "Instruct Lite")	An application used to initiate certain types of transactions or instructions (payments, collateral/securities, onboarding). Functionality to approve instructions/transactions is also available, as applicable. IIP automatically sends instructions to Hogan/IBS and SMAC/GSMAC, as appropriate. IIP captures transmissions (e.g., faxes or telexes) sent by the client or investment managers and provides a workflow program to monitor transmissions as users process them in real time.
Integrated Banking System ("IBS")	An application used to track on-book currency processing and balances.
International Cash ("ICASH")	An application used to track off-book cash balances at subcustodians. ICASH uses SWIFT messages to send off-book transactions for those accounts at the subcustodians.
Iris Trading and Operations Platform ("ITP")	An application that supports trade booking, position management, trade analytics and collateral management workflow for the Prime Services business.
Livewire	An application which extracts data from MCH to automate the calculation, validation and dissemination of key daily fund data using customized tolerances. The application utilizes general ledger balances, portfolio holdings and other critical data from MCH and automatically populates workbooks.
Loan Ops Portal	An application used to reconcile activity posted to WSO to activity posted to MCH.
Multicurrency Horizon® ("MCH")	<p>An application that maintains the general ledger and chart of accounts. Unless otherwise noted, MCH and eHorizon are collectively referred to as "MCH" throughout this report.</p> <ul style="list-style-type: none"> • Electronic Trade Authorization ("ETA"): Middleware that links MCH to SMAC for domestic trades and to GSMAC for international trades and electronically passes transactions entered by investment managers to SMAC or GSMAC. • Clean Cash Transaction ("CCTX"): Functionality in MCH used to process receipt of SWIFT MT202/210 instructions or internal cash transfers.
MyStateStreet ("MySS")	A web-based portal that provides online access to customers' custody, cash and accounting data and that allows users the ability to generate various reports. Coverage of MySS throughout this report is limited to testing select standard reports, as detailed in Section IV C.

Application	Description
MyView	<p>An application which provides the following services:</p> <ul style="list-style-type: none"> • Process Monitor – An application which provides for electronic evidence of review and process monitoring for various State Street applications and allows for progress updates or alerts and exceptions through the use of process maps and operational metrics and provides updates in real time. • MyNAV – An application residing on the MyView platform which provides exception-based reporting by applying business rules and tolerances to accounting activity and generates alerts to be investigated and/or validated. • Task Manager – Functionality which provides the ability to create customized checklists and signoff through MyView.
NAVigator	An application used to perform second source data quality checks on equity securities.
Open System Accounting – Accounting Systems Audit (“OSA-ASA”)	An application used to provide fund groups with the ability to run audits/proofs systematically throughout the month in order to facilitate a fully audited set of month-end client reports.
Payment Services Account Repository (“PSAR”)	A web-based query tool that provides near real-time IBS balances allowing users to view the details of IBS and related SWIFT transaction details.
Securities Lending Enterprise (“SLE”)	An application used to monitor and control international lending related transactions (loans, returns, reallocations, sells, confirmations). SLE messages activity between the DML and GSMAC applications on a near-real-time basis.
Securities Movement and Control (“SMAC”)	An application used to maintain inventory records of the individual portfolio securities held domestically, track physical movements of securities and monitor trade activity through each stage of settlement. SMAC details where the shares are currently held, as well as the history of each position and trading activity. SMAC is linked to the Depository Trust and Clearing Corporation’s settlement application to automate the settlement process. It is also linked to MCH, Hogan and ETA.
Securities Transfer System (“STS”)	An application used to control and transfer Federal Reserve, book-entry eligible securities through the Federal Reserve System.
Spire	A third-party application used to consolidate and automate certain cash collateral processes related to Securities Finance Agency Lending, reconcile investment accruals to the investment manager on a monthly basis and calculate monthly income distributions.
Tax Efficient Lot Selector (“iTELS”)	An application used to calculate the tax per share for each security lot and identify the most efficient selection of lots based on business rules and post the lots to the MCH application.
Tax Reclaim System (“TRS”)	An application used to automatically process and track reclaims on taxes withheld by foreign tax authorities.
Transaction Lifecycle Management Premium (“TLMP”)	An application used to receive feeds and electronically match data and identify exceptions. The TLMP application has the ability to manage the lifecycle of exceptions as well as matched positions.
Universal Custody Management (“UCM”)	An application used to receive feeds from custodians and electronically match data and identify exceptions.
Variation Margin Wire (“VMW”)	An application used for wire entry, approval and inquiry, which interfaces with Hogan and MCH applications. The VMW application sends wire transfer instructions to State Street’s wire transfer application for execution with the Fed, instructions to the Hogan application to transfer monies from one DDA to another and Fund General Ledger instructions to the MCH application.
Wall Street Office (“WSO”)	An application designed to provide tracking and reporting of accounting detail for asset classes including institutional loans. The components within this suite currently used at State Street are WSO Administrator (for institutional loan activity tracking), WSO Security (for access entitlements) and WSO Reporting (for loan activity reporting).

Additionally, the following applications support transaction processing; however, information technology general controls in place for these applications are not covered in State Street's ITGC SOC 1® report. Testing of manual or IT general controls and output for these applications is performed as applicable.

Application	Description
Advent Workflow	A third-party application used to calculate proper collateralization and automatically determine the collateral required for each client.
Cash Manager™ ("Cash Manager")	A web-based platform accessed through State Street's web portal mystatestreet. The application allows entitled users to originate U.S. Dollar FedWire transfers, internal book transfers between State Street Demand Deposit Accounts, SWIFT message types ("MT") 103, 200, 202 and 210 for major currencies and Automated ClearingHouse ("ACH") transactions. Cash reporting is available for U.S. and currency accounts, including the ability to customize and schedule reports using the Automated File and Report Delivery ("AFRD") feature.
Duco	A web-based reconciliation tool used by Securities Finance to receive feeds and electronically match on-loan security positions and non-cash collateral balances between DML and custody records (State Street or third party) and identify exceptions.
Equilend	An application used to facilitate non-U.S. equities "contract compare" with counterparties.
FundSuiteArc (Australia Instance)	An application used to produce shareholder reports for managed investment trusts and other investment vehicles. FundSuiteArc (Australia) accepts data feeds from MCH and client-required third-party providers. The application has three primary modules: portfolios, financials and notes to financials.
Loanet	An application used to facilitate U.S. equities "contract compare" with counterparties.
Local Custody Control System ("LCCS")	An application used for trade matching which acts as a link between GSMAC and the local depositories (CDS in Toronto, CBF in Germany and CREST in London) to enable straight-through processing.
Pirum	An application used to facilitate non-U.S. equities "contract compare" with counterparties.
Relationship Management Application ("RMA")	An application which encrypts and decrypts transmissions sent through SWIFT.
Report Generator ("One SumX Report Generator")	An application used in Regulatory Reporting to generate the regulatory reporting files transmitted to the Luxembourg regulators (BCL and CSSF).

6. Operations Overview

GLOBAL DELIVERY

State Street's investment servicing business provides asset owners and managers with a wide range of support, from core custody and cash processing/security settlements, accounting, financial reporting and shareholder recordkeeping to complete investment operations outsourcing solutions and servicing for complex assets like OTC derivatives, private equity and real estate. State Street provides financial services to institutional investors worldwide, including pension funds, insurance companies, corporate entities and collective investment vehicles. Among the collective investment vehicles are mutual funds, common trust funds, unit trusts, managed investment schemes, investment trusts and similar structures globally. Global Delivery performs various operational activities in support of State Street's clients.

State Street provides core custody and cash services, including transaction processing, income and tax processing, settlement and reconciliation for State Street's global client base. State Street provides many of these services through centralized functions which, similar to core accounting functions above, may be referred to as "Centralized Processing units" throughout this report. State Street has created a shared service model that embraces the use of technology to enable multiple sites to have one processing model across the entire workflow. The work is continuously shared among the sites using application-based rules and workflow. State Street's shared service model helps to effectively integrate client team processes and operations, leverage global talent (across time zones and core capabilities), streamline processes and maximize technology to improve customer service.

State Street's Global Delivery has corporate-wide responsibility for fund transfers and payment operations. It focuses on the global trend toward shorter settlement cycles and increasing demand from Client Segments, clients for faster response times in executing and reporting cash transactions. Global Delivery is charged with developing consistent procedures on payments and fund transfer activities, as well as control systems and risk management functions to determine whether corporate and regulatory compliance requirements are being met.

State Street supports the custody of client assets and maintains a global network of subcustodian banks in over 100 markets. As part of this, State Street is responsible for contracting with and managing subcustody relationships. The management teams maintain a focus on regional issues so that operations are compatible with uniform corporate risk management and other policies.

The following table depicts a listing of State Street's shared services model and their locations.

State Street's Shared Services Model and Locations

Location	Shared Services Processes										
	Cash	Reconciliation ³	Collateral Processing	Trade Processing	Account Opening ¹	Reference Services	Corporate Actions ⁴	Derivatives	Income	Loan Services	Securities Valuation ²
Canada – Toronto	✓			✓			✓			✓	✓
China – Hangzhou		✓					✓	✓	✓		✓
Germany – Frankfurt			✓				✓				✓
Germany – Munich							✓				
India – Bangalore		✓	✓		✓			✓			
India – Chennai	✓	✓					✓		✓		
India – Coimbatore	✓	✓	✓					✓	✓		✓
India – Hyderabad	✓	✓	✓		✓		✓		✓	✓	
India – Mumbai	✓	✓	✓	✓		✓	✓		✓	✓	
India – Pune	✓	✓	✓	✓			✓		✓	✓	✓
India – Vijayawada	✓	✓						✓			✓
Ireland – Dublin		✓					✓	✓		✓	✓
Ireland – Kilkenny								✓		✓	
Luxembourg							✓				✓
Poland – Gdansk			✓		✓			✓			✓
Poland – Krakow	✓		✓		✓	✓		✓			✓
United Kingdom – Edinburgh		✓					✓		✓		
United Kingdom – London							✓				✓
United States – Boston	✓										
United States – Irvine			✓								
United States – Kansas City	✓	✓		✓				✓	✓	✓	✓
United States – Quincy	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
United States – Sacramento		✓						✓			✓

¹With respect to the scope of this report, the Business Onboarding and Transitions ("BOaT") team is responsible for new fund set-up on MCH via AFW.

²The Hangzhou location performs centralized pricing functions but does not report into the Securities Valuation Shared Services team.

³The following locations perform oversight functions and do not perform core reconciliation processing: Dublin, Kansas City, Quincy and Sacramento.

⁴The following locations perform oversight functions and do not perform core corporate action processing: Dublin, Hyderabad, London, Luxembourg, Munich, Quincy, and Toronto.

Global Accounting

State Street has extensive experience in accounting for very large, highly complex portfolios with structures that involve various mixes of complex securities in multi-manager, multi-class, master-feeder, alternative and offshore funds.

In many locations, State Street has centralized several portfolio accounting functions (i.e., income and corporate action processing) within a “Business Unit Shared Service”. A “Business Unit Shared Service” is a team representing like activities that are business unit specific. These centralized portfolio accounting functions are referred to throughout this report as “Centralized Processing units.” The decentralized functions performed by the portfolio accounting teams are collectively referred to throughout this report as “Global Accounting groups.” Global Accounting groups are responsible for the calculation, verification and research and resolution of client portfolio activity within the respective accounting records.

Processing for Business Unit Shared Services teams and Global Accounting groups is performed by teams in various locations, as noted below:

- Corporate Action Shared Services teams are located in the U.S. as well as in Bangalore, Hyderabad and Mumbai, India;
- Exchange Traded Funds teams are located in the U.S. as well as in Mumbai and Hyderabad, India;
- Global Accounting is performed in various locations as noted below for the listed donor sites:

Region	Locations
North America	Bangalore, Coimbatore, Hyderabad and Pune, India
Asia Pacific	Bangalore, India and Hangzhou, China
Europe, Middle East and Africa	Canada, India, Gdansk and Krakow, Poland, and the United States

Financial Reporting

Financial Reporting provides services to clients with assets held in mutual funds, unit investment trusts and other pooled investment vehicles. Financial Reporting prepares draft semi-annual and annual shareholder reports for clients, including required financial statement disclosures. Financial Reporting is performed in various locations as noted below for the listed donor sites:

Region	Locations
North America (U.S.)	Bangalore and Mumbai, India
Asia Pacific (Australia)	Hangzhou, China
Europe (Ireland, Luxembourg, Switzerland and United Kingdom)	Mumbai, India, Krakow, Poland, Kansas City, U.S.

GLOBAL MARKETS

State Street provides specialized research, trading, securities lending funding and collateral solutions and innovative portfolio strategies to owners and managers of institutional assets. State Street's goal is to enhance and preserve portfolio values for clients through original flow-based research, proprietary portfolio and risk management technologies, trading optimization and global connectivity.

Collateral Management

State Street's Collateral Management Team acts as a collateral management agent for State Street's Securities Lending, OTC or exchange-traded derivatives and/or REPO products to secure proper collateralization from counterparties.

Securities Finance

Securities Finance, a division within State Street Global Markets, offers two primary products, Agency Lending and Prime Services.

State Street's securities lending program is available to all institutional investors whether their assets are held in custody at State Street or elsewhere. Innovative technology and global presence enable Securities Finance to provide securities lending capabilities and supply liquidity in 37 markets around the world.

Agency Lending

The Agency Lending business acts as an agent to facilitate lending and borrowing between the approved borrowers with participating lenders who hold the same security on a fully collateralized basis. Agency Lending borrowers are generally banks and prime brokers.

Prime Services

The Prime Services product offers borrowing and on-lending services to satisfy the demands of its borrowing clients on a fully collateralized basis. The Prime Services staff manages the "borrows" on behalf of the client, from the initial locate, settlement of the borrow and up until the client closes out the short sale with a buy to cover or returns the securities back to Prime Services. The servicing during the life of the borrows includes daily mark-to-markets, corporate actions, manufactured dividends, collateral management and billing.

7. Complementary User Entity Controls

State Street's controls are only a portion of the overall internal control environment of each client. Clients also need to implement and maintain effective internal control. Each client's internal control depends upon the nature of the transaction processed, the degree of interaction of controls and the terms of agreement with State Street.

Clients need to evaluate the service level (e.g., Full Service, Custody Only, Accounting Only, etc.) and service offering, as described in their administration agreement with State Street, to determine what controls covered in this report are applicable to them or if additional controls need to be implemented in their own control environment.

The list of Complementary User Entity Controls presented below are controls that State Street believes should be present for each client and does not represent a comprehensive set of all the controls that may be necessary at user entities.

Client Interface and Communication Considerations

Each client (and its independent auditor) must evaluate its own internal controls to determine if procedures are in place for the following:

Complementary User Entity Control	Control Objective Reference
Account Set-Up and Global Accounting	
Clients are responsible for providing accurate and complete account information for the set-up of new accounts on MCH.	1 and 9
Transaction Processing	
Clients are responsible for communicating timely written notification of changes to individuals or third parties authorized to instruct State Street on a client's behalf.	2 and 9
Clients are responsible for providing authorized instructions and information to State Street using data transmission delivery methods in accordance with State Street security standards. Instructions and information provided to State Street using methods not in accordance with State Street security standards may be less secure.	2
Clients are responsible for maintaining effective controls to monitor that trade instructions submitted to State Street are appropriately authorized and provided to State Street timely.	2
Clients of State Street's Custody-Only model are responsible for maintaining effective controls over the accuracy and completeness of trades manually entered in SMAC/GSMAC and are responsible for the research and resolution of rejected trades.	3
Clients are responsible for verifying that only appropriate transactions are excluded prior to the generation of the automated wash sales report (applicable to clients subject to U.S. tax laws).	3
Clients are responsible for comparing electronic and/or other acknowledgements received from State Street to their original instructions to verify all transactions are processed. State Street should be notified timely of any discrepancies.	3
Clients or authorized third parties are responsible for providing State Street with accurate and complete information for the configuration of Exchange Traded Funds on the ETF Global Platform.	3
Clients are responsible for providing State Street with a complete periodic Portfolio Listing File for creation of the ETF basket on the ETF Global Platform.	3
Clients of State Street's Dynamic Cash Allocation service are responsible for providing accurate and complete instructions related to asset allocations, set-ups and modifications of new funds and for communicating investment vehicle changes. Clients are also responsible for reviewing output from the Dynamic Cash Allocation application and notifying State Street of discrepancies identified in a timely manner.	3
Clients of State Street's Custody-only model are responsible for monitoring their respective queue within GTM for trades which do not pass the edit checks (e.g., settlement location, valid asset ID, coupon rate, settlement date, etc.) and for performing appropriate research and resolution.	3

Complementary User Entity Control	Control Objective Reference
Trade Processing	
Limited Partnership clients are responsible for ensuring the General Partners provide complete and accurate cash flow information or partnership statements to update the relevant accounting inputs or starting period capital balance in eCFM.	3
Income and Corporate Action Processing	
Clients are responsible for communicating responses for voluntary corporate actions to State Street timely and maintaining effective controls to monitor that responses are appropriately authorized.	8
Global Accounting	
Clients are responsible for providing timely instruction to State Street when fair valuation should be invoked, including the use of vendor price overrides. Clients are also responsible for maintaining effective controls to monitor that fair valuation is appropriately authorized.	13
Clients using State Street's EPW Fair Value Pricing are responsible for communicating decisions to employ fair value pricing and achievement of fair value triggers, if applicable, timely.	13
Clients are responsible for performing a review of the comparison of amortized cost to market value for money market funds maintaining a stable Net Asset Value ("NAV") (i.e., \$1.00) in accordance with applicable laws (applicable to mutual funds serviced in Ireland and the U.S.) and for instructing State Street timely, whether any action is required if the difference between amortized cost and market value exceeds one-half of 1% or if the NAV deviates from \$1.00 per share.	13
Transaction Processing, Income and Corporate Action Processing, Expense Accruals and Global Accounting	
Clients are responsible for providing instructions and information to State Street in accordance with the provisions of the fund prospectus, servicing agreement, trust agreement or other applicable governing agreements or documents in effect between State Street and the client.	2, 3, 5, 7, 8, 9, 10, 11 and 12
Clients are responsible for providing State Street with timely written notice of discrepancies, if identified, as part of their review of account balances and related activity reporting provided by State Street.	2, 3, 5, 7, 8, 10, 11 and 12
Accounting clients of State Street are responsible for notifying State Street in writing of fund accounting policies, including pricing sources and/or indices, business rules and tax rates as applicable when using Tax Efficient Lot Selector, etc., as well as changes thereto.	3, 7 and 13
Clients are responsible for performing a reconciliation of derivatives and OTC securities positions to relevant counterparty records/statements. Discrepancies should be communicated to State Street on a timely basis.	3, 7 and 13
Clients are responsible for maintaining effective controls to monitor and review the completeness and accuracy of expense accruals, and ensuring expenses amounts are in accordance with client instructions.	12
Safekeeping of Assets	
Clients are responsible for performing independent reconciliations of State Street and the balances as reported on their investment manager applications; timely written notice of discrepancies should be provided to State Street.	5
Clients of State Street's Custody-Only Model are responsible for performing independent cash and position reconciliations of State Street's custody balances to their own accounting records.	5
Financial Reporting	
Clients are responsible for performing timely, independent reviews of their funds' financial statements; timely written notice of discrepancies should be provided to State Street. Clients are responsible for the fair presentation in the financial statements of financial position, results of operations, cash flows, changes in net assets, financial highlights and notes to financial statements, including tax disclosures, in conformity with the prescribed applicable accounting principles (applicable to U.S., Ireland, Luxembourg, Switzerland, U.K. and Australian Financial Reporting clients).	15
Clients are responsible for maintaining effective controls over the accuracy and completeness of "Management's Discussion of Fund Performance" and other information provided to State Street by the client (or third parties engaged by the client) for inclusion in shareholder reports (applicable to U.S. Financial Reporting clients).	15

Complementary User Entity Control	Control Objective Reference
Clients are responsible for maintaining effective controls over the accuracy and completeness of "Management's Discussion of Fund Performance" and other information provided to State Street by the client (or third parties engaged by the client) for inclusion in periodic financial reports (applicable to Ireland, Luxembourg, Switzerland and U.K. Financial Reporting clients).	15
Securities Finance	
Non-Custody clients of State Street's Prime Services product are responsible for providing State Street with accurate and complete daily loan position files.	17
Clients of State Street's Agency Lending program with externally managed cash investment vehicles or their authorized third parties are responsible for providing State Street with accurate investment vehicle yield information.	18

8. Subservice Organizations

State Street utilizes a third-party subservice organization to perform services that are relevant to clients' internal controls over financial reporting. The subservice organization, which is not included in the scope of this report, is described below. The subservice organization controls presented below should not be regarded as a comprehensive list of all the controls that should be employed by the subservice organization.

Duco – State Street's Securities Finance division uses Duco, a web-based reconciliation tool, used to receive feeds from various sources and electronically match data and identify exceptions.

Monitoring of Subservice Organizations

As referenced in the Third-Party Risk Management section, the output of the IRQ determines the level of due diligence required to be performed on the vendors, including the subservice organization identified above. The due diligence process includes a series of control review programs, which are completed by the vendor to provide visibility on the design of the vendor's controls prior to contracting. The TPRM includes defined ongoing monitoring program activities such as: review of the subservice organizations' System and Organization Control ("SOC") reports, if applicable; periodic due diligence reviews; and review of output reports based on either service-level agreements or scope of services provided (e.g., accounting report reconciliations, etc.). The level of inherent risk determines the timeframe for reassessment, and includes a schedule for updating the IRQ, including any changes to the scope of products or services and updates to the control reviews with the vendor.

Expected Complementary Subservice Organization Control Considerations

State Street has evaluated the services provided by the subservice organization and has identified the controls State Street management assumes, in the design of State Street's system, are implemented by the subservice organization. The control identified below is applicable to the following application, and is necessary to achieve the control objective identified below:

Application	Subservice Organization	Complementary Subservice Organization Control	Control Objective Reference
Duco	Duco	Duco is responsible for providing the technology platform for the web-based Duco reconciliation tool, and is responsible for establishing processes and controls over certain information technology general controls (including system development, job scheduling and backup and recovery).	17 and 18

9. Changes in Operations

The following changes in operational processing controls were implemented during the period from October 1, 2022 to September 30, 2023.

Application Changes

Changes to applications used include the following:

- Financial reporting clients in the U.S. continue to be migrated from FundSuite SX to FundSuiteArc (U.S. Instance).
- Eligible funds continue to be migrated onto the DNAV tool.

B. Description of Operational Processes**36 Account Set-Up****37 Transaction Processing**

Receipt and Authentication of Transaction Instructions
Recording of Transaction Instructions

44 Security Masterfile

Reference Data
Security Masterfile Additions and Amendments
Derivative Security Additions
Security Factors and Rate Resets

47 Collateral Processing

Collateral Held Internally
Collateral Held Externally
Collateral Management

49 ETF**50 Dynamic Cash Allocation****51 Settlement**

U.S. Settlement
Non-U.S. Settlement
Contractual Settlement Processing
Failed Trades

57 Safekeeping of Assets

Depository to Custody
Subcustodian to Custody
Accounting to Custody/Third Party
Accounting to Unit Registry
Accounting to Depository
DHub

61 Subcustodian Selection and Monitoring

The Investment Company Act of 1940 Rule 17f-5 and 17f-7 Compliance

62 Income Processing

- Contractual Income Policy
- U.S. Income
- International (Non-U.S.) Income
- Dividends and Receivables
- Global Tax Processing
- Income Repatriation

69 Global Corporate Action Processing

- Corporate Action Identification and Notification
- ETF
- Voluntary Corporate Action Response Processing

70 Global Accounting

- Corporate Action Accounting
- Cash Disbursements
- Capital Activity
- Distributions
- Income Accruals
- DHub Trade Post Model
- DHub G/L Post
- Amortization/Accretion
- Multi-Basis
- Variable Rate Securities
- Principal Paydowns
- Expense Accruals
- Multi-Class Allocation
- Pooling Structures
- Security Valuation
- Net Asset Value
- Flexible Fund Cycle
- Money Market Funds
- Reporting

90 Financial Reporting

91 United States Financial Reporting

- Semi-annual and Annual Reports to Shareholders and Quarterly Schedule of Investments

92 Australia Financial Reporting

93 EMEA Financial Reporting

94 Securities Finance (Agency Lending)

- Risk Management and Borrower Oversight
- Borrower and Lender Authorization
- Loan Restrictions
- Loan Processing
- Loan Maintenance and Borrower Agreement Monitoring
- Collateral Maintenance
- Collateral Investment and Monitoring
- Offline Adjustments
- Tri-Party Collateral
- Loan Returns

99 Securities Finance (Prime Services)

- Account Set-up and Maintenance on Global One/Advent Workflow
- Locate/Borrowing Processing
- Loan Maintenance
- Collateral Maintenance
- Financing Process
- Manufactured Income and Corporate Actions

The overview that follows provides a description of the operational processing controls in place to support the control objectives.

Although the control objectives and related controls are included in Section IV, they are the responsibility of State Street Management and are an integral part of Management's description of the Global Fund Accounting and Custody System.

Account Set-Up

Prior to launch date for a new fund, new fund set-up personnel within Global Delivery's Business Onboarding and Transitions ("BOaT") team or Client Support (requestor) set up new funds on MCH via AFW using fund information provided by the client and/or investment manager (via applicable fund governing documents, default settings for new accounts and/or any additional documented client instructions).

AFW systematically validates that certain system conditions (e.g., completion of mandatory fields, check for input of valid information, etc.) have been met. A review of the AFW package for completeness and accuracy by a second individual (approver) is performed in AFW prior to the fund being completely loaded to MCH.

AFW automatically generates a variance report highlighting any differences between AFW and MCH. AFW generates a notification to the requestor and the approver notifying them that a variance, if existing, needs to be addressed. Identified items are followed up on and resolved by Global Delivery, Client Services or Client Support personnel, if applicable. Evidence of this review is documented in the AFW package as the approver must add a comment to move the package to history status in AFW.

Transaction Processing

Receipt and Authentication of Transaction Instructions

State Street business units receive trade instructions via Electronic Trade Delivery (“ETD”) or manual delivery. State Street’s FTTOP Policy requires that an originator’s identity and transaction authority be verified upon receipt of trade instructions. Certain transaction delivery methods are considered secure and do not require additional authentication procedures (e.g., SWIFT, Depository Trust and Clearing Corporation (“DTCC”) ID and Secure Transport). Procedures employed to authenticate transactions received via facsimile may include testkey, callback or signature verification.

ETD Trades

Electronic trade files, including manual trade adjustments, trade cancellations and re-bookings and trade related journal entries, either in the pre-defined State Street or Industry Standard for Institutional Trade Communications (“ISITC”) format, are delivered through SWIFT, DTCC ID or a user’s own applications. Batch transmissions in the ISITC format go directly into the State Street mainframe common processing region (“ETD Common”) (with the exception of ETF funds using ETF Global Platform) and the Fund ID contained in the trade instruction is systematically compared with the fund header record on MCH for authorization. Record counts and trade amounts are checked against batch trailer records for trades received as batch files. This verifies that the batch transmissions are complete and accurate.

Batch transmissions not received in the proper industry standard format go through a translation prior to being transmitted to ETD Common. The translation process includes batch header and trailer checking which includes total trades, total shares and net amount for completeness and accuracy. When required by clients or if a header or trailer information is not provided, an acknowledgement message is sent to the client detailing the total number of trades processed.

SWIFT

ETD Common may receive electronic trades via the SWIFT protocol. SWIFT messages are also monitored for completeness and incomplete files are sent to an exception queue for research and resolution. SWIFT transmissions are encrypted and decrypted through the use of the Relationship Management Application (“RMA”). RMA set-up requests are processed upon receipt of an authorized RMA set-up request and approval.

If the trailer has been truncated, or the number of files in the trailer does not agree to the records sent, an error acknowledgement message is generated and the transmission is pended. Transmissions with

unidentified fund numbers or other errors are investigated and corrected through inquiry with the investment manager or client.

Non-ETD Trades

Facsimile, TLS Secure email and non-ETD SWIFT (i.e., SWIFT trades which are not processed through ETD Common) transactions, including manual trade adjustments, trade cancellations and re-bookings and trade-related journal entries, may require additional security protocols with the investment manager or client. Additional procedures are used to authenticate non-ETD instructions including callback, test key, signature validation or end-of-day reporting with the client or investment manager.

Over-The-Counter ("OTC") Derivatives

OTC derivatives represent a number of investment types including interest rate, credit default, currency, equity, total return swaps, swaptions and contracts for differences. Communication of trade notifications, payment and reset instructions for OTC derivatives are provided electronically or manually (facsimile, TLS, Secure Transport or non-ETD SWIFT).

Electronic messages are typically sent to DHub, State Street's derivatives servicing platform, using Financial Products Markup Language ("FpML"), a messaging protocol for OTC derivatives. By using FpML, organizations can establish a set of detailed business and operational rules to automate the trade notification process and ensure that appropriate data is provided for update to accounting.

Custody-Only Model

State Street's Custody-Only model was designed to enable clients to process activity directly and straight through with little manual intervention by State Street. The Custody-Only model is based on State Street's core custody applications (SMAC/GSMAC). Clients of State Street's Custody-Only model go directly to assigned operational points of contact in Transaction Services or the Client Service team to resolve their issues.

State Street also services custody-only clients using our MCH platform as the front end to our core custody applications. Controls for these clients are similar to our full-service clients and are described throughout this report as part of our core operations.

For certain clients of State Street's Custody-Only model, electronic trade files are delivered through SWIFT, a client's own system, or via a web-based application to ETD Common where the same completeness checks as described above are performed.

State Street's FTTOP requires that an originator's identity and transaction authority be verified upon receipt of trade instructions. The FTTOP procedures applied to Custody-Only model clients are the same as for other State Street clients as described above.

Recording of Transaction Instructions

Once acknowledged as complete, the files are formatted into the State Street internal ETD format, batched and sent to the appropriate accounting region on MCH as specified by the record header. A reconciliation report or checklist is utilized to determine whether all transactions received by ETD Common are processed in the accounting region. Transmissions that are not successfully loaded (ETD trades with errors) to the accounting region are reviewed, investigated and corrected within specified time frames through inquiry with the investment manager or client. Prior to the trades passing to MCH, a series of edit checks are performed in Global Transaction Manager ("GTM"), to determine whether the trade information is complete and can be automatically processed in MCH. Trades not passing the edit checks (e.g., settlement location and dates, valid asset ID, coupon rate, etc.) are systematically sent to a series of queues in GTM which are continuously monitored by either the Centralized Processing units or Global Delivery groups and researched and resolved before trades are released to the Electronic Trade Authorization ("ETA"). GTM utilizes ETA's concurrent posting functionality which is defined as the splitting of a single trade instruction into two separate trade instructions that are sent concurrently to the accounting and custody applications. An eligible trade must satisfy all edits in GTM before it is allowed to split and be sent to State Street's Custody Common Interface ("CCI"), to SMAC or GSMAC and to the ETD Accounting Region. Error-free ETD trades may be loaded directly to MCH or can be coded in the header file to be held for review.

The affirmation function may be performed by State Street, the investment manager, client or a third party. If the affirmation function is performed by the investment manager, client or a third party, trade information automatically processes to MCH. If State Street is responsible for trade affirmation, broker confirmations from non-ETD trades in the DTCC Interactive Institutional Delivery ("IID") application are compared in MCH or IIP to trade instructions received from the investment manager. ETD trades are electronically matched and the trade is processed to MCH. If transaction terms agree, an electronic affirmation message is sent back through BID to IID. Unaffirmed trades are researched and resolved with the client, investment manager and/or broker.

Authorized manual trade instructions are reviewed for completeness and accuracy and input into MCH via IIP or by individual Global Accounting groups or Centralized Processing unit personnel. International and certain domestic trades (based on pre-determined risk criteria such as dollar amount and settlement date) received via IIP are automatically routed to the authorization queue within IIP for review by a second individual. The reviewer authorizes the trade after comparing data input to the trade image on IIP. Upon authorization from the reviewer, and if the authentication process is complete, IIP automatically releases the transaction for downstream processing to MCH or the respective custody application. IIP will not release the item until both the authentication and authorization steps have been completed.

MCH automatically checks trade instructions for completeness (required information includes fund, CUSIP, trade date, settlement date, security description, currency, settlement location, amount and shares) and performs certain online edit checks (e.g., calculates net amount and interest bought/sold). Trades manually input into MCH or respective custody applications are reviewed systematically or by a second individual. Exception trades are identified and corrected before trades are released to Electronic Trade Authorization ("ETA").

ETA is middleware that links MCH to the custody applications SMAC (U.S.) and GSMAC. Prior to passing trade details to the custody applications, ETA performs a series of online edit checks. ETA reviews settlement location, net amount of the trade and delivery instructions. In some countries, trades exceeding certain dollar thresholds and international trades are identified and require additional online authorization before they are released to the custody applications. (Fund headers may be coded to allow the auto-authorization of ETD trades.)

Custody-Only Model

Error-free ETD trades may be loaded directly to ETD Common or can be coded in the header file to be held for review. The affirmation function may be performed by State Street, the investment manager, client or a third-party. If the affirmation function is performed by State Street, the process is the same as for other State Street clients described above; otherwise, trade information will automatically be processed to the common custody interface region.

Authenticated manual trade instructions (non-ETD) for clients of State Street's Custody-Only model are received by Transaction Services where the trade details are reviewed for completeness and input manually or automatically through workflow applications directly into the custody application.

Once acknowledged as complete, the files are formatted into the Industry Standard format, batched and sent directly to the common custody interface region as specified by the record header for processing in the respective custody application (i.e., SMAC/GSMAC). Prior to the trades passing to the respective custody application, a series of edit checks are performed via GTM to determine whether the trade information is complete and can be automatically processed in SMAC/GSMAC. Reference Services monitor GTM for the initial edit checks related to the market or dummy identifiers on trades received electronically. These individuals will add securities to the masterfile if necessary and pass the trade along within GTM. GTM then performs additional edits (e.g., settlement location, valid asset ID, coupon rate, settlement date, etc.). Trades which do not pass the edit checks are reported in the client's queue for monitoring and research and resolution.

Recording Transactions on DHub

DHub supports a range of security types and transaction types for futures and options. Non-ETD futures and options transactions are manually input or systematically uploaded via pre-formatted files into DHub. The DHub Trade Hub Status User interface is used to monitor trade status (success, warning, error) for trades automatically or electronically processed to DHub. Trades with a status of "warning" or "error" are reviewed, investigated and resolved.

Trades manually loaded into DHub via file upload or manual input and U.S. swap transactions manually loaded into MCH are subject to review against the original trade directive.

The change in contract value is calculated by DHub and recorded on MCH. Futures daily variation margin is agreed to the investment manager or counterparty. Exceptions are researched and resolved. Discrepancies on

manually input option transactions, if applicable, would be detected by the cash reconciliation process defined below under the heading *Safekeeping of Assets*.

DHub sends trades to MCH throughout the day. MCH sends DHub reference and pricing information and DHub sends MCH derivatives and accounting information. Trades entered into DHub are automatically sent to MCH with calculated cost, proceeds and gain/loss information.

Futures and options transactions in the scope of this examination include only those transactions processed on DHub. Manual, off-line spreadsheets used to process derivatives are not in the scope of this report.

Recording of Derivatives

The recording of certain over-the-counter derivatives, including swaps, swaptions and contract for differences are recorded and processed using DHub for locations as noted in Section III 6, *Operations Overview* and Section IV. Clients and their independent auditors should gain an understanding of the processes, controls and related servicing locations applicable to services provided by State Street for OTC derivatives recorded on DHub.

DHub is used in two models. The trade post model places DHub “in front” of MCH. This allows DHub to capture OTC trade activity and utilizes its functionality to calculate the cash flows and accruals on the OTC trades. This information is then used to verify and update downstream applications such as MCH ensuring the accuracy of client information. All other downstream reporting remains the same as it was prior to the use of DHub.

The General Ledger (“G/L”) Post Model utilizes DHub as a sub-ledger to the MCH accounting platform. Position, cash and trade information from DHub and MCH is passed downstream into a data warehouse where client reporting applications can access the data to complete their respective deliverables.

Error-free electronic OTC derivative trades are automatically received in DHub or loaded manually to DHub before release to MCH. DHub queues are monitored throughout the day to verify that transactions pass edit checks and are posting to accounting timely and accurately. Trades with a “warning” or “error” status are researched and resolved within established deadlines. For funds using DHub G/L Post functionality, the only reflection of swap data on MCH is through the posting of general ledger entries.

Authenticated manual transactions received via facsimile are reviewed for completeness and manually input to DHub or MCH. Completeness of transaction receipt is monitored via callbacks, transmission status, confirmation sheets or end-of-day recap reporting with the investment manager or client. Manual transactions are subject to review by a second individual against the original trade directive. DHub or MCH, through automated edit and validation checks, validate trade input for completeness (required data includes fund, broker, trade date, settlement date, price source code, notional amount, interest bought, spread and net). Exception trades are identified and corrected.

Trade blotters that are received from applicable clients or investment managers are used to verify completeness of instructions. Certain swap contracts are periodically reset (monthly, quarterly) according to the terms of the agreement. Cash is paid to or received from the broker. The cash movement is a net payment representing the change in value of the swap since the last reset. Instructions are received manually or via SWIFT (MT202/210) and processed to MCH via manual trade entry or automatically. Manual income postings and/or interest accrual adjustments are processed in accordance with investment manager/client instruction and are subject to review by a second individual.

Recording of Institutional Loans – Wall Street Office (“WSO”)

Loan Services, a shared services group within Global Delivery, supports the processing and recordkeeping for institutional loan transactions. Loan Services provides accounting and recordkeeping support for institutional loans held across all product structures, including U.S. mutual funds, partnership products, structured products, non-U.S. and institutional funds. The WSO application and MCH are used to perform institutional loan tracking and accounting as well as provide general ledger accounting and reporting. WSO provides multiple-level accrual functionality on individual credits, commitment level accounting and loan valuation functionality via quotes provided by vendors and stores reference information for institutional loans.

Loan Services receives manual and electronic trade information from clients or investment managers and other loan market information (e.g., agent notices, prices) directly from market participants. Authorized institutional loan trades received from clients or investment managers are recorded in WSO daily and reviewed by Loan Services supervisory personnel. If a trade summary is received from the client or investment manager it is reconciled to trade activity posted to WSO to verify completeness. For loan positions recorded and maintained in MCH, trade activity from WSO is either automatically or manually updated in MCH by Loan Services. The manually input trade activity is reviewed by a second individual for accuracy and completeness of the posting.

For loan positions recorded and maintained in MCH, amortization/accretion and unrealized and realized gains/losses are calculated via core MCH processing, including the respective loan information. For loan positions not recorded on MCH and maintained solely in WSO, interest and fee accruals, amortization/accretion and unrealized and realized gains/losses are automatically calculated in WSO and then automatically recorded in MCH.

The Global Loan Processing Team at Syntel in Pune, India manually input bank loan transactions (i.e., borrowings, combined contract, conversion, interest, interim interest, LOC fees, LOC increase/reduction, optional prepayment, PIK (payment in kind), paydown, prime rate change, rate set, rollover, split contracts, spread change) into WSO based on notices received from the agent bank community. Manually input information sourced from agent notices is reviewed by a second individual within the Global Loan Processing Team for accuracy. Upon posting, WSO automatically applies the agent notice information, including paydowns, to all positions across the global client base.

Interest and fee accruals are automatically calculated by WSO based on the reference information maintained in WSO. Amortization/accretion is calculated automatically using the straight-line method. Realized gains and losses are calculated automatically using the selected costing method (i.e., FIFO, LIFO, Weighted Average, Lowest Cost and Highest Cost) within WSO and automatically posted to MCH.

Income activity from WSO is automatically updated to MCH by Loan Services or is manually input by Global Accounting groups. Income balances from WSO are reconciled to MCH general ledger balances automatically by Loan Services or by manual reconciliation by Global Accounting groups. Discrepancies above a predetermined threshold are researched and resolved. The reconciliation of subsidiary to general ledger balances is reviewed by a second individual for completeness and accuracy.

The WSO loan portfolio's separate DDA account on Hogan is reconciled daily to WSO unapplied cash activity. Manually prepared reconciliations are reviewed by Loan Services personnel daily. Loan Ops Portal automatically reconciles the WSO to Hogan activity and in the absence of any discrepancies, systematically approves the reconciliation. Discrepancies, if any, are identified and tracked according to the WSO loan portfolio. Loan Services researches and resolves discrepancies.

Loan Services reconciles WSO positions to positions on MCH automatically or a manual reconciliation is prepared by the Global Accounting groups. Discrepancies are researched and resolved. The reconciliation is reviewed by a second individual.

Recording Foreign Exchange Transactions

Electronic transactions are processed directly to GTM. GTM performs a series of online edit checks to determine if the transaction information is complete and accurate prior to releasing to downstream custody systems and MCH. Transactions not passing edit checks are researched and resolved by the Centralized Processing group. Transactions manually processed offline are reviewed by an authorizer (based on predetermined limits) who compares the transaction information in MCH to the original trade instructions. If the information agrees the transactions will be approved and released to custody applications.

On contractual settlement date, FX transactions are settled on MCH automatically via an ETD transmission from IBS, Hogan or ICASH and the clients' DDA accounts are automatically updated. Some settlements may be updated manually on MCH, depending on the fund set-up. For State Street Global Markets ("SSGM") executed FXs, on-book account settlement is on a book-entry basis, with no movement outside of State Street accounts required. For third-party FX transactions, actual payment receipt is confirmed via a daily reconciliation with accounts at correspondent subcustodian banks.

Realized Gains and Losses

MCH and DHub calculate and post security cost transactions and realized gains and losses based upon the selected costing method (e.g., FIFO, LIFO, Specific Identification and Average Cost) identified during account set up.

Tax Efficient Lot Selector

The Tax Efficient Lot Selection (“iTELS”) method is used to achieve tax efficiency for the shareholder of a mutual fund. iTELS will allow a sell transaction from MCH to automatically process through to the iTELS application and calculates the tax per share for each security lot based on the applicable shareholder tax rates to identify the most efficient selection of lots based on a pre-determined Business Rule selected by the client. Prior to the posting of a sell within iTELS, various edit and validation checks are performed.

Wash Sales

For funds subject to U.S. tax law, wash sale activity is identified and captured on the MCH Wash Sales Review report or the Automated Wash Sales Application reports. Subsequent reversals are identified on the Automated Wash Sales Application reports.

Security Masterfile

Reference Services, a team within Global Delivery, is responsible for maintenance of the central information files that support the custody and accounting applications used globally. The department maintains core reference data files in Reference Security Masterfile (“RSM”) including Government factor file, Variable Rate Demand Note (“VRDN”) rate change file and Holiday file.

RSM contains detailed information on investments traded by State Street clients. Global Accounting groups can research investment details directly from the masterfile database through input of an asset or relevant market ID number on MCH.

Reference Data

The Alveo application provides centralized data management solutions for reference data. There are three parts to the Alveo solution: Acquisition Management (“AQM”) is an application that acquires vendor data; Alveo is an application that processes and stores the data; and Distribution, Metering and Entitlements (“DME”) is an application that formats and distributes data to the RSM on the State Street mainframe.

AQM is used to schedule, retrieve and monitor vendor feeds based on an established schedule and then sends them to Alveo. AQM then monitors the feed processing progress to the basic (raw vendor) level in Alveo. Vendor feeds that do not meet established processing criteria (i.e., are not received at their scheduled time or take longer than the expected processing time) are reported to Reference Services via the AQM Graphical User Interface (“GUI”) and all activity is captured for reporting. Reference Services personnel will then take appropriate research and remediation actions based on the specific facts and circumstances. Activity performed by Reference Services personnel is captured in an audit view in the application for reporting purposes and all activity is reviewed and requires a comment to be input to track resolution.

AQM sends the vendor data to Alveo, including data from Bloomberg, Refinitiv, DTCC and Canadian Depository Services. Alveo stores and processes the vendor data using established processing rules. Data may be input manually into Alveo if there is no vendor data available, or if a manual override of vendor data is required.

All processing is subject to the established rules and when Alveo identifies a data discrepancy, the record is marked for review and action by Reference Services personnel. All manual activity in Alveo is subject to a second level of review by Reference Services personnel that approves the record prior to distribution to MCH.

AQM is also used as a communication platform utilizing systematic messaging to receive individual new security requests from multiple platforms. The details received in the messages are systematically validated and sent to Alveo for new security creation following established rules within the Alveo platform. AQM systematically provides success/response messages back to the requesting application with newly created State Street Asset ID or details of rejection reason. Each security request received in AQM is viewable in the AQM dashboard with current status of the request. The AQM dashboard is monitored by Reference Services personnel for resolution of any requests that do not pass Alveo's systematic validations and require manual resolution to complete the creation of the security record.

DME distributes the completed records from Alveo to the RSM. If an Alveo record has been marked for review, it will not be distributed until the review is complete and has gone through the approval "audit" review described above. DME monitors the successful distribution and processing by RSM and displays processing errors in the DME GUI for research and remediation based on the specific facts and circumstances. Activity performed by Reference Services personnel is captured in an audit view for reporting purposes, reviewed and requires a comment to be input to track resolution.

Security Masterfile Additions and Amendments

For security addition and amendment requests not originally sourced from Alveo, Centralized Processing units or Reference Services personnel manually process security and amendment requests. Upon receipt of a request, Reference Services personnel research the security using outside, independent sources. Security details such as CUSIP, rate, maturity date, issuer name, issuer description, issue date, interest payment dates, basis and frequency are reviewed. Independent sources most often used include Intercontinental Exchange ("ICE"), SIX Financial Information, Bloomberg, Refinitiv, S&P and Euroclear. If the CUSIP or SEDOL number given is invalid, personnel attempt to research the security by other criteria and/or contact the requestor to receive a valid identifier. After the security is reviewed using outside sources and changes are approved, the data is entered into Alveo. The Quality Control team performs quality review checks for new additions which have an associated market identifier (e.g., CUSIP, ISIN, SEDOL, etc.). Once security data is entered, MCH automatically cross references to review that the security has not previously been set up. If no duplication is identified, the security is automatically added. If the security is already set up, personnel will reject the addition request and inform the requestor. Supervisory personnel regularly monitor unprocessed request queues.

Additionally, Alveo receives Bloomberg intraday feeds that are reviewed by Reference Services personnel in order to cleanse and consolidate security reference data into a gold copy. This data is made available for downstream consumption (e.g., MCH's security master file) upon completion of a secondary review.

U.S. Money Market Instrument ("MMI") transmissions are provided by DTCC, initially to AQM and then to Alveo. Reference Services personnel monitor the transmission to AQM for successful receipt and review is performed by a secondary individual.

Derivative Security Additions

Derivative security addition requests are processed in MCH or Alveo, via Reference Services intranet website and GTM. Global Delivery personnel provide pertinent security information. Reference Services personnel monitor the intranet application for requests. Requests are processed in a timely manner. New requests are assigned a request ID for tracking purposes. Alveo sourced securities are created with Bloomberg as primary vendor source and matched to a Refinitiv record for linking of the Refinitiv Identification Code to the Bloomberg data. For non-Alveo requests processed in MCH, Reference Services personnel use Reuters to independently review the accuracy of the information detailed on the addition request. If Reuters does not identify a derivative, Bloomberg is used as a secondary source. If Reuters confirms the security data, an asset identifier is assigned and MCH automatically cross references to review that the security has not already been set up using key data fields. An addition can only be added to MCH without a vendor identifier as OTC (over the counter). Once the cross reference is complete, the derivative is added to MCH. If there are significant discrepancies between the request and Reuters, the request is rejected back to the requestor for additional information.

Security Factors and Rate Resets

Government Paydown Factors

State Street receives monthly data transmissions from SIAC for GNMA, FNMA and FHLMC pooled assets and daily transmissions from ICE for CMOs, IOs and other asset-backed securities. These data transmissions are received into the reference database from outside vendors and are automatically updated to MCH. File transmission is monitored for completeness through record counts. MCH performs automatic tolerance checks prior to the data upload to the Government Factor Database. To review the accuracy of the daily data transmissions received from ICE, items that change greater than the predetermined tolerance level in MCH will be printed on an exception report. Reference Services personnel agree these factors to an outside source (e.g., Bloomberg) and manually update MCH as appropriate. Discrepancies are resolved through discussions with ICE and Bloomberg personnel.

Rate Resets for Variable Rate Demand Notes

Municipal Market Data ("MMD") updates rate resets for VRDNs twice a day by transmitting Variable Rate Feeds to State Street. Variable Rate Feeds are monitored for completeness and accuracy through record counts and date checks. After the transmission has been received and checked for completeness, a Reference Services administrator reviews the reports online to identify errors and views a summary of total rate changes for tolerance checks. The review on these reports is to gauge the accuracy of the transmission and to monitor the percentage of total rates loaded and updated. The fund groups are then informed of the availability of the rates via a daily notification accessed through MCH. Rate resets and factors are automatically applied to client holdings.

Collateral Processing

Collateral Held Internally

Segregation of securities may be required for many transactions and circumstances, including futures, options on futures, Options Clearing Corporation ("OCC") options, OTC products, short sales or special requirements of the fund's prospectus/trust documents, etc.

Authorized instructions are received from Client Services or Client Support personnel, asset managers and the client requesting collateral to be segregated. The Client Services or Client Support personnel will complete the internal applicable collateral documents (e.g., Information Needed for Escrow Receipts, Index Option Escrow Deposit/Withdrawal Request form and Collateral Ticket Asset Segregation form, etc.) depending on the nature of the transaction and/or agreements in place with State Street. The Collateral Services team receives the required collateral documents from the investment manager or Global Delivery, Client Services or Client Support personnel for processing.

Authorized instructions are received from clients and asset managers via facsimile, SWIFT, Secure Transport or TLS Secure email for which State Street acts as the directed custodian by processing as directed through the authorized instructions. The Collateral Services team processes these instructions to State Street's custody applications (SMAC/GSMAC) for the global client base.

Upon receipt, the Collateral Services team will review documentation for completeness and proper authorization. If incomplete, the Collateral Services team follows up with the contact person or Client Services team for external directives for corrections. The Collateral Services team does not alter the instructions in any way. Incomplete instructions are rejected. Collateral Services team personnel process complete and accurate instructions for securities as collateral to the respective category on SMAC/GSMAC and cash as collateral on Hogan/IBS depending on the nature of the request. The Collateral Services team reviews all processing of securities on SMAC/GSMAC and cash on Hogan/IBS for completeness and accuracy to the corresponding instructions. Once review is complete, the collateral is authorized to be released within SMAC/GSMAC and Hogan.

Client Services or Client Support personnel monitor segregated securities for possible redemptions, maturities and expiration. To release a security for a closed/expired option contract, Client Services or Client Support personnel must obtain approval from the client and/or broker and complete the applicable form requesting release of the collateral. The form is signed by an authorized individual and forwarded to the Collateral Services team for processing on SMAC/GSMAC.

For cash escrow receipts issued at the OCC, in the event of a fund liquidating its option position before exercise date, collateral is not released until the broker approves the early withdrawal posted at the OCC. The OCC has updated their process so that security collateral used for escrow receipts is directly released by the broker at DTC.

For OCC Index Call/Put and Equity Put Options, State Street as an approved “Escrow Bank” with the OCC, may safekeep the margin required for writers of OCC option contracts. Client Services or Client Support personnel must obtain the client’s authorized signature and complete all applicable internal collateral forms, and forward them to the Collateral Services team for processing on SMAC.

The broker and OCC are notified of the collateral value via the OCC’s “Encore” internet application. The deposit notification confirms to the broker and the OCC that State Street has segregated sufficient collateral to cover the value of the option contract. Collateral shares are pledged at DTC, and the pledge data flows automatically into the OCC’s “Encore” internet application, confirming sufficiency of collateral. For cash collateral, an online printout from the OCC approving the transaction is received and filed.

In order to determine compliance with OCC regulations, the Collateral Services team monitors the market value of the collateral held. The identified collateral is input in the CMW/Colline database that produces a daily escrow receipt report. CMW/Colline calculates the market value of collateral held at the close of each day. The OCC requires that the initial deposit of collateral be equal to or exceed 100% of the value of the outstanding contract. If the value of the collateral falls below 85% of the value of the outstanding option contract, a warning message will be generated from CMW/Colline and the Collateral Services team notifies the Client Services or Client Support groups to identify additional collateral.

Germany

In Germany, for the fund business, pledge agreements are based on contracts among clients, clearing banks and State Street Bank International GmbH. They require as collateral either securities to be pledged or cash to be transferred in accordance with stock exchange regulations in order to satisfy initial margin requirements. The securities are segregated by State Street Bank International GmbH on behalf of the clearing banks which cover (and are reimbursed for) initial margin requirements, if the initial margin is not paid in cash. Daily variation margins are payments made in cash on behalf of State Street Bank International GmbH’s clients and their counterparties. Cash is transferred to clearing banks.

Initial margin requirements are reviewed by State Street Bank International GmbH daily. If the value of pledged securities falls below initial margin requirements, the clearing bank informs State Street Bank International GmbH and the client who is obligated to identify additional securities to be segregated in order to satisfy the requirements of the stock exchange.

Collateral Held Externally

For certain portfolios, collateral for derivative transactions is delivered to and held by the broker or other authorized third parties. The Collateral Services team or Global Delivery personnel record the collateral activity (delivery and returns) at the time of the delivery/return. In addition, Global Delivery personnel may deliver collateral to external brokers or banks for other instruments and/or transactions requiring hard segregated collateral.

Collateral Management

As per the client's terms and provisions that are agreed upon by State Street, collateral eligibility, valuation, minimum transfer amounts, rounding logic, collateral thresholds, etc., are added into CMW/Colline using the eligibility requirements in the Client Questionnaire. Details of the final agreement set up in CMW/Colline are reviewed for accuracy.

Collateral transactions, underlying positions and/or valuations are captured automatically or manually in CMW/Colline daily or as determined in the Client Questionnaire. The receipt of electronic messages (i.e., SWIFT, XML) which are not successfully received in CMW/Colline is monitored daily. Manual input into CMW/Colline is reviewed against the source document for accuracy (i.e., counterparty statement) by a second individual.

CMW/Colline automatically calculates the credit exposure based on the underlying positions to the valuation of client collateral posted to a counterparty or counterparty-owned collateral held per agreement. Daily, or as mandated by the client, after the valuations and positions are loaded/updated into CMW/Colline, collateral sufficiency information calculated by CMW/Colline is used by the Collateral Services team to confirm margin calls against the client or to issue margin calls to the counterparty for the client. Appropriate action is taken and results are represented on various reports sourced from CMW/Colline, which are subject to review, including any manual inputs to CMW/Colline.

The Collateral Services team agrees to collateral movement and or identifies disputes that require resolution with the counterparty. The Collateral Services team instructs/processes the collateral movement as agreed upon with the counterparty and monitors settlement of the collateral to ensure full collateralization. Collateral movements are reviewed to source documents for accuracy by a second individual. Where applicable, the Collateral Services team pursues unsettled collateral transactions with the counterparties ahead of or after the market settlement deadline and reports failed collateral settlements to the client and/or counterparty as agreed with the client.

Collateral positions in CMW/Colline are automatically or manually reconciled to third-party records, on a predetermined basis. Position breaks, if any, are researched, resolved, or if need be, escalated to the client, counterparty or internal groups as appropriate.

ETF

New account configurations or changes to existing account configurations on the ETF Global Platform are requested by the ETF team, processed and reviewed by ETF personnel. The request is based on information received from the client. A review is performed by a second individual in ETF personnel of the new account configuration or the changes to existing configurations.

The ETF Global Platform systematically checks for missing or invalid data upon receipt of the Portfolio Listing File ("PLF") from the client or authorized third party. PLFs with no missing or invalid data are automatically placed in "Success" status and are loaded by the ETF Global Platform. PLFs with missing or invalid information are automatically placed in "Error" status by the ETF Global Platform. GCAS or a third-party source are used to identify corporate actions that are effective on the next trading day and applicable corporate actions are automatically or manually posted into the ETF Global Platform. ETF personnel process such corporate actions based on applicable parameters (e.g., split ratio, price change) and, once processed, ETF personnel perform a review to verify that the corporate action parameters were applied completely and accurately. The required basket components (e.g., PLF file, Market Value, NAV) are reviewed online by ETF personnel to verify that components have been updated and are available for processing on the ETF Global Platform. The ETF Global Platform will not systematically process the basket until all required basket components are available. The basket creation occurs once all required basket components are available. ETF personnel verify that baskets are in "Approved" status by the end of the day.

Dynamic Cash Allocation

The Dynamic Cash Allocation ("DCA") application is integrated with MCH to receive available cash balances and is used to allocate cash utilizing predetermined allocation algorithms across portfolios and managers for certain clients.

DCA automatically allocates cash in MCH accounts into predefined investment vehicles. Each fund has a defined asset allocation amount that is set up in DCA. DCA personnel set up new funds or investment vehicle changes to existing funds in DCA as instructed on the application form. A review for accuracy of the application form to the setup of the funds and asset allocation profiles in DCA is performed timely in DCA.

Each business day, DCA personnel perform a reconciliation between the share positions recorded on DCA to MCH as well as DCA to the Transfer Agent. Exceptions are reported, investigated and resolved timely.

Asset Owner Private Markets ("AOPM") (previously known as Limited Partnerships)

AOPM/Limited Partnerships is a shared service group within Client Segments that assists institutional investors in managing the administrative aspects of investing in Alternative Investments. AOPM/Limited Partnerships provides accounting and recordkeeping support for alternative investments, such as Private Equity, Real Assets and Hedge Funds held across various asset owners and asset managers. eCFM and MCH are used to perform General Partner ("GP") notice and statement document collection, general ledger account postings and cash adjusted market value calculations.

AOPM/Limited Partnerships receives cash flow notices and market value statements directly from the GP and manually enters the data in eCFM to provide clients with a full transparency into the accounting breakdown details for their review. Manually input transaction data is reviewed by an AOPM/Limited Partnerships team member.

Upon client approval, the GP's contributions and distributions which have reached settlement date are automatically posted directly from eCFM into MCH to record the general ledger activity. To ensure that all activity has been posted and that the corresponding custody movement took place, a daily reconciliation is performed between MCH and Hogan. Discrepancies, if any, are researched and resolved by AOPM/Limited Partnerships personnel.

Periodically (i.e., daily or monthly), the AOPM/Limited Partnerships Team performs a cash adjusted market value ("CAMV") calculation within eCFM to systematically mark-to-market the investments in MCH. Using the current General Partner capital balances, eCFM will perform an automated CAMV calculation by adjusting for cash flows that occurred from the last period ending date through the specified ending date. After the calculation is completed and MCH has been updated, LP Services personnel complete an ending CAMV reconciliation to verify that calculated eCFM ending market values agree to the MCH investment holdings. Differences are investigated and resolved. Additionally, an unrealized period-over-period check is performed to verify the change in MCH unrealized balance is attributed to a General Partner cash flow or new statement update. Differences are investigated and resolved.

Settlement

U.S. Settlement

State Street is a direct participant in two major U.S. depositories: The DTCC and the Federal Reserve Book Entry System. With respect to physical securities, State Street uses DTCC and their Custody program in New Jersey (formerly located in New York) as depository for the majority of physical securities. Actual processing of critical settlement and income-related activity is performed in a split operations environment by securities operations units in the U.S., Canada and India.

Depository Trust and Clearing Corporation

State Street maintains an electronic interface with DTCC to send and receive current business day data from State Street's custody application (SMAC) to DTCC. The direct link with OMGEO's Trade Suite ID application, a third-party vendor application, enables State Street to receive and transmit trade ID confirm/affirm messages via multiple transmissions throughout the day. Trade instructions for DTCC are updated to SMAC via electronic feeds from accounting platforms or other trade-entry vehicles, although some are manually input directly into SMAC. Trade instructions are subject to SMAC point-to-point authorization controls and other edits, as necessary.

On settlement date minus one, a batch file of ID affirmed sells are compared and matched to client pending trade instructions. The matched sell ID affirmations are sent to DTCC via Network Data Mover ("NDM"). Non-affirmed client sale instructions are sent to DTCC electronically on settlement date minus one or settlement date (depending on the timing of trade instruction). A position check at the client/CUSIP level is performed on sells prior to release to DTCC. Only sells with sufficient positions are released. Sells with insufficient positions recycle on the SMAC custody platform until sufficient positions are available.

Acknowledgement messages for all posted transactions (buys and sells) are transmitted from DTCC electronically to State Street on settlement date. Acknowledgement messages update SMAC pending trade records to a settled status if certain key data fields match or are within certain thresholds. Sell transactions for which the counterparty does not agree with the terms (e.g., reclaim trades) are either cancelled or returned by the counterparty creating an electronic acknowledgement message that automatically places the sell to a failed status on SMAC. Unmatched acknowledgement messages and returned deliveries are researched by administrators and resolved prior to end-of-day. Upon receipt of instructions, DTCC adjusts via book entry, share balances of State Street's omnibus account.

End-of-day summary and settlement reports generated from DTCC and SMAC are compared and verified. SMAC share and cash settlement totals are reconciled to depository totals. The final DTCC settlement dollar values are totaled for State Street participant accounts. The net State Street cash position is matched to the DTCC position report and the appropriate funds are sent to/from DTCC to satisfy the settlement obligation. A SMAC cash payments file is created to update the individual client accounts on the Hogan (DDA) application, and an end-of-day batch file updates settlement status in MCH.

Federal Reserve

State Street interfaces with the Federal Reserve through a real-time link utilizing the Securities Transfer System ("STS"). STS is a Tandem nonstop application that provides position control and custody recordkeeping for U.S. Government and Agency securities held in State Street's book entry accounts at the Fed in Boston. It is also a computer-to-computer communications link to the Fed's National Book-Entry System ("NBES"), for automated transmission and receipt of security transfer instructions.

Most trade instructions are updated to STS via electronic feeds from accounting platforms or other trade entry vehicles, although some are manually input directly on STS. Trade instructions are subject to applicable STS edits and controls. Once updated on STS, the trade instructions flow directly and simultaneously to SMAC and NBES (deliveries only). Upon receipt of instructions, the Fed debits or credits State Street's reserve account and adjusts, via book-entry, share balances of State Street's omnibus account. An acknowledgement message is then sent back to State Street through NBES to STS. STS updates and settles the trade on SMAC and the individual client accounts on the Hogan (DDA) application.

STS automatically updates returned sale trades from the Fed to a "failed" status (returned trades are those for which the participating broker does not have matching instructions and, therefore, the Fed has reversed settlement). When possible, returned sales are communicated to the originating department. Based on the originating department's response, the returned sales are reprocessed on a best-effort basis prior to the Fed's daily close.

Administrators identify unmatched wires from STS and work with the appropriate business unit to resolve any exceptions. Open purchase wires without instructions on STS valued less than certain predetermined

thresholds are returned to the delivering broker/dealer. Open purchase wires valued over certain predetermined thresholds are communicated to the originating department and are resolved prior to the Fed's close.

The Fed's end-of-day settlement totals are compared to the STS end-of-day settlement totals to verify the receipt and proper processing of all the Fed's book-entry activity. STS updates SMAC on a real-time basis. At end-of-day, STS updates pending or recycling trades to a failed status. The daily net cash settlement amount is reconciled to STS. Authorized personnel verify that Hogan cash totals agree with the Fed and STS totals and, at end-of-day, a batch file updates settlement status in MCH.

The DTCC Settlement group monitors State Street's intra-day cash position at DTCC periodically throughout the day. If needed, net funds are transferred to/from the U.S. depositories after review and authorization by the appropriate levels of management. Settlement wires are sent/received with the counterparty (outgoing wires are reviewed and authorized by management) through a central master money account. Failing sells are monitored, researched and resolved by the Physical Settlement Processing Unit. Sell fails are reported to management daily.

Non-U.S. Settlement

The subcustodian bank, hired by State Street, performs custodial functions for State Street clients in the market in which it has expertise. The role of the subcustodian includes trade pre-matching, settling and vaulting securities, collecting income, sending information to State Street regarding cash and security movements, cash balances, security positions, notification of corporate actions and upcoming income events and reporting changes in the market environment and tax regulations.

The Global Custody Communications Unit is responsible for the processing of international trade instructions received from originating departments and for monitoring incoming and outgoing communications with subcustodians.

Authorized non-U.S. trade instructions are automatically transmitted from GTM to GSMAC. GSMAC performs a series of online edit checks (e.g., completeness of instructions). If the instructions pass all the edit checks, GSMAC will forward the trade to the subcustodians and non-U.S. depositories (CREST, Euroclear and Clearstream) via SWIFT or self-custody units via SWIFT or LCCS. GSMAC edit exceptions are resolved by the Global Custody Communications Unit and Global Custody Settlements and self-custody teams. Enterprise Reconciliation is responsible for performing securities reconciliation functions.

Following the successful release of instructions to SWIFT (through Bank Electronic Support System ("BESS")), Global Custody Communications Unit administrators monitor the application for acknowledgement of receipt by the SWIFT network.

Canada, Germany and the U.K./Ireland are self-custody units and process Canadian, German and U.K./Ireland settlements, respectively. The remaining non-U.S. securities processing is performed by operations groups located in India, Poland, the U.K. and the U.S. within Global Custody Settlement. Each group's operations are further broken down by territory: Americas/Middle East/Africa, Asia/Pacific and Europe. Each operating group possesses market knowledge and expertise specific to its region and acts as the liaison between State Street's subcustodian banks and the business units and is responsible for effectively managing the timely and accurate settlement of securities transactions and their associated cash components at subcustodian banks within its respective market.

State Street requires its subcustodians to prematch or confirm trades with counterparties. Confirmation or prematch exceptions are communicated to State Street via SWIFT or other secure method. SWIFT communications feed automatically into GSMAC and update confirmation status. However, at times manual intervention may be required. Communications received via other secure methods are manually input into GSMAC by Global Custody Settlements. Originating departments monitor confirmation status through online access to GSMAC.

Subcustodians notify State Street that settlement has occurred as soon as possible after trade settlement. Notification is received automatically via SWIFT or manually via other secure methods to update the trade and related position records on GSMAC and currency amounts on IBS and ICASH. Upon settlement, this information is transmitted to MCH on a real-time basis. Settlement exceptions are monitored throughout the day by Custody Settlements.

Upon completion of the daily settlement process, a GSMAC report identifying trades not settled and in a failed status is generated and researched. Trade fail reasons are obtained and the status is updated on GSMAC.

Australia

The Unlisted Investment Department is a dedicated team responsible for the administration of investments into externally managed Unlisted Investments. This includes trade processing, income posting, pricing and holdings reconciliation.

Unlisted investment transactions are either uploaded automatically or manually entered (by UIT personnel) into IIP. Upon entry to IIP, instructions flow to DMH-UIT for enrichment and validation. DMH-UIT also performs a series of edit checks and transactions not passing the edit checks are investigated and resolved. Transactions are pended on MCH awaiting unit confirmation.

The appropriate accounting entries are automatically created by DHM-UIT and sent to MCH for posting. Transactions move to pending status within MCH while awaiting unit confirmation. DMH-UIT is automatically updated and the entry to reverse the pending entry is sent to MCH upon receipt of the unit confirmation from the external registries or State Street Unit Registry.

Australia fixed income trades are settled through the depository Austraclear Limited, and cash trades are either settled through Austraclear Limited or Real Time Gross Settlement depending on the method of settlement selected by the investment manager. Cash transactions are input to MCH and released to IBS.

The Global Transactions, Controls and Banking team generates a report from the Austraclear application that matches trade details entered into Austraclear by State Street to those entered by the counterparty. The Global Transactions, Controls and Banking team provides the report to the relevant Global Accounting groups for review and follow-up and resolution of unmatched trades. SSAL sends domestic fixed income trades to the subcustodian (HSBC) via SWIFT.

Canada

The Global Custody Unit is responsible for processes related to the securities transaction settlement and safekeeping of assets in the Canadian market. To establish geographically diverse facilities for Canadian and United States trade settlement, split operations have been established. State Street operates in a self-custody environment in Canada consisting of an omnibus securities account at the central depository, CDS Clearing and Depository Services Inc. ("CDS"). Physical securities (including precious metals) are held at subcustodians in Canada.

The Global Custody Unit personnel match settlement instructions from GSMAC to CDS/subcustodians using the Local Custody Controls System ("LCCS"). Exceptions are monitored and resolved by the self-custody unit. GSMAC is updated by LCCS which is updated via electronic messages from CDS. Settlement exceptions are monitored, resolved and documented by the Global Custody personnel through review of GSMAC. GSMAC automatically updates the settlement status on MCH.

Enterprise Reconciliation personnel match positions from GSMAC to CDS using GSR. Exceptions are monitored and resolved by the self-custody unit. GSMAC is updated by electronic messages from CDS. Settlement exceptions are monitored, resolved and documented by the Global Custody team through review of GSMAC. GSMAC automatically updates the settlement status on MCH.

A detailed recap report from CDS is compared and verified against daily reports of GSMAC positions generated from LCCS. The final settlement amounts from CDS are reconciled to LCCS totals to determine whether cash transactions are properly accounted for. Discrepancies are researched and resolved.

Germany

The Global Delivery Unit in Germany is responsible for processes related to securities transaction settlement and the safekeeping of assets in the German market and for the related processing of eligible securities (e.g., equities, bonds, mutual funds) which settle at the central depository, Clearstream Bank Frankfurt ("CBF"). Physical securities will continue to be held at the subcustodian in Germany.

Settlement instructions are transmitted from GSMAC to CBF via LCCS. GmbH self-custody personnel verify trade instructions properly pass all edits and are matched at CBF to ensure settlement. Trades where criteria match settle automatically at CBF. The Global Delivery Settlement team monitors LCCS to identify settlement issues and exceptions are monitored and resolved. Settlement confirmations are received electronically by LCCS from CBF and transmitted to GSMAC. Settlement issues are monitored and followed up on throughout the day by the Global Delivery Settlement team through review of LCCS. Upon confirmation of settlement, GSMAC automatically transmits the settlement status to MCH.

United Kingdom and Ireland

Global Delivery U.K. is responsible for processes related to securities transaction settlement and the safekeeping of assets in the U.K. and Irish markets. Global Delivery U.K. settles transactions and monitors asset safekeeping for U.K. and Irish equities, U.K. and Irish government and corporate bonds, U.K., Irish, certain Luxembourg and offshore collective investment schemes, CREST Depository Interests, Certificates of Deposit and commercial paper instruments.

CREST Securities

The CREST central securities depository maintains dematerialized U.K. and Irish equities, exchange-traded funds, corporate securities, government bonds (gilts), CREST Depository Interests and Sterling and Euro-denominated certificates of deposit for safekeeping. LCCS compares trade instructions received from GSMAC and CREST. Trades where criteria match settle automatically at CREST. Trade exceptions are monitored and followed up throughout the day by Global Delivery U.K. Settlement notifications are requested directly from CREST to GSMAC. GSMAC and currency accounts are updated via an electronic file (converted into a SWIFT format) received from CREST. Notifications of settlements are received via SWIFT, which updates GSMAC and the client accounts on IBS.

Certificates of Deposit

Deutsche Bank AG maintains U.S. dollar-denominated certificates of deposit for safekeeping. Certificates of deposit transactions flow from GSMAC through SWIFT to Deutsche Bank AG. Notifications of settlements are received via SWIFT, which updates GSMAC and the client accounts on IBS. Settlement exceptions are reviewed and resolved by U.K. Operations.

Contractual Settlement Processing

State Street provides contractual settlement as a standard settlement convention for eligible clients in accordance with the parameters of the product offering. Contractual settlement is provided for eligible trades failing over contractual settlement date, providing securities are under custody at State Street and trading in the U.S. and other major international markets. State Street reserves the right to reverse contractually funded trades that do not settle in the market within a reasonable time frame.

Certain contractual settlement results in credit exposure to State Street as a result of advancing funds to clients. Client eligibility is determined by credit risk rating thresholds established by ERM and quality ratings of documentary risk (i.e., the quality of the client's contract language). Clients that meet or exceed the established risk thresholds are eligible to participate in the standard contractual settlement service. Clients that do not meet the established credit risk and/or quality ratings may still be eligible for contractual settlement services but would need to obtain exception authorization from the appropriate risk and/or legal party. Once a client has been approved, a request is forwarded to the Global Support Services ("GSS") Help Desk to set up the appropriate client portfolio header records, establishing the fund for contractual settlement eligibility.

Risk Monitoring monitors exposure levels daily for all contractually eligible clients to determine whether the funding of the sell fails are within established credit limits. Risk Monitoring also calculates credit limits within policy guidelines monthly based on current client Net Asset Value information. The majority of the credit limit guidelines are derived via automated calculations from the Intraday Exposure Monitoring application. Any exception for clients that require a limit greater than policy limit must be reviewed and approved by ERM.

Contractually eligible U.S. buy and sell transactions are identified by Risk Monitoring in the U.S. via SMAC/GSMAC and the cash portion of the security transaction is funded to the client's DDA account and applicable general ledger accounts on the contractual settlement date. For buy fails, the client's DDA is debited and a separate buy fail processing general ledger account is credited. For sell fails, the client's fund DDA is credited and the applicable State Street general ledger account is debited. The State Street buy and sell fail accounts are reconciled daily by Global Custody personnel and reviewed by Global Custody management.

Failed Trades

Failed trades are monitored daily through online reviews of SMAC/GSMAC and STS or certain areas also use reporting tools that systematically extract failed settlement information directly from SMAC/GSMAC. Failed trades are researched by Global Custody Settlements or U.S. Securities Operations on SMAC/GSMAC as applicable. If necessary, corrective action is taken based on authorized instruction from the investment manager or client.

Safekeeping of Assets

Enterprise Reconciliation in Global Delivery is responsible for cash and security position reconciliations with central depositories (reference to central depositories includes CDS in Canada, CBF in Germany, CREST in the U.K. and DTCC in the U.S.) and subcustodians through automated reconciliation programs, ensuring account statements are received from subcustodians at least monthly. The North America Settlement Unit is responsible for cash and security position reconciliations with the Fed. Enterprise Reconciliation personnel code and monitor aged exception items and provide weekly reporting to management of the North America Settlement Unit.

Depository to Custody

Canada

Depository

After the close of business each day, State Street receives a transmission from CDS. The transmission contains the day's closing position balances by security within each omnibus account at CDS. The transmission is then electronically reconciled against security holdings on GSMAC via GSR. Exception reports are automatically generated displaying security positions that are out of balance. Items are researched and resolved by Global Delivery Canada or Enterprise Reconciliation personnel.

Germany

Positions on GSMAC are matched to CBF using GSR. Enterprise Reconciliation personnel review the exceptions and code them by unit responsible for resolution. Applicable exceptions are routed to the self-custody unit for monitoring and resolution. In accordance with German regulatory requirements for custodian banks, Enterprise Reconciliation personnel reconcile positions on a daily basis between CBF and GSMAC and exceptions are monitored and resolved on a daily basis by the Global Delivery Settlement team.

United Kingdom

Depository

CREST positions are reconciled to GSMAC daily via SWIFT Gateway messages received from CREST into the Auto-Recon application. For U.S. dollar-denominated Certificates of Deposits ("CDs"), Deutsche Bank AG (acting as depository) positions are reconciled to GSMAC daily via the Auto-Recon application. Exceptions are coded and routed to the unit responsible for resolution.

United States

Each business day, State Street receives transmissions from DTCC, which include physical securities. These transmissions contain the previous day's closing position balances by security within each State Street omnibus account. The transmissions are automatically reconciled against security holdings on SMAC, and any positions that do not match are listed on the daily exception report. Exception reports are automatically generated and downloaded by Enterprise Reconciliation personnel on a daily basis. Exception reports display the variance of each security position that is out of balance between SMAC and DTCC. Exception items are researched and coded to the appropriate party or team for resolution by Enterprise Reconciliation personnel and/or North America Securities Settlement. Exceptions are followed up on and escalated, as appropriate, until resolved/cleared.

An automated reconciliation is also performed between State Street's Fed settlement system, STS, and SMAC. Exception reports are automatically generated displaying each security position that is out of balance. Exception items are researched and resolved by North America Securities Settlements personnel or routed/directed to the appropriate area for resolution. Exceptions are followed up on until resolved.

Subcustodian to Custody

Cash

In an on-book cash processing environment, foreign cash deposits are held at a cash correspondent bank in omnibus accounts in State Street's name. The cash deposits are carried on the global custodian's books and represent a debt obligation from the global custodian to an individual client. In an off-book cash processing environment, foreign cash deposits are held at a subcustodian bank on its accounting books in individual cash accounts in the client's name. The cash deposits represent a debt obligation from the subcustodian to an individual client.

On-book currency transactions maintained on the IBS application are reconciled daily via the Global Services Reconciliation application. GSR receives SWIFT MT950 messages from the subcustodians, central depositories or settlement bank and compares the transactions listed to the currency transactions listed on IBS at the account level. Exceptions are downloaded from GSR and retrieved by Enterprise Reconciliation for coding to the unit responsible for exception resolution. The exceptions are reviewed online by the responsible unit, resolved and updated. Detailed exception information is available on GSR and downloaded into weekly reports for distribution to senior management. Management-level personnel regularly review summary reports that include exception analysis and aging.

Off-book currency transactions are reconciled daily by GSR and reviewed. GSR receives SWIFT MT950 messages and compares the transactions listed on the SWIFT MT950 statement to those on ICASH. For subcustodians without access to SWIFT, cash statements are received via email and/or postal mail. Currency balances are manually input to GSR, which reconciles the balances or activity to ICASH. Exceptions are coded to the unit responsible for exception resolution. The exceptions are reviewed online by each unit, resolved and updated. Detailed exception information is available on GSR and downloaded into weekly reports for distribution to Senior Vice Presidents and/or Managing Directors for each business unit and applicable Vice Presidents in their organization. Management-level personnel regularly review summary reports that include exception analysis and aging.

Securities

Omnibus and non-omnibus accounts are reconciled via receipt of daily, weekly or monthly SWIFT statement of holding messages into GSR. GSR reconciles security positions between GSMAC and the subcustodians or depositories as reported on the SWIFT messages or statements based on security ID. Exceptions are posted to the Securities Recon Database ("SRD"). Subcustodians that do not have SWIFT capability provide monthly statements that are manually reconciled to GSMAC. Exceptions are researched and resolved and reviewed by a second individual. Enterprise Reconciliation personnel review exceptions and code them by unit responsible for exception resolution (e.g., Corporate Action Services). The exceptions are reviewed online by the responsible unit, resolved and updated. Detailed exception information is available on GSR and downloaded into weekly reports for distribution to senior management. Management-level personnel regularly review summary reports that include exception analysis and aging.

Accounting to Custody/Third Party

Securities

MCH security position records are reconciled to State Street custody (SMAC/GSMAC) or third party (e.g., external custodian, counterparty, recordkeeper, etc.) security position records periodically by Centralized Processing groups using the following tools: eHorizon CARS, SRD, UCM or manually. Exceptions are reviewed and coded to the unit responsible for exception resolution. Appropriate action is taken to resolve exceptions and the reconciliations are reviewed by a second individual. Online functionality allows users to manage current open exceptions.

Cash

U.S. dollar cash reconciliations are performed systematically on a daily basis (using downloads from Hogan, IBS, ICASH, MCH, and SWIFT), through TLMP and UCM. Exceptions are identified and investigated through reference to the prior day reconciliations or online review of the Hogan application.

Exceptions are reviewed and coded to the unit responsible for exception resolution. Appropriate action is taken to resolve exceptions and the reconciliations are reviewed by a second individual. Online functionality allows users to manage current open exceptions.

Non-U.S. dollar balances are also reconciled daily. The GSR or TLMP applications reconcile custody to accounting balances using downloads from IBS, ICASH and MCH. GSR examines exceptions and attempts to match (reconcile) them using certain criteria. Reports are generated detailing balances and exceptions per fund/portfolio for all currencies. Exceptions are reviewed and coded to the unit responsible for exception resolution. Appropriate action is taken to resolve exceptions and the reconciliations are reviewed by a second individual. Online functionality allows users to manage current open exceptions.

On Monday, February 6, 2023, TLMP experienced an outage impacting State Street's ability to reconcile business activity from Friday, February 3. The outage affected certain cash reconciliations (control 5.8) as well as certain reconciliations for swap positions on DHub or MCH (control 5.10). The data restoration was completed, validated and resynchronized by the morning of Tuesday, February 7 allowing activity from February 3 and 6 to be reconciled. Management validated that all data feeds for February 3 and 6 were loaded and activity for the two days was captured in the reconciliations performed on February 7. Additionally, management confirmed that there was no impact to the daily net asset values. State Street's Information Technology teams performed a post-mortem to assess the root cause of the issue and have implemented changes to mitigate recurrence and increase the speed of data restoration.

Accounting to Unit Registry

In Australia, a reconciliation is performed between MCH records and the external registries or State Street Unit Registry for all Unlisted Investments at the end of each month. The reconciliation is completed by a Centralized Processing Unit with the oversight of the Unlisted Investment Department.

Accounting to Depository

In Germany, position reconciliations between the Clearstream depository and MCH are performed for accounts opened in the name of State Street Bank International GmbH on a regular basis, at least annually, by a reconciliation team. Exceptions are researched and resolved.

DHub

Total market value and realized gain/loss is calculated in DHub and systematically or manually posted to MCH daily. The posting is reviewed for accuracy and variances are identified, researched and resolved. Positions recorded on DHub are reconciled to investment manager, counterparty or client records periodically. Variances are investigated and timely resolved or escalated.

Reconciliations of total market value between DHub and MCH are performed in China (Hangzhou), Ireland (Kilkenny), Poland (Gdansk) and U.S. (Quincy and Sacramento). Reconciliations of positions between DHub and Investment Manager or client records are performed within centralized processing units in Australia, China (Hangzhou) and Ireland.

Subcustodian Selection and Monitoring

State Street maintains a comprehensive structure for expanding market coverage and selecting subcustodians for entering new markets through the Market Expansion Committee, comprised of senior management across the organization, as well as the Deal Team, comprised of functional managers from multiple areas of State Street. Prior to offering subcustody arrangements in a new market, State Street carries out a market risk evaluation, a subcustody Request for Proposal ("RFP") process, a subcustodian financial review, an on-site due diligence visit and a legal review. The Deal Team is also involved in recommending subcustodian selection in connection with review of existing markets. Legal and Network Management personnel work jointly to negotiate and execute the subcustody contract which includes defined service levels.

Once subcustody services are established, State Street continues to monitor subcustody providers for compliance with service-level agreements. These standards enable client assets to be custodied in an environment where risks have been mitigated to the extent possible.

Network Management personnel, located in Australia, Germany, Hong Kong, Singapore, the U.K. and the U.S., manage relationships with State Street's worldwide network of agent banks and review their performance on an ongoing basis. Network Management, with support from operational units, monitors each subcustodian's ability to manage large trade volumes; its ability to correctly handle complex transactions; the quality of reporting; the subcustodian's progress in the use of technology and telecommunications systems; steps taken to mitigate risk on behalf of foreign investors; and accuracy and timeliness in communicating market events. Network Management conducts formalized due diligence reviews with each subcustodian relationship on an annual basis. These reviews are facilitated through on-site visits by State Street to a subcustodian, scheduled visits by a subcustodian to State Street or arranged conference calls between State Street and a subcustodian.

These activities provide State Street with structured opportunities to further examine relationships with our selected subcustodians and the market environments in which they operate.

State Street's ERM division performs fundamental credit reviews of its subcustodians on an annual basis and monitors their financial condition using various credit-rating services, financial publications, press releases, and information obtained from internal due diligence activities.

ERM provides Network Management and its own senior management with regular monitoring reports, formal written credit reviews, and notices of any developments with respect to providers and their operating environments. ERM's routine reporting and various committee oversight keep relevant internal parties from ERM and Network Management apprised on subcustodian developments.

The Investment Company Act of 1940 Rule 17f-5 and 17f-7 Compliance

The Global Market Information Group within Network & Information Services/Global Delivery coordinates State Street's support for U.S. mutual fund clients, their Boards of Directors and legal counsel with respect to compliance functions associated with The Investment Company Act of 1940 Rule 17f-5 and Rule 17f-7. The Global Market Information Group annually publishes extensive informational materials addressing both State Street's subcustodian arrangements relevant to The Investment Company Act of 1940 Rule 17f-5 and our role as Foreign Custody Manager, and the informational obligations regarding securities depositories under The Investment Company Act of 1940 Rule 17f-7. The Global Market Information Group provides clients with updates throughout the year should significant changes in the foreign custody arrangements occur.

Income Processing

Contractual Income Policy

State Street systematically credits non-optional cash dividends, interest, principal paydowns and final redemption/maturities for securities held in State Street's custody to client accounts on SMAC/GSMAC and MCH on security payable date or maturity date in 50 major markets and depositories, including such income from securities on loan under the State Street Securities Finance lending program. Credits to client accounts are conditional until payment is made in full by the security's paying agent or issuing company. Securities (i) on loan under a third-party or client-directed lending program, (ii) involved in a trade for which settlement is pending over record date or (iii) known to be in a condition of default are paid upon actual receipt and are excluded from the Contractual Income policy. Contractual Income may be subject to revision as a result of changing market conditions and ongoing global custody analysis. Contractual Income is not available for off-book markets.

U.S. Income

Accruals for U.S.-based dividends, interest and maturities are established based on SMAC security positions, the Global Tax Table, data from the Security Masterfile, the global Dividend database and feeds from the depositories. U.S. income is processed in Canada and the U.S.

Depository Trust and Clearing Corporation

DTCC electronically transmits a daily projected income file on the morning of each business day. This file contains projected income payments for each State Street participant account. The projected files are systematically matched against SMAC's open receivable file based on certain criteria (e.g., CUSIP, dollars, shares/par, record and payable date). Items that match update SMAC to a pended (PEND) status. Items for which the fields do not match are researched and actioned as necessary to resolve differences. Receivables may be created or adjusted, as appropriate, to allow the income payment to be systematically posted to MCH.

The projected file is followed by eight intra-day payment files, which contain payment and adjustments for each participant account. The payment files create CUSIP-level payables on SMAC, which are systematically matched against SMAC receivables. Items that match are updated to a matched (MTCH) status. Unmatched items are researched and adjusted as necessary to resolve the differences. At the end of the day, once all items are in matched (MTCH) status, a SMAC totals report is printed and reconciled to the depository cash settlement reports. Any differences are identified and actioned accordingly. A batch job updates matched records to PAID status on SMAC and a SMAC cash payment file is created for posting to the individual client DDA accounts on the Hogan application.

DTCC sends SWIFT ISO 20022 messages containing CMO factors and principal and interest rates in a real-time environment. SMAC imports these messages and updates factors and rates systematically.

The Federal Reserve Bank

The Fed electronically transmits a nightly "Notification of Income Credit" file for the following business day's payments. This file systematically creates payable records on SMAC. On the morning of payable date, SMAC payable records are systematically matched against open receivables. Items that match are updated to a matched (MTCH) status. Unmatched items are researched and adjusted as necessary to resolve the differences. A SMAC totals report is printed and reconciled to the Fed pending payments. As SMAC records are updated to PAID status upon receipt of Fed wires, SMAC processes cash jobs and posts income to clients' DDAs on the Hogan application. The Fed electronically transmits a nightly Adjustment Notification file for the following business day's payments. Items that match are updated to a matched (MTCH) status. Unmatched items are researched and adjusted as necessary to resolve the differences. For any adjustments, a batch job updates matched records to PAID status on SMAC and a SMAC cash payment file is created for posting to the individual client DDA accounts on the Hogan application. At the end of the day, once all payments are received and in matched (MTCH) status, actual Fed payments are reconciled to the Fed payable records due on SMAC. Any differences are identified and actioned accordingly.

Collection of Market Claims

Market claims to counterparties are centrally identified on the business day following security payable date by systematically scrubbing DTCC payments against unsettled trades not eligible for due-bill tracking. Claim letters are issued to counterparties and status updates to the Income Tracking System are made weekly to allow Centralized processing units to track open receivables on MCH.

International (Non-U.S.) Income

Global Income operates in a “follow the sun” environment in order to provide income processing services for non-U.S. holdings. Core operating teams reside in Canada, India, the U.K. and the U.S. International income processing is based on market type (“on” or “off” book). Income is advanced to the client on payable date for select markets in accordance with State Street’s Contractual Income policy. Income from markets not included in the Contractual Income policy, income is processed on an actual receipt basis.

On-Book Income Processing

On-book international income receivables are created and maintained on the Global Income Control application (“GIC”) based on information provided from the Security Masterfile, the Global Tax Table and the Global Dividend database. Entitlements are established based on GSMAC security positions.

Cash payment information is received from GIC via SWIFT MT564/MT566 messages from the subcustodian depository. Cash is systematically posted to client accounts via IBS. Cash receipts are then matched to MCH receivable records. Exceptions are researched by Global Income Services. Receivables may be created or adjusted, as appropriate, to allow the income payment to be systematically posted to MCH.

Off-Book Income Processing

For off-book markets, whereby the subcustodian maintains the transaction records for individual cash accounts, income receivables are created and maintained on GIC based on information provided from the Security masterfile, Global Tax Tables and the Global dividend database. Entitlements are established based on GSMAC security positions.

Cash projections and receipts are received via SWIFT MT564/MT566 messages from the subcustodians and posted to client accounts on ICASH. Cash receipts are then matched to MCH receivable records. Exceptions are researched by Global Income Services and resolved. Receivables may be created or adjusted, as appropriate, to allow the income payment to be systematically posted to MCH.

Collection of Past-Due Income

For on-book markets, GIC identifies the anticipated sources of income payments (i.e., due from the subcustodian, a Securities Finance broker and/or a counterparty in the market). This information facilitates the collection of income from counterparties and is also used to identify which portions of income are eligible for payment under the Contractual Income policy. Monitoring of past-due income occurs through the use of the Income Tracking System for each market, regardless of whether the income is paid on a contractual or actual receipt basis. Income receivables are identified through review of the Income Tracking System or custody records. Income Services determines if the receivable is valid and assigns a status code to the Income Tracking Record. A claim for past-due income is sent to the appropriate broker and follow-up continues until receipt. Updates are recorded on the Income Tracking System. Past-due income status reports, which includes an aging analysis, are produced and regularly reviewed by Income Services.

Manufactured Income

Manufactured Income is the cash dividend or interest entitlement due on securities held by brokers as the result of a securities lending transaction. The claim generation, issuance, collection and payment of manufactured income is centrally processed by the Global Income team in Quincy. The Global Income team in Quincy supports both State Street Securities Finance as well as third-party and client-directed programs. Daily, the Securities Lending Claims Processing application ("SLCP") receives data feeds based on On-Loan positions on GSMAC. SLCP systematically generates claims to the borrowers or lending agents prior to or on security payable date based on market entitlement rules. Outstanding claims are followed up with brokers or lending agents until collection. Regular, weekly past-due claims reporting is in place with the State Street program and all third-party and client-directed programs.

Dividends and Receivables

Global Income generates accruals for dividends on behalf of State Street's global client base. Event information is included in vendor feeds on a nightly basis. State Street uses two primary vendor feeds, ICE and Bloomberg, to identify events. Data from the two vendor feeds systematically match and confirm dividend events. Unmatched events are researched and upon validation with a second source, the dividend record is manually confirmed. Second sources include, but are not limited to, subcustodian, SWIFT MT564 messages, depositories, secondary vendors and issuer websites. Dividend data entered manually is subject to systematic format, missing field, second source validation, limit and check digit controls. Manually confirmed events are documented and are reviewed by supervisory personnel before final confirmation. Events for which standard matching criteria have not been obtained remain in unconfirmed status. Receivable records are systematically posted to SMAC and GIC upon confirmation. Accounting receivables are systematically created for each SMAC and GIC record and posted to MCH as of the ex-dividend date. Changes to existing events are posted daily to the Market Data Services internal website. Income Shared Services monitor this website as well as receive email notifications from Global Dividends (a team within Global Income) for late dividend announcements (which include revisions impacting existing accruals as well as new dividend events announced late in the market) and post updates locally, as applicable. Events confirmed after the release of confirmed events with an ex-date of the current date or in the past are posted to the Market Data Services website as well as to external vendors.

Global Tax Processing

Custody Tax Services

Custody Tax Services is a department in Global Delivery with operations in Australia, Canada, Germany, Poland, the U.K. and the U.S. that provides tax services to State Street's global client base. Custody Tax Services is comprised of the following areas: Subcustodian Tax Reclaims, Tax Documentation, Depository Processing, Tax Research, Accounting Research Group, U.S. NRA Tax, Canadian Withholding Tax and Client Service.

Subcustodian Tax Reclaims provides tax reclamation services. Tax reclaim receivables are processed by utilizing the Tax Reclaim System (“TRS”), an application designed to automatically process and track reclaims on taxes withheld by foreign tax authorities. Reclaim filings are completed based on local market filing requirements and tracked by Subcustodian Tax Reclaims until paid by the local tax authority.

Tax Documentation supports the documentation and certification process as required to effect proper withholding, exemption, relief at source and reclaim opportunities in many markets. Local jurisdiction documentation required to facilitate reduction at source, exemption and tax reclaims is also requested on behalf of clients, solicited from clients, tracked and maintained.

Depository Processing supports the reduction at source and reclaim filing process as required to effect proper withholding, exemption and reclaim opportunities through Clearstream, DTCC and Euroclear. The Depository Processing Unit also utilizes TRS to process and track reclaims.

Tax Research is responsible for researching tax entitlements on investment income by reviewing double taxation, treaties and domestic law as they pertain to taxation, client account structure as it impacts taxation, market practices and procedures required to support and direct tax table maintenance and capital gains taxation.

The Accounting Research group is responsible for identifying the U.S. taxability of complex Canadian, Swedish, U.K. and U.S. corporate actions and providing line areas with MCH accounting instructions reflecting the taxability of the actions.

The U.S. Non Resident Alien (“NRA”) Tax Unit performs the daily withholding of U.S. tax from the Non-U.S. Resident clients who invest in U.S. instruments and the remittance of those taxes to the IRS. The U.S. NRA Tax Unit also supports on a limited basis certain other U.S. domestic tax reporting, prepares annual tax reporting to both clients and the IRS and tax filing on behalf of the nominees to the IRS.

The Canadian Withholding Tax team performs withholding of Canadian income tax from non-resident investors and submits these withholding taxes to the Canadian Revenue Agency (“CRA”). They also support annual Canadian reporting to clients and the CRA.

The Client Service team is responsible for supporting client presentations, Request for Proposal (“RFPs”) and servicing agreements. They manage all tax- and market-related inquiries from internal fund groups, the global client base and investment managers. They manage the development of new custody tax products and services and represent Custody Tax Services and clients with industry initiatives through participation in various industry tax committees.

Tax Entitlement Processing

The Tax Research team tracks Treaty and Domestic Law tax rate changes. Withholding tax and reclaim rate changes are checked to independent sources and reviewed by management for accuracy. Upon completion of the management review, a request is sent to the appropriate business unit to update Global Tax Tables ("GTT") with the change. MCH automatically calculates withholding taxes timely and establishes accruals for income and tax reclaim receivables.

The tax reclaim coordinator monitors accrued tax receivables and prepares and files required documentation with the subcustodian or the country's tax authority. Market practice and, in some cases, residency dictate filing frequency and follow-up confirmation steps. Reclaims are monitored by Custody Tax Services via a weekly status summary report. Follow-up steps are taken as needed to confirm filing status prior to the expiration of the statute and limitations and again to ensure timely payment receipt. Payment information is processed automatically or manually by the Custody Tax Services Payment Team, which updates TRS and the receivable on MCH to a PAID status.

Reduction at Source and Exemptions

Reduction at source or up-front filing refers to those circumstances whereby clients may be paid income net of tax withholding and reclaim amounts. Depending on the market, documentation may need to be filed annually or based on each income event in order to effect these opportunities. Exemptions generally allow an eligible investor to receive income gross. Subcustodian account openings are monitored for applicable markets to request documentation from business areas for execution and proper filing.

Tax Reclaims

Tax reclaim receivables are generated on TRS and MCH at the time of the income event based on rates contained within the GTT. The Global Tax Tables provide a hierarchy supporting specific asset, client exemption, investment type and generic withholding tax rates.

Subcustodian Tax Reclaims

TRS is an end-to-end workflow application that supports the tax reclaim processes. The TRS platform integrates client and market information with custody data to create and track receivables. TRS tracks receivables through their entire life span from creation to payment using descriptive status codes. Documentation requirements are tracked by TRS and reclaim forms are generated by the application on behalf of the individual beneficiary for each reclaim market. The forms are forwarded to the appropriate party for signature and certification nor signed under an applicable Power of Attorney ("POA"). Tax reclaims are filed on an ongoing basis or batched according to market practice and filed with the subcustodians or directly with the tax authority. Market practice and, in some cases, residency dictate filing frequency and follow-up confirmation steps. Cash payment information is received directly by GIC via SWIFT messages from the subcustodians and is posted to client accounts automatically or manually by the Tax Payment Team on IBS and MCH. The payment is processed on TRS and the receivable is moved to a PAID status.

Steps are taken to confirm the filing status for filed reclaims prior to the expiration of the statute of limitations. Reclaims are monitored for timely payment by Custody Tax Services and follow-up confirmation steps are taken for items that have exceeded normal repayment time frames as established by the market and State Street.

Depository Tax Reclaims

Reduction at source opportunities (Elective Dividend Service (“EDS”) elections) for American Depositary Receipts (“ADRs”) settling through DTCC are identified and monitored through the DTCC internet site. The Euroclear Euclid terminal is monitored for announcements of future payable dates in the Euroclear Depository. Client eligibility is determined based on residency using the ADR module within TRS. For clients who are not eligible for reduction at source, a reclaim is generated which flows through the normal TRS workflow process. The required forms are generated based on market procedures and client entitlement. After review, the documents are forwarded to either the U.S. sponsoring agent or the local subcustodian.

Australia

Taxation information is regularly reviewed by State Street’s tax specialists prior to the taxation reports being provided to clients.

The taxation reporting process requires a reconciliation to the accounting information. Material reconciling differences between the accounting application information and taxation reports are identified and reviewed regularly. Tax checklists are completed for the preparation and review of taxation reports.

State Street tax specialists regularly review the income tax policies adopted to monitor that they are a reasonable application of the current requirements of Australian Taxation Legislation or industry practice.

Germany

State Street Bank International GmbH acts as withholding agent on behalf of State Street Bank clients worldwide for German dividend payments. The Central Securities Depository (“CBF”) credits State Street Bank International GmbH with gross dividend amounts and State Street Bank International GmbH will debit taxes for taxable clients. The deducted tax is forwarded to the German tax authority on a monthly basis.

Income Repatriation

Clients or client agents can request that State Street convert income paid in non-base currencies to a specific currency on a predetermined basis (daily, weekly or monthly). This is not included within the scope of this report.

The Income Repatriation applications extract eligible income (e.g., interest, dividends and specific corporate action events that have been input with specific repatriation broker numbers) from a nightly MCH general ledger file or from global income postings and accumulates in a pending file until the scheduled repatriation date. On the scheduled repatriation date, the pending income item status is updated and the items are aggregated by the chosen aggregation level; currency, event (same CUSIP, paydate and rate), or qualifier

(individual income records). A file of SSGM executed currencies is transmitted to SSGM via OMS for foreign exchange contract execution. Once the repatriation foreign exchange has been executed, automatic updates are posted on Hogan, IBS and MCH. Contractual settlement takes place the day following the OMS request.

Income repatriation may also be processed automatically for off-book currencies. The income repatriation application will systematically aggregate amounts and request foreign exchange amounts from the subcustodians via SWIFT messages. On settlement date, the subcustodian's SWIFT settlement messages are matched to the pending file and ICASH and Hogan are updated.

Global Corporate Action Processing

Corporate Actions Operations, a department in Global Delivery, is responsible for processing U.S. and non-U.S. corporate actions. Corporate Actions Operation's responsibilities include identification and distribution of corporate action data to clients, the communication of elections on voluntary events to the market and processing and settlement of corporate actions such as stock dividends on SMAC/GSMAC which is reviewed by Corporate Actions Operations and by centralized processing units. Past-due cash and share exception reports of corporate actions are reviewed by Corporate Actions Operations and aged items are researched and resolved with the paying agent. Core Operating teams reside in Canada, the U.K., the U.S. and India.

Corporate Action Identification and Notification

Both U.S. and non-U.S. corporate action events are identified via automatic and manual sources, including vendor transmissions, depositories, subcustodians and nominee/direct mail and periodical review. Vendor feeds are electronically fed into the Global Corporate Action System ("GCAS") which also feeds the Corporate Action Monitoring System ("CAMS"). Vendor feeds with missing or conflicting information are researched and resolved by Corporate Actions Operations personnel. Corporate action feeds are monitored for completeness through record counts and data checks. Non-automated source information is input manually to GCAS and reviewed by a second individual, and when possible verified to a second source. Data entered into GCAS is subject to various format, missing field, validation, limit and check digit controls. Non-U.S. corporate actions are identified by the subcustodians (including the self-custody units), market depositories and vendors. Corporate action information and dividends are received from vendors via leased lines or encrypted over the internet. Corporate action information received from subcustodians is received via SWIFT. Where State Street is reflecting a holder of the applicable security on MCH or SMAC/GSMAC, GCAS retrieves entitled share positions for identified corporate actions automatically from SMAC/GSMAC.

Information necessary for corporate action notification is input to GCAS, reviewed by a second individual, if applicable, through reference to source documentation and assigned pending status. Full notifications are generated by GCAS prior to ex-date (expiration date) and sent to Centralized Processing units or investment managers via SWIFT or CapTAIN. Notification delivery is monitored by IT and any non-delivery items are immediately addressed. If the share position (as detailed on SMAC/GSMAC) is modified prior to ex-date/expiration date, GCAS' share tracking functionality will automatically identify position changes and generate a re-notification to centralized processing units or the investment manager.

ETF

Transfer Agent activity is automatically input into the ETF Global Platform upon receipt of the subscription and redemption file. The ETF Global Platform systematically produces the in-kind trade file for distribution. If, due to data inconsistency, the file is not automatically input it is manually adjusted to be in the proper format. Manually adjusted subscriptions and redemptions which were loaded into the ETF Global Platform are subject to review for accuracy and completeness against the original data from the Transfer Agent and evidence of review is maintained on the daily checklist.

Voluntary Corporate Action Response Processing

Voluntary Corporate Action Response processing is performed in the U.S. Responses may be delivered electronically via CAPTAIN, SWIFT or facsimile. Responses received via SWIFT and passing certain IT validity, accuracy and completeness checks will be processed automatically. SWIFT responses that cannot be processed automatically, or responses received via facsimile, are reviewed for both validity and accuracy, by a second individual prior to being updated in GCAS. Discrepancies are identified and researched. Responses received from the investment manager automatically update CAMS and are reviewed by the business units to support fund accounting updates. Responses that do not match to a pending action are identified and resolved with the investment manager or centralized processing units. For responses not received by the State Street deadline date, the standing instruction is applied. If no standing instruction exists, the default option is processed. Batch reports of responses with discrepancies or missing responses are generated daily. Investment managers or centralized processing units are contacted regarding resolution.

Instructions are released to the subcustodian or non-U.S. depository through GCAS via SWIFT, DTCC/CREST or the appropriate agent based upon client response and in accordance with the terms of the corporate action created by GCAS. Instructions are reviewed by Corporate Actions Operations for accuracy prior to release.

Global Accounting

Corporate Action Accounting

The Centralized Corporate Actions groups generate a Status Summary Report that is populated with daily activity from GCAS. The Centralized Corporate Actions groups check the Market Data Services website for late corporate action notifications posted by the Corporate Actions operations to ensure completeness of daily corporate action activity. The accounting entries to MCH for voluntary and other non-voluntary corporate actions that are not automatically posted to MCH are recorded by the Centralized Corporate Actions groups. Processed corporate actions are agreed to the Status Summary Report and reviewed by supervisory personnel for accuracy of the posted entry.

Corporate actions such as stock dividends, bonus shares, most name and CUSIP changes and domestic stock splits are automatically posted to MCH (in certain locations stock dividends may not be automated). Each day, the Centralized Corporate Actions groups reconcile confirmed corporate actions to activity that is automatically

posted on MCH. Corporate actions not automatically posted to MCH, which may include unconfirmed corporate actions, are manually posted and reviewed by supervisory personnel within the Centralized Corporate Actions groups.

Cash Disbursements

State Street receives instructions internally and from clients to process cash disbursements for various types of activity such as capital activity, dividend distributions, expenses, variation margin, collateral, loan settlements and purchase of alternative assets (i.e., limited partnership, real estate, etc.). Clients are requested to sign a written FTTOP agreement with State Street specifying the type of security procedures to be used for transfers of funds where there is no immediate exchange of value. Cash disbursements are authenticated for appropriate client authorization in accordance with the client's signed FTTOP agreement or alternative security procedures agreed to by the business unit and client. If a client does not agree to accept the standard FTTOP security procedures or declines to sign the agreement, an approved Client or Business Unit Exception may be submitted. Cash disbursements are automatically (via Expense Manager or eCFM functionality) or manually recorded on VMW, MCH (via CCTX functionality), Hogan (via OMP functionality) and IIP directly. Manually input transactions are reviewed to supporting documentation by a second individual for accuracy and timeliness.

For funds utilizing Expense Manager, an individual in Global Accounting selects the allocation methodology (e.g., average net assets, straight line, percentage by fund or fixed amount by fund) in Expense Manager based on client instructions. Expense Manager automatically calculates the amount of the vendor invoice to be allocated based on the selected methodology. The invoice is approved within Expense Manager by authorized personnel and Expense Manager posts the payment to MCH and to Hogan. Expense Manager does not release the payment to post to MCH and Hogan until approved.

For funds using eCFM, authorized individuals input the payment amount using pre-established templates that identify the payment type, payee and the appropriate accounting treatment based on rules identified in the initial set-up of the template. The payment is approved within eCFM by a second authorized individual and eCFM posts the payment to MCH and Hogan. The posting of the payment is not released to MCH and Hogan until approved.

The payment applications/functionality described below (e.g., VMW, MCH, Hogan/OMP and IIP) perform online edit and validation checks to determine whether the payment information is complete.

VMW

Variation Margin Wire ("VMW") is an interchange application providing Global Delivery personnel the ability to enter, approve and send U.S. dollar payments. VMW requires one individual to initiate the payment and another individual to approve the payment based on authorization levels within VMW. Two approvers are required for non-repetitive wires and for repetitive wires above a predetermined threshold. Global Delivery personnel

initiate requests to automatically transfer funds from the designated MCH general ledger account, and to State Street's U.S. dollar payment application, for processing to Hogan and the Fed. A repetitive wire template can be set up on VMW for fund transfer wires that are sent on a routine basis (e.g., expense payments). FTTOP procedures are performed for each fund transfer, or if a repetitive wire format is used, upon establishment of the template.

MCH/CCTX

Payments may be generated in MCH via CCTX functionality which requires one individual to initiate the payment and another individual to release the fund transfer transaction based on predetermined authorization levels in CCTX. Once released, CCTX automatically sends payment instructions to IBS.

Hogan/OMP

OMP is a functionality in Hogan used by Global Delivery personnel to transfer funds between DDAs. It provides a means for easy input by the user and an authorization method for another individual to authorize and release the funds transfer. Global Delivery personnel have the ability to view OMP transactions they have input and verify whether or not they have been released online throughout the day. At the end of the day, the transactions are forwarded to Hogan and recorded in the DDAs.

In addition, cash disbursements may be made directly by entitled users via *Cash Manager*TM, a third-party vendor application, to originate U.S. Dollar Fed Wire transfers, internal book transfers between State Street DDAs, certain SWIFT message types for major currencies and ACH transactions. Application controls of *Cash Manager*TM are not included in the scope of this report.

Instruction Initiation Platform ("IIP") (previously known as Instruct Lite)

IIP is an application which provides the ability to initiate and approve payment instructions. Segregation of duties is built in requiring one individual to initiate the instruction and additional individual(s) to authorize the instruction. Predetermined authorization levels are established within the system and the ability to approve the ability to approve is based on the individual's specific entitlements.

Monitoring of Multiple IDs

Based on business need, certain users may be granted multiple IDs to MCH, SMAC and GSMAC. As a result, State Street's access request tool has been configured to prevent MCH, SMAC and GSMAC users from requesting access with the ability to initiate and release cash. At least annually, designated State Street personnel review the access request tool for completeness and accuracy of MCH, SMAC, and GSMAC access entitlements that would allow a user to initiate and release cash.

Capital Activity

Capital activity, including subscription, redemption, estimates and dividend reinvestments for mutual funds or other collective investment vehicles and contributions, withdrawals and benefit payments for benefit plans and other institutional accounts is received via electronic transmission or hardcopy from the client's transfer agent,

recordkeeper, trustee or other servicing agent. Unit/share and/or cash capital balances recorded on MCH are reconciled to the client's transfer agent, recordkeeper, trustee or other servicing agent's records either via an automatic reconciliation or manually. Discrepancies greater than a predetermined threshold are researched and resolved by Global Accounting personnel with the transfer agent or other designated recordkeeper and reviewed. Additionally, MCH, eHorizon, MyNAV and Livewire compare capital transaction prices against the previous day's net assets and issue a warning message if the price does not agree. Discrepancies are researched and resolved by Global Accounting personnel.

MCH accepts capital stock general ledger journal entries for estimated capital stock activity in the client's records. The estimated capital stock activity is reversed automatically the next business day at the time the actual activity is posted.

Cash movement for capital activity may be performed manually (i.e., via VMW, MCH or Hogan) or automatically through Hogan. For portfolios set up on MCH to move cash automatically, DDAs are coded into the fund header on MCH and money movement occurs automatically through an overnight feed processed at the transfer agent/recordkeeper.

Germany

Capital orders are aggregated by type (e.g., subscriptions and redemptions) and automatically recorded to MCH. Daily, State Street Bank International GmbH Fund Administration reconciles each security position in the MCH reconciliation account to the units outstanding for each depot fund on MCH daily. Shares outstanding for each depot fund on MCH are reconciled daily to the depository (e.g., Clearstream) by GmbH Fund Administration.

Distributions

Periodic Distribution

Distribution rates are authorized by clients based on calculations determined by the client, trustees or other servicing agents (which may include State Street) on or by ex-date. Global Accounting personnel confirm that instructions are received from individuals who have been designated as authorized persons by the client. Total outstanding shares from the MCH trial balance are verified to the total outstanding shares from the transfer agent, trustee or other servicing agent documentation by Global Accounting personnel. On ex-date, distribution amounts are automatically calculated and posted to MCH through DR&Y or manually calculated and posted to MCH, updating the general ledger. Distributions posted are reviewed for accuracy by a second individual through MyNAV, eHorizon, Livewire or MCH.

Daily Distribution

Some funds distribute income daily based on the funds' prospectus or standing instructions from the client. Daily distributions are automatically calculated and posted through DR&Y or manually calculated and posted to MCH. Distribution amounts are reviewed by a second individual through eHorizon, MyNAV or MCH. The rates are disseminated to the transfer agent or third-party agent.

German Tax

German tax calculations are initiated by importing data from MCH and EPW into GTS. GTS performs the calculations according to the fund's valuation frequency and regulatory requirements and highlights tolerance breaches based on predefined tolerance levels that require investigation and disposition are reviewed by a team leader or manager prior to dissemination.

Income Accruals

MCH automatically calculates interest income based on portfolio holdings and income characteristics, such as accrual basis, interest rate, etc., from the lot-level position files. MCH also automatically calculates inflation factor adjustments for Treasury Inflation Protected Securities ("TIPS") based on information/settings in the security masterfile and inflation factors entered into MCH. Once MCH performs the calculations, it posts the income and inflation factor adjustment to the general ledger. Income accruals are regularly reviewed for accuracy by the Global Income groups.

For daily priced funds, Global Accounting personnel and/or supervisory personnel monitor the impact to the fund for income accrual parameters and income accrual adjustment changes and other income-related journal entries manually (e.g., Global Accounting personnel review for large or unusual fluctuations using Income Tracker, Income Workbook or similar reports) or automatically (e.g., G/L Alerts/Livewire/eHorizon Income Service/eHorizon Fixed Income Asset Control). For funds that are priced monthly, Open System Accounting–Accounting Systems Audit ("OSA-ASA") can be systematically generated or income accrual exceptions are reviewed manually using the Income Verification report or other comparable reports (e.g., Income Tracker). Exceptions to the OSA-ASA audits or comparable reports are reviewed, resolved and closed.

DHub Trade Post Model

For clean pricing funds on DHub, a daily comparison is performed on interest accrual variances between DHub and MCH. Variances are investigated and timely resolved or escalated.

DHub G/L Post

Interest accruals are calculated on DHub, where applicable, reviewed for reasonableness and systematically or manually posted on MCH. The entry to MCH is reviewed for accuracy timely.

For CFD funds, financing accrual changes are calculated and posted to MCH. The financing accrual on MCH is reconciled to the broker statement and differences are investigated timely and resolved.

Amortization/Accretion

Prior to or on settlement date of the trade, eHorizon automatically or Global Income personnel manually determine if the security should accrete discount or amortize premium. If applicable, Global Accounting personnel refer to the written amortization/accretion policy received from the client for the portfolio to

determine the appropriate amortization/accretion method. Amortization/accretion elections are established in eHorizon based on the client's amortization policy, which provides a rule-based infrastructure to systematically apply amortization methods. Amortization/accretion is automatically calculated in MCH based on the rule groups established within eHorizon (e.g., Straight Line, Effective Interest Method). Alternatively, amortization/accretion may be calculated off-line by Global Accounting personnel (off-line calculations are not included within the scope of this report). Income change alerts are generated within eHorizon to notify the Global Accounting groups of any missing data needed to calculate the amortization/accretion. The Global Accounting groups must clear alerts in order for eHorizon to process the amortization/accretion and post to MCH. On settlement date, for new security acquisitions, Global Accounting personnel confirm that necessary parameters are set up accurately for amortization/accretion and reviews posting amounts for reasonability.

The amortization/accretion methodology provided by the client is often based on the tax guidelines and differs from the methodology prescribed by local accounting standards. In order to provide these clients with information that will allow them to present associated amounts in their financial statements in accordance with applicable accounting standards, State Street built functionality into MCH to generate the AICPA Mandatory Amortization Review Reports (the "Reports"). The Reports compute the amortized cost for each security using the "effective interest method," compare that cost against the cost on MCH and produce an "intra-period" adjustment. For certain securities noted in the Reports by a flag and/or message indicator, the Global Accounting groups or client manually calculates the amortization and accretion adjustments. The Global Accounting personnel and supervisory personnel review both the automatically and manually calculated adjustments for completeness and accuracy. MCH also allows multiple base amortization calculations for multi-basis structures. See discussion under the "Multi-Basis" heading.

The Reports are only appropriate for investment companies using the identified cost methodology. For investment companies using the average cost methodology, bond premium amortization and discount accretion adjustments are calculated manually by Global Accounting personnel. Both the Global Accounting personnel and supervisory personnel review the manually calculated amortization adjustments for completeness and accuracy.

Multi-Basis

Multi-Basis, a functionality in MCH, allows multiple base calculations/structures (e.g., U.S. GAAP, U.S. Tax, AICPA, IFRS) for any fund or portfolio. Multi-basis allows specific calculations and rules (par rules, amortization rules, transaction costs, valuation, corporate actions rules, etc.) to post related transactions to multiple accounting basis within MCH. The anchor basis is the primary basis and the comparison or second basis is the alternative basis. Multi-Basis accounting processes calculations or compiles data by utilizing either a default or customizable rule structure depending on which basis is being utilized (e.g., AICPA or IFRS).

Transactions on the anchor basis in MCH are transmitted to the second set of books real-time or via batch depending on which basis is being used (AICPA or IFRS). Multi-Basis generates Real-Time alerts (i.e., amortization parameters out of tolerance, cost differences, security differences, and corporate action related issues) and Reporting alerts (i.e., share discrepancies, reconciliation difference between the anchor and comparison basis). Some Real-Time alerts halt updates from the anchor fund to the second basis until cleared.

In the U.S., Global Accounting personnel review Real-Time and Reporting Alerts and take the appropriate action to clear the alerts prior to the books being closed at each financial reporting period. Multi-Basis maintains a history of the in-progress and cleared alerts, including date and time the alert was cleared, how the alert was cleared and who cleared the alert.

In Australia and Canada, reports are generated and/or reconciliations are prepared and Multi-Basis reports are generated at each reporting period to identify discrepancies between the anchor and second basis. Discrepancies above the defined tolerance limits are researched and resolved. For clients electing to amortize for IFRS reporting, MCH automatically calculates amortization/accretion using the IFRS effective interest method.

Multi-Basis maintains a core set of reports which includes, but is not limited to the following:

- Trial Balance Comparison
- Holdings report
- Purchases report
- Sales report
- Amortization Income Comparison report
- Realized Gain/Loss report

Variable Rate Securities

Rate resets for VRDNs are automatically received from Municipal Market Data (“MMD”) (see Security Masterfile). Rates are transmitted into State Street from MMD twice daily. File transmission is monitored to verify receipt. Rate change tolerance exceptions are reviewed by Reference Services personnel on a sample basis to monitor the accuracy of transmission. Once approved by Reference Services personnel, the rates are released, and the MCH accruals are automatically updated.

Rates not received automatically through MMD or Bloomberg are obtained manually and input into MCH by the individual Global Accounting groups and reviewed for accuracy.

Principal Paydowns

Paydown factors for government securities and certain non-pooled securities are received automatically through vendor transmissions (see Security Masterfile). Application controls such as automated tolerance checks and transmission edit checks are performed and the receipt of each file is reviewed for completeness.

For some securities, paydown factors must be processed manually to MCH. Manually processed paydown factors are obtained from other vendor sources or the client/investment manager. A record of securities processed manually is maintained.

Payments received through SMAC/GSMAC are automatically applied to the clients' accounts on Hogan, SMAC/GSMAC and MCH (if in agreement). Payments that vary from accrued amounts are researched by Global Accounting personnel and resolved. Claims are submitted to the paying agent for payments not received.

Expense Accruals

Expenses are accrued based on budgeted expense amounts in accordance with client or other authorized party instructions. Funds are disbursed when bills are received and authorization is obtained. Fixed expenses are generally determined based on the annual fee divided by business days in the calendar year and remain constant unless written authorization from the client is received. Variable expenses change based on certain expense drivers (e.g., asset management fees vary based on changes in average net assets) and may be modified to reflect changes in the key drivers. The variable expense rate is provided by the client or other authorized party. Expense accruals are calculated and recorded to the fund's general ledger daily, either automatically in MCH directly, via Expense Manager functionality or via off-line spreadsheet by Global Accounting groups based on established accrual rates. Expense entries are subject to validation checks on MCH.

Expense accruals are automatically or manually recorded on MCH directly or via Expense Manager functionality as instructed by or agreed with the client or other authorized party. A review by Global Accounting personnel of manually posted expense accruals or adjustments on MCH or Expense Manager is performed for accuracy. Expense Manager automatically calculates periodic expense accruals and adjustments which are reviewed and approved by the Global Accounting groups in Expense Manager for transmission/posting to MCH. Changes to expense accruals must be approved by Global Accounting personnel in Expense Manager before the application will post the entries to MCH. For daily priced funds, the Global Accounting groups monitor the impact of expense accrual adjustments to the fund either manually (e.g., Global Accounting personnel review for large or unusual fluctuations) or automatically (e.g., eHorizon, Livewire, MyNAV).

Multi-Class Allocation

A multiple share class allocation ratio to allocate fund-level income, expense and realized/unrealized gain/loss amounts to the share classes is calculated daily. The ratio is calculated automatically through MCH. MCH

calculates the amount to allocate to the share classes based on the predetermined ratio at the fund level. eHorizon or MyNAV automatically generate an alert if the fund-level net assets do not reconcile to the sum of the class-level net assets.

Pooling Structures

State Street Bank Luxembourg S.C.A. and State Street Funds Services (Ireland) Limited have both intra- and extra-fund pooling service capabilities, allowing portfolios from the same or distinct legal entities to be pooled. The individual security positions in a pool are owned by the sub-funds participating in the pool proportionate to their ownership ratios. State Street's pooling platform is fully integrated into the proprietary custody and accounting platform and provides a robust and scalable solution for complex intra- and extra-fund pooling structures. The pooling process is fully controlled through one centralized processing control screen called PLCP, which is the MCH function code assigned to the Pooling Control Cycle/Process.

All pooling controls take place within the PLCP functionality which is embedded in core MCH technology. The process is opened when contributions and/or withdrawals are allocated from the pool's participant fund(s) to the pool. Upon creation of contribution/withdrawal records for the current day, Global Accounting personnel run the request to update the ownership ratios. If there have been no transactions for the day, a zero contribution record is posted. The fund group performs a reconciliation to validate the system-generated ownership ratios and differences are researched and resolved. Based on the new ownership ratios, rebalancing activity is automatically generated and posted at the participating funds' level. MCH replicates new pool activity and automatically posts it at the participating funds' level. Trades that have not been released are identified via an electronic trade processing queue and manually released by Global Accounting personnel. Once the pooling cycle has been completed, the participating fund's NAV calculation is completed using State Street's standard systems, controls and procedures.

Security Valuation

Global Pricing Services

Global Pricing Services ("GPS") is a team within Securities Valuation Shared Services that is responsible for the collection, validation, enrichment and distribution of pricing-related data for State Street's global client base. GPS supports the pricing needs for clients requiring daily pricing on the EPW application and clients requiring less time-critical, non-daily valuations on MCH.

Pricing-related data is systematically obtained from third-party vendors as the markets close around the globe or at specific intra-day valuation points for European clients. Pricing administration and data center personnel work in tandem to monitor these transmissions for timeliness to ensure files are received and processed in time to meet client deliverables. Once the files are received into State Street, via real-time or batch data feeds, the security price data is automatically populated in the pricing database, NAVigator, where they are available for data content review by GPS personnel.

EPW electronically retrieves prices from the pricing database based on the unique asset identifier and the associated EPW price source code. EPW systematically identifies pricing exceptions (including derivatives security prices). EPW systematically requires all exceptions to be cleared prior to the prices being delivered to the applicable receiving systems. Upon completion of the batch job, updated prices on MCH are available to internal and external users. Once the vendor prices are loaded to the pricing database, they undergo a rigorous screening process by GPS personnel. Daily, the following checks are performed at the file/vendor source level:

GPS personnel perform a second source verification of equity prices. This verification is performed where there are two prices available from the primary and the secondary vendors. There is a 0% tolerance for this comparison on closed markets and a 1% for intraday snaps. Any exceptions on the closed markets are researched, typically to Bloomberg, and resolved prior to dissemination throughout State Street applications such as MCH and EPW. Intraday reports are reviewed to identify significant issues with the vendor snapped data. In addition to the second source verification of equity prices, GPS also performs a day-over-day tolerance of these prices. Price movements breaking a predetermined threshold, versus a relevant local index, are researched for news and other relevant information to substantiate the price movement. The results of this research are stored centrally on the GPS intranet website for all global business areas to review.

Fixed income security prices undergo a security level price audit. Current day prices are compared to the previous day at a predetermined threshold to identify securities that fall outside the tolerance level. Security prices that do not pass the tolerance checks are returned to the original vendor in the form of a price challenge.

In addition to the collection, validation, enrichment and distribution of pricing-related data, GPS also supports the administration functions on the EPW application. GPS personnel set up new funds and process changes (including fair value) to existing funds in EPW upon receipt of the appropriate EPW Fund Add form from authorized personnel. All completed fund set-ups or changes to EPW are reviewed by a second individual in GPS by comparing the information posted to EPW against the EPW Fund Add form. Exceptions are followed up on and resolved.

Exchange Rates

Currency exchange rates (used for translation) are obtained at specific hourly intervals by GPS throughout the day for State Street's global client base from a third-party vendor.

OTC Derivatives

The review of pricing vendor feeds in DHub is performed in Canada, China (Hangzhou), Poland and the U.S. (Sacramento) for the global client base. OTC valuations are performed by various internal State Street groups using third-party vendor pricing sources, counterparty/broker quotes and/or investment manager/client

provided pricing. Centralized Processing units are directed by clients on the pricing methodology including the hierarchy of pricing sources, preferences by product, tolerance thresholds and timing requirements. Once prices are obtained, valuation teams are responsible for reviewing the integrity of the data, conducting price challenges and audits and distributing prices.

For portfolios and positions in DHub, DHub initiates scheduled jobs for supported products which automatically updates the positions in the vendor applications and internal valuation systems or by emailing a template to the vendor. Prices can flow automatically from vendor or internal valuation systems to DHub, be emailed by the vendor or downloaded from a vendor application. Security (which includes derivatives) prices received into DHub are applied to client holdings based on pricing hierarchy established with clients.

Once all vendor or internally calculated prices have been received electronically or manually loaded into DHub, security-level prices are applied to the fund-level holdings. Once prices are applied, an unpriced position check is completed using one of the following approaches and unpriced positions are addressed by generating and reviewing the OTC Missing Market price report or view via DHub Pricing Viewer to identify unpriced positions in DHub; manually reviewing that prices are applied to pricing group prior to generating the pricing output files; or after loading vendor or internally calculated pricing files, Centralized Processing units review the EPW pricing file for unpriced positions prior to distribution.

For OTC positions not maintained on DHub, the terms and conditions of new swap deals are manually input to a vendor template or updated to vendor websites and subject to review against source documentation by a second individual. The pricing files are obtained via email from the vendors, downloaded from the vendor websites or retrieved via other secure means. Unpriced position and tolerance checks are performed prior to the release/distribution of vendor prices.

Prices are sent to Centralized Processing units for upload to EPW or MCH. Centralized Processing units are responsible for completing cost/market value and Fund NAV impact checks to identify set-up issues occurring during trade capture or vendor set-up processes.

Centralized Processing units review prices rejected by EPW or equivalent and take appropriate action to resolve. Price reject reasons include manually input prices, tolerance breaks, no price or stale prices.

Enterprise Pricing Web ("EPW")

For funds on MCH or receiving systems (i.e., RKS, GP3, SCD), prices are received into EPW from the pricing database and the daily tolerance reviews are performed in EPW. EPW identifies valuation breaks based upon security price tolerance limits that are determined by the client. Edit checks are automatically performed by EPW and positions with rejected prices are identified on the Rejected Pricing Report. Centralized Processing units review manual source pricing data, price overrides and adjustments for authorization and completeness and then manually enter the information in EPW. The manually input price is reviewed by a second individual

for accuracy. The Rejected Pricing Report or equivalent (detailing the securities' previous and current-day prices, percentage change, reject reason code and status) is reviewed daily by a second individual in the Centralized Processing unit.

Price reject reasons include manually input prices, tolerance failure, no price or stale price. EPW systematically requires all exceptions to be cleared before the price can be delivered to the applicable receiving system. Once the prices are approved in EPW, they are sent to the appropriate downstream receiving systems.

European Pricing Automation Team

Certain vendor pricing feeds are received and processed directly by the European Pricing Automation ("EPA") team to meet specific client requests and for intraday pricing purposes. These feeds are monitored and are transmitted to EPW when received.

International Fair Value Pricing

Fair value pricing is performed in Canada, Ireland, Luxembourg, Poland, the U.K. and the U.S. within EPW. Accounts that hold non-domestic equities are at risk of arbitrage activity that can undermine the returns to long-term investors when asset prices become stale. Fair Value pricing may be required based on predetermined market triggers/indicators or specific market events as instructed by the clients. The fair value process is executed after the closing price is established but before the fund NAV is calculated.

Upon receipt of the EPW Fund Add Form, GPS sets the fund up for fair value pricing (e.g., vendor, trigger, exchanges and confidence level/significant measure, as applicable) within EPW after verifying that the set-up is approved by an authorized State Street employee. EPW automates the ability to invoke systematic fair value pricing based on available market triggers such as S&P 500®, Russell 1000® and Russell 2000® or on a daily basis as specified in the EPW Fund Add Form.

Upon client request or in accordance with the client's standing instruction, State Street utilizes the EPW application and receives fair value factors from third-party vendors, to apply fair value factors to closing prices from the local exchanges. The vendor feeds are monitored for receipt by GPS. EPW will not accept a file from a day other than the current day. Additionally, GPS reviews the files to determine whether they are complete.

EPW

During account set-up, fund groups specify if the default NAV is the Fair Value NAV or the Local NAV. For funds set up in automated mode, EPW automatically calculates and delivers the fair value prices as applicable. EPW automatically applies the correct price (fair value or regular price) as needed.

MCH Pricing

MCH transmits daily fund positions to be valued to the pricing databases. Pricing parameters (i.e., pricing sources, pricing methods, foreign exchange sources, tolerance levels) use a standard MCH pricing hierarchy unless instructed otherwise by the client. Priced holdings are available to users once the overnight batch job updates have been completed. The overnight batch cycle includes jobs that apply vendor prices to portfolio positions, after which time the prices are swept to downstream applications such as OSA-ASA.

GPS compiles a list of unpriced securities for MCH Pricing funds daily. GPS generates unpriced security reports from these holdings files periodically throughout the month and performs the necessary research to find alternative pricing sources to be obtained for month-end pricing on MCH. At month-end GPS releases prices from previously identified sources recorded in the unpriced security database and updates these prices to MCH for application to client holdings.

The OSA-ASA price tolerance audit performed by the Global Accounting groups identifies prices requiring further review, including manual, out-of-tolerance, new buys and no tolerance securities. Price tolerance reviews are not performed for non-daily priced Fund of Funds on MCH. The Centralized Processing units supervisory personnel review manual source pricing data, price overrides and other price adjustments (including fair value and other prices received directly from the client or authorized third party) to source documentation. Out-of-tolerance prices are challenged, investigated and corrected as necessary. New buy security prices are agreed to the purchase price. Those exceeding certain predetermined thresholds and no tolerance security prices (those securities for which the previous price was zero and are not a new buy) are agreed to a second source, excluding securities dual sourced by GPS. A review of the resolution of rejected or out-of-tolerance prices is performed by a second individual.

Money Market

In Ireland and the U.S. (for U.S. funds maintaining a stable \$1.00 NAV), money market funds are recorded on MCH at amortized cost. Periodically, in accordance with regulatory requirements and client instruction, Global Accounting personnel obtain market prices, where available, or use alternative pricing methods as authorized by the client. The fund's NAV, using the market prices, is calculated using either a database or priced through EPW and calculated using eHorizon functionality and is compared to the NAV at amortized cost or priced through EPW and calculated using eHorizon functionality. The report comparing amortized cost to market value is disseminated to the client for their review.

Net Asset Value

Master/Feeder Processing

The master/feeder functionality within MCH automates the allocation of income, expense and realized/unrealized gain/loss items from master funds to feeder funds. The functionality within MCH allows for the linking of feeder funds to master funds.

A feeder fund's available cash is systematically invested in a master fund in accordance with client feeder fund elections, in exchange for an ownership interest in the master fund's net assets. Where a flag within eHorizon is set to "on," a master fund to/from feeder fund cash movement must be processed before MCH allows master fund allocations to be processed and posted to a feeder fund. Subsequent allocations can be processed and posted; however, eHorizon generates an alert each time there is a cash balance in one of the feeder funds. The ownership interest (i.e., allocation percentage) is systematically calculated by MCH based on the feeder fund's proportional investment in the master fund. An alert is generated by eHorizon if the aggregate feeder funds' ownership interest in a master fund does not sum to 100%.

MCH systematically allocates daily master fund activity, including income earned, unrealized/realized gains/losses and expenses, for each distinct ledger account to a corresponding distinct ledger account at each feeder fund based on the respective feeder fund's ownership interest. At the end of each day, eHorizon automatically performs a master/feeder reconciliation to reconcile the sum of the feeder funds investment in master accounts to the net assets of the master fund. Differences exceeding a predetermined threshold are researched and resolved by a second individual.

Fund of Funds ("FOF")

For participating non-registered funds, the FOF processing functionality within MCH automates the allocation of per unit valuation (which includes the impact of per unit income earned, expenses and realized/unrealized gain/loss) from higher tiered funds to lower tiered funds. Daily, MCH automatically calculates the per unit value for each fund labeled a higher tiered fund (i.e., a Tier 1 fund). The per unit values are reviewed and manually or automatically approved by an authorized approver and are then stored within MCH. Once this process is completed, the per unit values are then applied to the total number of shares of the higher tiered funds that are owned by the lower tiered funds in order to calculate the lower tiered funds' per unit value.

eHorizon/MyNAV/Livewire

G/L Alerts is a functionality within eHorizon that provides exception-based reporting by defining impact rules and tolerances to general ledger activity and signals to the user(s) any activity that should be investigated and/or validated. G/L Alerts extracts general ledger data from eHorizon and triggers alerts based on rules and tolerance settings within G/L Alerts. Alerts can be viewed in eHorizon and/or MyView/MyNAV as G/L Alerts have been integrated into MyView/MyNAV to allow user(s) to have a comprehensive view of the fund's status. Global Accounting personnel research and resolve alerts and clear the alerts within eHorizon. A secondary review is performed on cleared alerts. Upon review and approval, cleared alerts flow into MyView/MyNAV.

MyNAV is a NAV validation control application which applies business rules and tolerances to accounting activity and signals to the user(s) any activity that should be investigated and/or validated. MyNAV extracts data from MCH and EPW and triggers alerts based on rules and tolerance settings within MyNAV. Alerts generated appear on the MyNAV alert screen. Global Accounting personnel research and resolve alerts and clear the alerts within the alert screen. All alerts in MyNAV must be cleared prior to the final NAV being struck.

MyNAV is integrated with MyView which allows users to utilize process monitoring to see the status of daily tasks and alerts. Signoffs performed within MyNAV feed directly into MyView. Alerts generated within MyNAV include NAV Roll, NAV Percentage Change, NAV Divergence (price divergence between classes and change in NAV divergence between classes), Class to Core Total Net Assets ("TNA"), Trial Out of Balance Alert and Prior Day NAV (Approved) not equal to Current Day Starting NAV.

Digital Alerts Service ("DAS") is an alert aggregation tool used by Global Accounting personnel to view alerts in real-time from MyNAV, G/L Alerts, and eHorizon at an aggregated level by pivots (e.g., CUSIP, fund). DAS provides the ability to research and resolve the relevant alerts in an aggregated manner. DAS is integrated with the aforementioned applications allowing alerts to be cleared in either DAS or the underlying alert application tools.

For certain funds in the U.K., Livewire (an exception-based application) is used to extract information from MCH and populate the Internal Control Report ("ICR") workbook with calculated NAV information. Livewire automatically verifies fund data and calculations using tolerances customized by the fund accounting manager or client. Out-of-tolerance conditions calculated are highlighted within the ICR. Global Accounting personnel research and resolve any out-of-tolerances reflected, as necessary, or provide an explanation confirming the movement as correct. A review is performed on the resolution of out-of-tolerance conditions by a second individual.

For funds serviced in Hong Kong, a periodic tolerance review is performed based on predetermined thresholds. If the predetermined threshold is exceeded, activity impacting funds' current day NAV is reviewed and resolved by senior Global Accounting personnel within required time frames.

For certain funds that are priced using MCH, OSA-ASA audits are systematically generated. The audits reconcile general ledger to subsidiary ledger account balances for cash, cost of investments, open trades, payables/receivables and pending foreign exchanges and rollforwards of prior period balances to the current period using current period activity for portfolio cost and shares, open trades, foreign exchange and realized gain/loss. Exceptions to OSA-ASA audits are reviewed, resolved and closed on OSA-ASA by Global Accounting groups. For funds priced on MCH for which no OSA-ASA audits are generated, activity reports directly obtained from MCH are agreed periodically to the trial balances. Exceptions are researched and resolved by Global Accounting groups.

Month-end reports such as the fund/trust's trial balance, statement of condition, portfolio appraisal, portfolio purchases and sales, gain/loss are generated and reviewed by Global Accounting groups.

A final NAV (defined as Net Asset Value per share throughout this report) price review is completed for each fund and is reviewed for accuracy by supervisory personnel.

Germany Final NAV Price Review

The final NAV is reconciled with the KVG. The reconciliation is performed by Global Accounting personnel and reviewed by supervisory personnel.

Driverless NAV (“DNAV”)

DNAV is a service which moves NAV processing from deadline-based to event-based operations. The system “drives” itself with minimal human intervention. Tasks and workflows within DNAV are conducted through straight-through processing with users’ time being used to analyze data and validate exceptions through automated alerts.

DNAV Onboarding

Prior to going “live” on DNAV, a fund must meet certain data eligibility requirements which includes being set up on certain related services/tools (e.g., Expense Manager, Income Change, GL Alerts, etc.). Given the eligibility requirements, not all funds are currently using the DNAV service.

Upon meeting the DNAV requirements, authorized personnel instruct the BOaT or the eHorizon Deployment Team (as applicable) to set up the fund on DNAV and EDW by either providing a fund number to “clone” or by submitting an eHorizon Fund Level Service Setup Request Form (which includes workflow specific to the fund, live date, fund type, etc.). Fund Accounting personnel perform a weekly review of funds set up on DNAV and communicate approval or submit required changes to the Global Delivery Simplification Team.

Critical Alerts

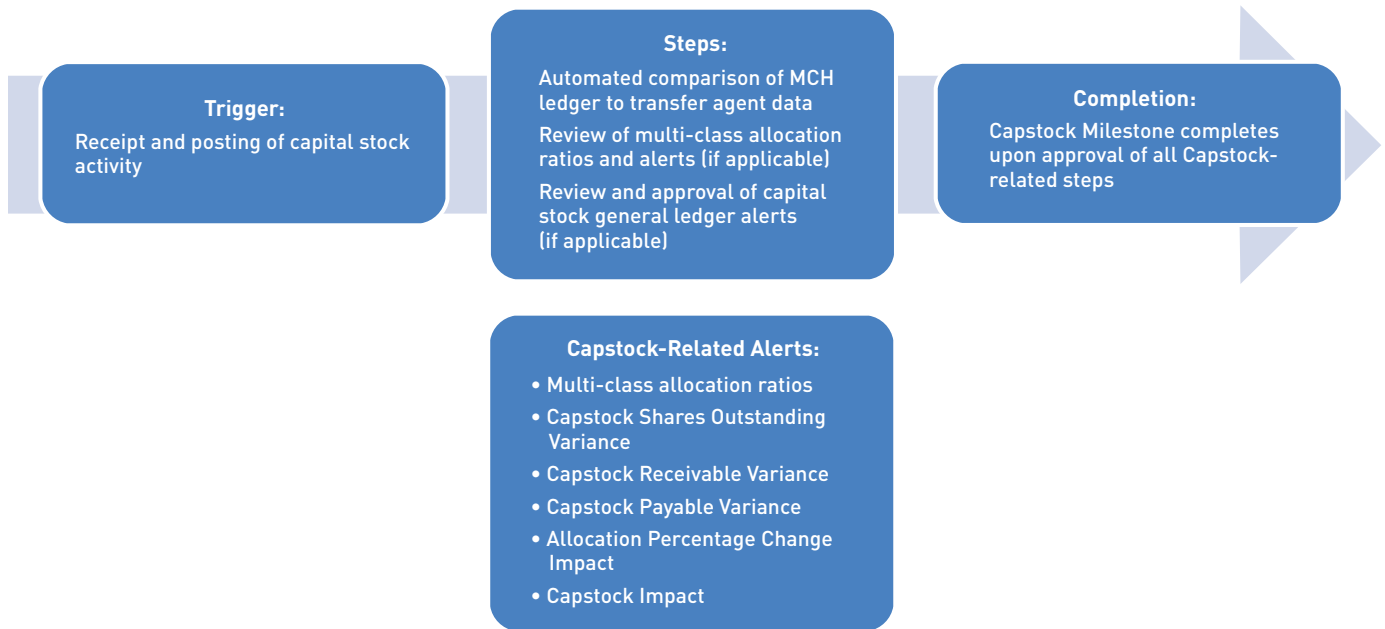
Certain alerts generated through DNAV tools are classified as “critical alerts.” Critical alerts are automatically generated when transaction-related tolerances are exceeded/breached. Critical alerts require the initial reviewer to investigate, research and resolve alerts by posting a response. A second individual must review the response and either approve or reject the response for further investigation. An approval is required before the alert is “cleared.”

Event Driven Workflow (“EDW”)

Upon completion of the set-up on DNAV, funds are able to leverage EDW functionality. EDW is a service which uses event-based operations to automate the processing of the NAV and reduce manual intervention. EDW leverages MyView/Process Monitor to link events (called “Milestones”) together to trigger subsequent processing. Events that do not complete automatically appear in a critical status in MyView/Process Monitor to be actioned before processing can continue. Reversal and reprocessing logic is built in to ensure accurate deliverables. Critical alerts are generated throughout the processing of each of the EDW milestones described below.

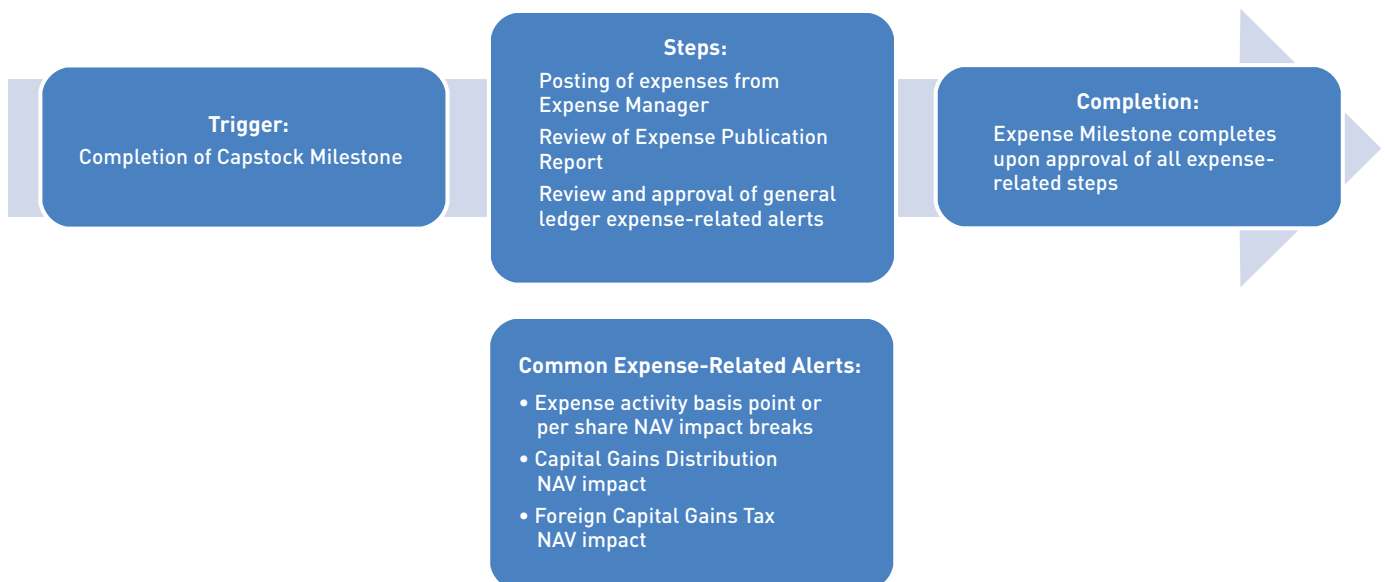
Event Driven Workflow Milestones

Capstock Milestone



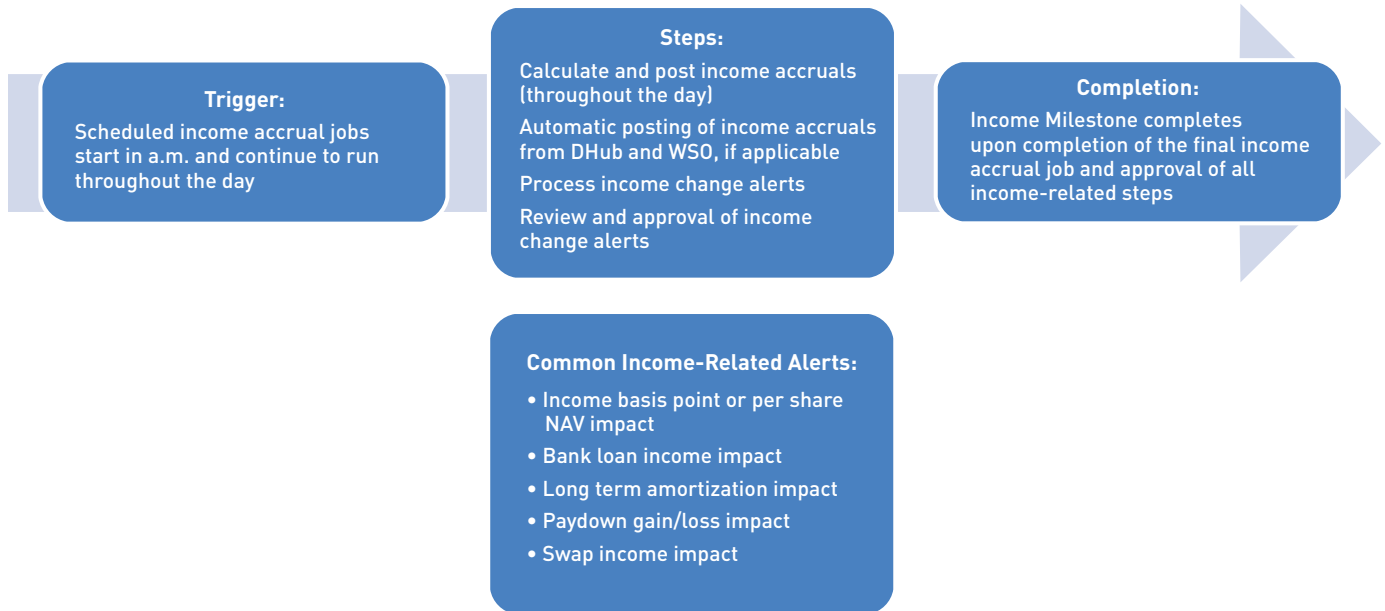
Event Driven Workflow Milestones

Expense Milestone



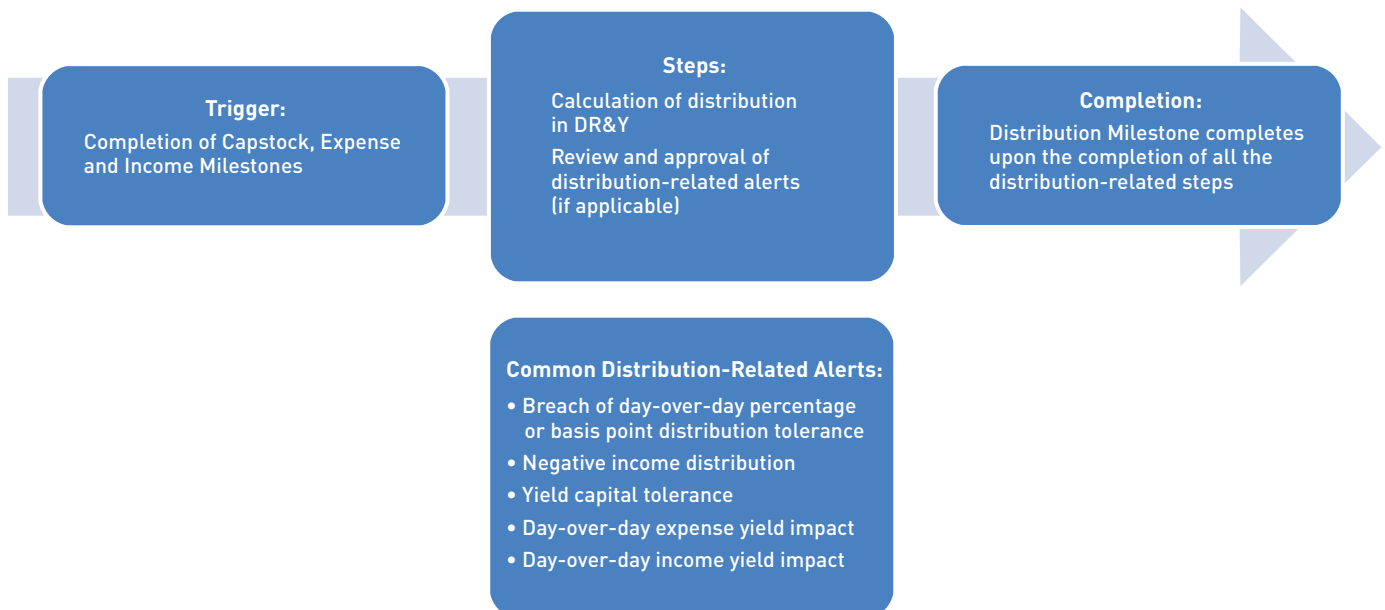
Event Driven Workflow Milestones

Income Milestone



Event Driven Workflow Milestones

Distribution Milestone (Daily Distribution Funds Only)



Upon approval of all critical alerts and completion of EDW milestones, MCH automatically calculates the NAV.

Mark-to-Market Workflow

Balance sheet accounts denominated in foreign currencies are marked to market in line with the fund's pricing frequency. MCH automatically marks to market the foreign denominated balance sheet accounts (e.g., interest receivable, dividends, payables/receivable and security holdings, etc.) using either the current or prior day's exchange rate (based on the fund's setup) according to how the fund is set up in the system. The associated unrealized appreciation/depreciation is automatically posted to the fund's general ledger. The MyView status screen is automatically updated if mark-to-market does not complete. A critical alert is automatically generated and reported in DAS if the appreciation/depreciation for forward or spot contracts exceeds a predefined tolerance. Alerts are investigated, researched and resolved by designated personnel based on predefined criteria. A second individual reviews the resolution response and approves the closure of the alert.

Hedge Workflow

Hedge Workflow automatically posts currency hedging transactions from the hedge sleeve to the related parent share class. Hedge Workflow posts settled cash, realized gain/loss and unrealized gain/loss from the hedge sleeve to the corresponding parent share class. Failed postings appear in MyView. eHorizon automatically generates an alert if the sum of the corresponding parent class balances do not agree to the child class (hedge sleeve) balances. Daily priced funds automatically generate a critical alert that is reported in DAS if the impact of the hedge entries exceeds a predefined tolerance for funds that make the specific election.

For certain clients domiciled in the U.K., eHorizon systematically calculates the amount of the income/capital split.

Flexible Fund Cycle

The flexible fund cycle automation within MCH allows fund groups to calculate fund NAV at any time on any day. The fund's accounting records can be closed and rolled forward at any time during a day with month end or year end falling on any business day independent of scheduled cycles. Same-day client reporting is available upon the close of the fund.

Fund transactions including corporate actions received prior to the designated closing time are automatically posted on MCH to the current accounting period. Fund transactions including corporate actions received after the designated closing time are automatically posted to the next accounting period. Fund closing accuracy controls (e.g., eHorizon, OSA-ASA audits) are completed by Global Accounting personnel based on the designated closing time and are reviewed for accuracy and completeness by supervisory personnel.

Money Market Funds

Certain funds in the U.S. adopted a floating NAV as a result of money market reform. For money market funds maintaining a floating NAV, security valuations are received from EPW. Alerts are automatically generated through eHorizon for each valuation period (i.e., intra-day) and are period specific. A review of the NAV change is performed and differences in account balances exceeding predefined thresholds are investigated and resolved timely and a review of the NAV change is performed by a second individual.

Reporting

Monthly Reporting

Month-end reports such as the fund/trust's trial balance, statement of condition, portfolio appraisal, capital stock activity (mutual funds only), portfolio purchases and sales, gain/loss, income, etc., are generated and reviewed.

Luxembourg

State Street Bank Luxembourg S.C.A. ("SSBL") uses custody and accounting applications described in this report. Controls in place are designed to determine whether there is adequate segregation of duties between custody functions (maintaining custody of securities; collecting dividend and interest income; receiving notification of corporate actions and recording such corporate actions; and recording and settling securities purchases and sales transactions in the custody application) and portfolio accounting and valuation functions. Key central administration and custody functions are subject to separate preparation and review processes. Custody and accounting records are automatically reconciled with results reported through the appropriate management reports.

Written procedures describing operational standards have been established and communicated to SSBL employees. Specific custody and accounting procedures have been drawn up in relation to portfolio valuation, capital stock and trade processing, compliance with investment policy and investment restrictions, NAV accuracy checks and other pertinent topics. Where some central administration functions are delegated to several parties, procedures also define the coordination and overall oversight performed by SSBL.

SSBL uses a remote-access computing network for the execution of tasks in support of its custody and recordkeeping functions. SSBL has full access to the systems required to support its normal operations and can enter data and retrieve reports on a real-time basis. SSBL is fully aware of the operating conditions of the computer applications on which it relies and must give its consent for alterations to the applications that impact Luxembourg operations.

Luxembourg investment funds and structures are required to send financial data on a monthly, quarterly and annual basis to the Luxembourg regulators and/or supervisory bodies (i.e., BCL, CSSF). In addition, specific data elements/reports are filed with the Luxembourg Business Register ("LBR"). The content and reporting period/deadline requirements for such reports are defined by the regulators. Period-end reports

are generated using accounting data from MCH/eHorizon (including DHub etc.) via automated tools or manually. For nonautomated funds (i.e., complex structure, funds priced after the month-end), the reports are manually prepared by the Client Service Operations teams and are forwarded with supporting documentation to a centralized Regulatory Reporting team. Both automated and manual reports are reviewed for accuracy. Any errors identified on the report are corrected on the report, and only the approved final version of the report is transmitted electronically to the regulators within the defined deadlines.

Australia APRA Reporting

New portfolios or changes to existing portfolios are processed on ESP based on information from the client, applicable updates or new reporting requirements. A review of the set-up or modifications is performed by a Regulatory and Tax Services (“RTS”) Senior Accountant or above and the review is evidenced on the General Fund Setup and Data Collection checklist. A quarterly reconciliation is performed by RTS personnel between data in ESP to the MCH Trial Balance (composite level) and reviewed by a RTS Senior Accountant or above. The review is evidenced on the respective APRA form checklist. Differences are researched and resolved.

U.K. Collective Investment Schemes

As part of its contractual responsibilities, Global Delivery U.K. is required to identify all unit/share pricing errors in authorized collective schemes that impact the fourth significant figure and report these to the client. Errors identified are logged centrally and are reviewed by Global Delivery U.K. supervisory personnel.

Financial Reporting

The accounting and custody controls described in other sections of this examination report should be considered by users of this report when analyzing the controls at State Street designed to completely and accurately record and process client financial information. The controls described in this report collectively contribute to the accurate recording of client financial data. As described in other sections of this report, client financial data is processed and recorded in MCH; Financial Reporting uses the client’s financial data reflected in the fund’s accounting records on MCH and information provided by the client and third parties (that is subject to the controls and procedures at those organizations) to create shareholder reports.

The U.S. Proofs and Audit team (a group within Shared Services) prepares and reviews period-end proof packages (MAPS) and/or Ledger to Sub-ledger (“LSL”). A manager in the Proofs and Audit team or Client Operations team reviews each completed proof package for accuracy. Any items found in error during review are researched and resolved. The format of the proof package may be modified to suit a particular type of fund or client; management-level personnel approve any modifications to the standard package. The completed period-end proof packages are provided to Financial Reporting. For Australia and in-scope locations in Europe, the preparation and review of MAPS and/or LSL reporting is performed by Financial Reporting, Global Accounting and other related business units (i.e., custody, depositary/trustee, etc.).

United States Financial Reporting

Semi-annual and Annual Reports to Shareholders and Quarterly Schedule of Investments

Financial Statement Template Set-up

Financial Reporting creates customized financial statement templates for each client prior to the first shareholder reporting cycle for which State Street is responsible. Financial Reporting works closely with the client so that each template suits the client's needs. Templates can be modified upon the client's request. Templates are maintained in FundSuite SX or FundSuiteArc (U.S.), applications offered by Donnelley Financial Solutions ("DFIN"). The integrity of the template design and information presented is maintained by restricting access via the application, password protection features or locating the templates in restricted network directories.

FundSuite SX/FundSuiteArc (U.S.)

FundSuite SX and FundSuiteArc (U.S.) accept data feeds from multiple sources and incorporates data elements using a sophisticated preprocessing routine based on specifications provided by State Street. This enables generation of schedules specific to clients' needs with little manual intervention.

The application is comprehensive and adjustments made to a schedule automatically trigger related downstream adjustments. The Notes to Financial Statements module provides tools to easily compare and contrast pieces of text. Each module of FundSuite SX and FundSuiteArc (U.S.) provide edit tracking capability and is set up to identify when changes are made.

Adjustments made via the FundSuite SX and FundSuiteArc (U.S.) applications are automatically logged; capturing the date the adjustment was made, the user name making the change and the account change details (e.g., account code, account, debit/credit amount). Reports from the FundSuite SX and FundSuiteArc (U.S.) applications can be generated which captures manual adjustments posted to accounts. A series of reports provides management with the ability to review audit trails of adjustments made. Access to FundSuite SX and FundSuiteArc (U.S.) is restricted to specific clients and accounts.

Report Creation and Analysis and Preparation and Maintenance of the Shareholder Report Checklists

State Street Financial Reporting maintains a series of checklists used during the financial statement preparation process including the Financial Reporting ("FR") Combined Checklist and a GAAP and Regulation S-X Checklist (together, the "Shareholder Report Checklists") that must be completed and reviewed by a Financial Reporting manager and/or officer prior to the completion of each financial reporting cycle.

The Portfolio of Investments ("POI") Preparation and POI Review checklists are used in completing a fund's Portfolio of Investments for inclusion in the financial statements and quarterly schedule of investments reporting. The FR Combined Checklist includes financial statement review procedures designed to determine whether financial statement balances are completely and accurately recorded in a fund's financial statements. The GAAP and Regulation S-X Checklist provides a comprehensive list of disclosure requirements and is

completed for each set of financial statements. A review is performed by a second individual to verify that new and existing rules and regulations governing appropriate disclosures have been incorporated within the shareholder report completely and accurately and that the shareholder report accurately reflects period operations.

Period-end portfolio holdings information and general ledger balances from MCH are downloaded or manually posted to financial statement templates to create draft financial statements. The Financial Reporting manager and/or officer reviews the draft financial statements, including the quarterly schedule of investments required by Form N-PORT, Part F and the completed Shareholder Report Checklists, for accuracy and completeness. This review includes tracing financial statement disclosures back to Fund Accounting records or third-party-provided source documentation and reviewing mathematical accuracy of the financial statements. Discrepancies between draft financial statements and source documentation are researched and resolved.

Any “No” responses on the GAAP and Regulation S-X Checklist indicate that a required disclosure is not made in the financial statements. The explanation for each “No” response is documented on the GAAP and Regulation S-X Checklist and reviewed by Financial Reporting personnel.

State Street has established a Disclosure Controls & Procedures Committee (the “Committee”) to monitor industry regulatory developments.

Information Provided by the Client or Third Parties

The client provides the fund’s Management Discussion of Fund Performance (“MDFP”) and submits the completed MDFP to State Street or to the printer directly. Depending on the level of contractual client service, Financial Reporting reviews that certain disclosures made in the MDFP are consistent with disclosures made in the remainder of the shareholder report. In addition to the MDFP, Financial Reporting receives certain information from the client or other third-party service providers that is required disclosure in the financial statements. This information includes, but is not limited to, tax disclosures for clients to which State Street does not provide tax services, board of trustees/directors information and proxy voting results. State Street maintains documentation to support disclosures if provided by the client or other third-party service providers but does not perform procedures to determine the accuracy and completeness of those disclosures.

Australia Financial Reporting

For clients in Australia, the RTS Team creates and reviews a customized financial statement template within FundSuiteArc (Australia) prior to the first reporting cycle for which State Street is responsible for preparing the applicable financial statements. Access to the templates which are maintained in FundSuiteArc (Australia) is limited to authorized personnel based on job responsibility. The RTS Team’s Senior Associate and/or Officer reviews the draft of the financial statements for accuracy and completeness and traces financial statement disclosures back to the fund accounting records and completes a reviewer checklist. Discrepancies between the draft financial statements and the source documentation are investigated and resolved.

Industry developments are monitored by the RTS Team and the master financial statements checklist is updated as required to reflect current industry requirements.

Manual general ledger adjustments made via FundSuiteArc (Australia) are logged including the date the modification was made, the user name making the change and the account change details (e.g. account code, account, debit/credit amount). A system report can be generated which captures manual general ledger adjustments posted to each account, which is reviewed by a RTS Senior Accountant or above. Key reports such as the Financial Workbook, Holdings, Manual journals listing and Statement of Investments – FVH and Security Type, are generated by FundSuiteArc (Australia) after the completion of the financial statement preparation process and are reviewed by the RTS Team.

EMEA Financial Reporting

Semi-annual and Annual Reports to Shareholders

Financial Statement Template Set-up

For clients domiciled in Ireland, Luxembourg, Switzerland and the United Kingdom, the applicable Financial Reporting Team leverages a standard financial statement template that is agreed and potentially customized based upon the feedback provided by the client prior to the first reporting cycle for which State Street is responsible for preparing the applicable financial statements. The templates are created and maintained in the FundSuiteArc (EMEA) application and access is restricted via application security features or locating the templates in restricted network directories. Access to the templates in FundSuiteArc (EMEA) is limited to authorized personnel based on job responsibility.

Manual general ledger adjustments made via FundSuiteArc (EMEA) are logged including the date the modification was made, the user name making the change and the account change details (e.g., account code, account, debit/credit amount). A system report can be generated which captures manual general ledger adjustments posted to each account.

Report Creation and Analysis and Preparation

A primary review of the draft financial statements, including primary statements, schedule of investment and related notes for each fund is performed by the Financial Reporting Teams for accuracy and completeness. The review includes tracing financial statement disclosures back to the fund accounting records or third-party-provided source documentation and data in the spirit of ensuring the overarching accuracy of the draft financial statements. Financial Reporting Teams leverage checklists which cover local and/or fund-specific controls to ensure accuracy and completeness of disclosures. Financial Reporting Teams also review and amend such checklists to verify new and existing rules and regulations are covered, as agreed with the client and their auditor during the prep meeting, as well as verify that appropriate governing disclosures are included in the reports correctly and the report accurately reflects period operations. The financial statements and associated disclosures are subject to a secondary review (4-eyes principle).

Information Provided by the Client or Third Parties

The client provides the Management Discussion of Fund Performance ("MDFP") and submits these to either State Street or the printer/typesetter directly, based on the service agreement with the client. As far as possible, Financial Reporting reviews for certain disclosures in the MDFP that they are consistent with other disclosures in the remainder of the shareholder report. Financial Reporting receives other information from the client or third parties which are required for/as disclosures in the financial statements. Such information may include, but is not limited to, tax disclosures, performance and risk indicators etc. Documentation is maintained by State Street to support disclosures provided by the client or third parties, but does not perform procedures to determine the accuracy and completeness of such disclosures.

Securities Finance (Agency Lending)

State Street's Securities Finance Agency Lending department lends on behalf of approximately 250 custody and third-party clients. The unit is organized based upon the following lending programs: U.S. Equity and Corporate Bonds, International Equity, U.S. Fixed Income and International Fixed Income. Securities Finance Agency Lending's central responsibilities include lender and borrower approval, loan processing and maintenance, third-party client processing, collateral investing and monitoring and loan income distribution to clients. Securities Finance Agency Lending operations teams are located in Canada, India, the U.K. and the U.S. These locations provide support to State Street's global client base. Securities Finance operations located in Australia are not included in the scope of this report.

Risk Management and Borrower Oversight

ERM oversees the Securities Finance Agency Lending program via its vertical and horizontal risk groups. A vertical group is aligned with the agent lending business supporting business managers with risk management, measurement, and monitoring activities, while the horizontal risk group identifies and monitors credit risk throughout State Street and defines credit risk policies and procedures. Both the vertical and horizontal risk functions report to State Street's Chief Risk Officer.

State Street's credit risk management governance includes the following activities:

- Establishing a comprehensive credit risk policy framework
- Monitoring and managing credit risk across all business segments, including transaction and exposure approval
- Assigning and managing credit authorities in connection with the approval of credit exposure
- Determining the allowance for credit losses and ensuring appropriate credit risk-based capital management

As part of the State Street's credit risk management framework, the credit risk inherent to the Securities Finance Agency Lending program is identified, measured, and monitored against approved limits. All extensions of credit and the creditworthiness of counterparties are reviewed at least annually.

Borrower and Lender Authorization

Borrower and lender authorization and set-up is performed in the U.S., United Kingdom and India for the global client base. Prospective borrowers are approved in accordance with State Street's ERM guidelines. Borrower participation in the Securities Finance Program requires execution of a comprehensive borrower agreement that specifies acceptable types and percentages of collateral coverage, custody of collateral, securities subject to the lending program and risk of loss and risk bearer. Completed borrower start-up forms must be reviewed and approved by various levels of Securities Finance management prior to entry into the DML application, the primary application used by Securities Finance for the lending of client portfolio securities. Input into DML is reviewed for accuracy by appropriate personnel.

Lender participation in the Securities Finance Program requires execution of a comprehensive lending contract. For new lenders, a requisite start-up form is completed that specifies investment vehicles for collateral investment, participating lender accounts and lender restrictions (borrower, collateral, security or settlement), and is reviewed and approved by personnel from various groups within Securities Finance and entered into the DML application. Lender modification forms are also reviewed and approved by personnel from various groups within Securities Finance and entered into the DML application. Fee splits are entered into Spire and inputs into both DML and Spire are reviewed for accuracy by appropriate personnel.

Loan Restrictions

Loan restrictions (e.g., loan programs, collateral types, restricted borrowers) detailed in lender and borrower start-up forms are input to DML. Restrictions input to DML are reviewed for accuracy. Other restrictions may be monitored outside of DML by Securities Finance on a daily basis. The DML application tracks loan restrictions (regulatory, borrower or lender requested) and automatically removes the participating lender's restricted securities from the pool of available securities.

A list of approved borrowers is available online for lenders to review for any affiliates or conflicts of interest. Securities Finance monitors open loans for compliance with lender and borrower restrictions regularly.

Loan Processing

Securities Finance receives a request to borrow a security or hold a security to be loaned at a future date. The Securities Finance trader reviews the DML application to determine whether the requested security is available to be loaned currently or held for a future-dated loan. If Securities Finance designates a security to be held for loan at a later date, the hold status may be terminated if another broker requests a loan on the position. DML lists each fund that participates in securities lending and the securities available for lending. DML automatically calculates loan value and collateral required from the borrower. The trader verifies the amount of collateral required from the borrower based upon the collateral calculation performed by DML.

The loan is input by the trader into the DML application and assigned an internal reference number for tracking purposes (U.S. equity, international equity and corporate bond loans may also be entered automatically).

to DML through a systematic interface with participating broker/dealers). DML automatically determines the borrower's credit limit, availability of free securities, opening and daily margin requirements and loan concentration based on lender restrictions. DML automatically notifies the settlement area of the loan.

DML automatically allocates the loaning of securities based upon an established portfolio queue. This allows for a fair and weighted allocation of loans based on the amount of securities the portfolios have available to lend. Operations and trading personnel have the ability to override the automated queuing process under prescribed circumstances. User access to process override transactions is limited to specific personnel and access is controlled by the respective employee's manager. Overrides are processed to assist in loan processing in certain circumstances, including but not limited to, corporate actions and market restrictions. Users that have access to process overrides are reviewed annually for appropriateness based on job responsibility. Users are required to enter a mandatory reason code in DML when processing override transactions. Mandatory reason codes are established and approved by the Securities Finance compliance department. Once a loan has been entered into DML, the loaned security is delivered to the borrower through the various clearing organizations. Failing loans are monitored, researched and resolved by the appropriate settlement desk.

For borrower requests received electronically, DML automatically matches loan requests to portfolios by CUSIP and description, and loans on securities are allocated and granted. Any loans granted are executed based on predetermined rebate rules and dependent upon lender and borrower criteria.

Loan Maintenance and Borrower Agreement Monitoring

Global Income Services is responsible for tracking income receivables on loaned securities. Daily, Global Income Services generates claim sheets for income receivables identified on loaned securities. After claim sheets are distributed, the income receivables are reviewed with the borrower by Global Income Services. The borrower remits payment to Global Income Services directly. The details of these conversations may be documented in the SLCP tracking tool ("SLCP").

Global Delivery Corporate Actions is responsible for the processing of corporate actions. Corporate action announcements are received from Corporate Actions Processing via a feed into SLE. Corporate action notifications are compared to lending activity. Securities that are affected by corporate actions are subject to lending activity restrictions. Required modifications are processed to the on-loan positions in DML, or the securities are called back from the borrower. Lender entitlements are collected from the borrowers and distributed to client accounts.

Daily, as part of a multi-step reconciliation process, Securities Finance personnel reconcile several processes which include a reconciliation of daily transactions (loans, loan terminations and mark-to-markets) with each borrower, a reconciliation of daily collateral transactions with each borrower (cash and non-cash collateral) and a final collateral reconciliation to DML. Included in these reconciliations is the process of verifying the DML

loan activity totals (including new loans, loan terminations and mark-to-market) on Securities Finance's DML broker transaction sheets. Additionally, the Securities Finance representative identifies rejected DML loans, returns or collateral transactions and adjusts the position to reflect the correct settlement.

Online cash transactions are posted to transfer end-of-day balances for daily loan activity including new loans, returns and marks-to-market. Securities Finance's cash totals for all borrower transaction sheets are reconciled to depository systems and are reconciled to the appropriate group's cash and security collateral accounts. Reconciliations are reviewed for accuracy by a second individual.

For lenders who are also custody clients of State Street, DML on-loan security positions are reconciled to SMAC/GSMAC on-loan positions via Duco. Differences are researched and resolved. For lenders who are not custody clients of State Street, DML on-loan security positions are matched to custodian on-loan positions per statements received from the third-party custodian via Duco. Differences are researched and resolved regularly. Daily, Securities Finance reviews a reconciliation from external vendors (Loanet, Equilend or Pirum) comparing shares on loan, cash and rates, or a subset thereof, between State Street's DML application and the borrower's records. Exceptions identified on the reports are researched and resolved. In the event that a counterparty's records are not available on a given business day, Securities Finance works with the external vendor and/or counterparty to receive the records and, upon receipt, review the relevant reconciliation and perform timely research and resolution of exceptions identified.

Collateral Maintenance

The loan's collateral amount is determined during loan negotiations. Collateral receipt is confirmed through review of Hogan/IBS and SMAC/GSMAC or reporting from the tri-party custodian. To monitor borrower exposure on a daily basis, loan market value is compared to collateral market value for each broker account in the aggregate and individual loan level. If the borrower is not adequately collateralized, the borrower is contacted and required to deliver additional collateral. Securities Finance performs an End-of-Day Proof Balance Sheet that reconciles DML activity for the day, including mark-to-market adjustments, by broker on DML. This reconciliation is secondarily reviewed. Daily feeds from Global Pricing Services automatically update the loaned security prices or where market practice dictates an internationally recognized pricing source may be used. DML systematically recalculates the collateralization threshold and automatically determines if additional collateral is required. Securities Finance completes a reconciliation via Duco of the required collateral per DML to the non-cash collateral received per SMAC/GSMAC the following day. Exceptions are researched and resolved.

Collateral Investment and Monitoring

Cash collateral is invested in the investment vehicle authorized by the lender per the lender's approved start-up form or subsequent modification forms. On a daily basis, Securities Finance accountants reconcile cash collateral balances per DML to the investment manager's balance for the investment vehicle per Spire and a secondary review is performed via the Manager's Check file. Discrepancies over a predetermined threshold are researched and resolved.

Spire is configured to calculate, allocate and record interest income from collateral investments to client accounts through Spire based on the lender start-up forms or subsequent modification forms, collateral account values, and investment rates entered.

Investment return rates on cash collateral are updated daily on Spire to calculate investment earnings. Missing rates are identified and updated as appropriate. A tolerance check is performed to validate the rate change from the previous day's rate. Changes greater than a predetermined threshold are verified against the rate source and updated, if appropriate.

On a monthly basis, the Financial Accounting and Distribution ("FAD") team reconciles investment accruals on Spire to the investment accruals provided by the investment manager. Discrepancies over a predetermined threshold are researched and resolved and a secondary review is performed and evidenced via the Monthly Recon Sign-off file.

The FAD team performs daily reconciliations for State Street operational DDA Accounts (i.e., Earnings, Cash Management, and Billings). Reconciliations are reviewed by a second individual for accuracy and completeness. Discrepancies are identified, researched (leveraging data from PSAR and MCH) and resolved.

Monthly income distributions to the bank and clients are performed by the FAD team based on earnings data sourced from Spire Earnings are due to:

- Investment accruals for cash collateral invested; and
- Fees paid to/from borrowers for shares on loan.

Offline Adjustments

Accounting Positions entered into Spire to account for earnings adjustments that are unable to be calculated by Spire. These Accounting Positions are reviewed and approved as evidence on the Monthly Recon Sign-off file.

Tri-Party Collateral

Securities Finance receives a daily statement from each tri-party bank for clients who utilize tri-party collateral. The statement reports the collateral balance in each of the segregated broker accounts. Upon receipt of the statements, Securities Finance personnel compare the collateral balances per the tri-party bank to DML for appropriate collateralization-level requirements. The end-of-day balance packet includes the collateral balances reconciliation and the evidence of review.

Loan Returns

U.S. loan returns are sent to State Street by the borrowers via an electronic DTCC linkage that updates DML. U.S. fixed income returns are monitored for settlement in STS. Non-U.S. loan returns are settled within the

custody application and then automatically flow through SLE to update the DML records. Failed items are researched and resolved by contacting traders and brokers to reconfirm the agreed-upon amounts. As items are resolved, the applicable systems and SLE are updated. DML is updated to reflect security availability.

Securities Finance monitors sale and recall positions when a client/lender security out on loan is sold or recalled by the client's investment advisers. Sales or recalls are either automatically fed into DML/SLE or received manually. Sales or recalls are researched and acted upon. Securities Finance reallocates loans as appropriate, notifies borrowers of recalls and negotiates the terms of the security's return.

Securities Finance (Prime Services)

The principal lending program within Securities Finance is referred to as Prime Services. Prime Services trading and operations are located in the U.K. and the U.S. These locations provide support to the global client base. Securities Finance operations located in Hong Kong are not included in the scope of this report.

Account Set-up and Maintenance on Global One/Advent Workflow/ITP

Borrower authorization and set-up is performed in the U.S. and India for the global client base. Borrower participation in the Prime Services Program requires execution of a comprehensive borrower agreement. A start-up form is completed for new borrowers and must be reviewed and approved by Securities Finance management prior to turning the account live on Global One/Advent Workflow/ITP. Input into Global One/Advent Workflow/ITP is reviewed for accuracy by appropriate staff.

Locate/Borrowing Processing

Locate/Borrowing processing is performed in Hong Kong, the U.K. and the U.S. for the global client base. Prime Services receives a locate request (automatically or manually) from the borrower and responds with a locate response file. The borrower determines securities to short and executes trades. The Prime Services desk receives short sales from SMAC/GSMAC and negotiates to borrow the securities from a lender for delivery on settlement date. Pending trades are authorized prior to release and confirmation of security delivery is monitored through online review of settlement on the Global One system which receives settlement messages from SMAC and GSMAC Custody applications. Prime Services traders monitor the borrows to confirm that orders are filled prior to the settlement deadline. Securities that are borrowed via Equilend are recorded automatically onto Global One.

For non-custody clients, a borrow request is received and the Prime Services desk negotiates to borrow the securities from a lender for delivery on settlement date. The borrow and loan are either systematically input onto Global One by the ITP application or input by the trader onto Global One and assigned an internal reference number for tracking purposes. Pending trades are authorized prior to release and confirmation of security delivery is monitored through online review of SMAC/GSMAC for settlement with DTCC. In certain cases securities that are borrowed via Equilend are recorded automatically onto Global One.

Loan Maintenance

Loan maintenance is performed in Hong Kong, the U.K. and the U.S. for the global client base. The scope of this report does not include controls performed in Hong Kong. For custody clients, Global One loaned security positions are reconciled to SMAC/GSMAC borrow positions on a daily basis via Duco. Differences are researched and resolved. For non-custody clients Global One loaned security positions are reconciled to the borrower's reported loan positions based on files sent in from the borrowers on a daily basis. Differences are researched and resolved.

For U.S. equities, Loanet, Pirum and Equilend automatically compare shares on loan, cash and rates, or a subset thereof, between DML and the borrower's records. Certain exceptions on the report (e.g., marks, money, orphan, quantity and rate) are researched and resolved. For non-U.S. equities, Pirum and Equilend automatically compare shares on loan, cash and rates, or a subset thereof, between DML and the borrower's records. Exceptions identified are researched and resolved in conjunction with daily processes. In the event a counterparty's records are not available on a given business day, Prime Services works with the external vendor and/or counterparty to receive the records and, upon receipt, review the relevant reconciliation and perform timely research and resolution of exceptions identified.

Collateral Maintenance

Market values of borrowed securities are compared to the collateral value for each counterparty account in the aggregate. If the lender or borrower is not adequately collateralized the appropriate steps are taken to receive additional collateral depending on the collateral process that is being utilized. ITP automatically calculates the required counterparty collateral levels based on market and loan values from Global One and required margin levels. Daily feeds from Global Pricing Services automatically update the loaned security prices for market value, or where market practice dictates an internationally recognized pricing source may be used.

Online cash transactions are posted to transfer end-of-day balances for daily activity including new borrows, new loans, borrow returns, loan returns and mark-to-market. Prime Services cash totals for all cash transactions are reconciled to depositories and are reconciled to the appropriate group's cash and security collateral accounts. Reconciliations are reviewed for accuracy.

Financing Process

For borrowers/clients who utilize the self-financing model each day, the market value of the open loans and all new activity is applied to determine the required collateral amount. This amount is reconciled to the value of the financing trades and the collateral amount is adjusted as needed.

For borrowers who utilize the option of giving the Prime Services desk cash each day, the market value of the open loans and all new activity is applied to determine the required collateral amount. This amount is reconciled to the cash held. If the borrows are under-collateralized, Prime Services will debit the client's DDA account for the required collateral. If the borrows are over-collateralized Prime Services will credit the client's DDA account with the excess collateral.

For borrowers who utilize the Internal Financing Model ("IFM") process by pledging assets as a form of collateralization, the market value of the open loans and all new activity is applied to determine the required collateral amount. The amount of required collateral is sent to Collateral Management. Collateral Management records the amount into CMW/Colline and runs the pledge process which flags a sufficient amount of the client's long assets as pledged to Prime Services as collateral for their borrowed securities. The cash equivalents are borrowed from State Street Treasury in exchange for the pledge value.

Manufactured Income and Corporate Actions

Manufactured Income is processed in the U.K. and the U.S. for the global client base. On a daily basis, Global One receives a feed of dividend income information from the Corporate Actions COE which is reviewed to identify any dividend events that need to be monitored. Global One automatically calculates dividends due; claim sheets are generated via Global One as part of the dividends process. In the U.K. claim sheets are reviewed before being sent to borrowers. In the U.S., dividends on U.S. Securities are processed against client accounts automatically by the DTCC. For non U.S. Securities, Corporate Actions COE processes dividend payments by directly debiting respective client accounts.

On a daily basis, Global One receives a feed of corporate action information. Prime Services reviews reports to identify any corporate event that needs to be monitored. For voluntary events, Prime Services may receive elections from the lenders and informs the Prime Services client of the election that has been made along with the liability that will be incurred for that election.



Section IV

State Street's Control Objectives and Related Controls and Additional Information Provided by the Independent Service Auditor

The description of control objectives and related controls are the responsibility of State Street management and are an integral part of management's description of State Street's Global Fund Accounting and Custody System Applicable to the Processing of User Entities' Transactions. The control objectives are as follows:

A. Control Objectives, Controls and Tests of Operating Effectiveness

Account Set-Up

1. Controls provide reasonable assurance that new accounts are set up completely and accurately on MCH.

Transaction Processing, Settlement and Safekeeping of Assets

2. Controls provide reasonable assurance that security transactions received from the client or third parties are authorized.
3. Controls provide reasonable assurance that security transactions received from the client or third parties are processed and recorded completely, accurately and timely.
4. Controls provide reasonable assurance that security transactions are settled completely, accurately and timely.
5. Controls provide reasonable assurance that security holdings and cash balances are completely and accurately stated.

Subcustodian Monitoring

6. Controls provide reasonable assurance that subcustodians are authorized and monitored on a timely basis.

Income and Corporate Action Processing

7. Controls provide reasonable assurance that investment income and receipts are recorded completely, accurately and timely.
8. Controls provide reasonable assurance that corporate actions and related settlements are identified and processed accurately and timely.

Global Accounting

9. Controls provide reasonable assurance that cash disbursements are authorized, processed and recorded completely, accurately and timely.
10. Controls provide reasonable assurance that capital activity received from the client or authorized third parties is recorded completely, accurately and timely.
11. Controls provide reasonable assurance that dividend and distribution rates are authorized and dividend amounts are accurately and timely recorded.
12. Controls provide reasonable assurance that expenses and related accruals are authorized, accurately calculated and recorded in accordance with client instructions.
13. Controls provide reasonable assurance that security valuations are recorded completely, accurately and timely in accordance with client instructions.
14. Controls provide reasonable assurance that NAV is calculated accurately and timely.

Financial Reporting

15. Controls provide reasonable assurance that financial data recorded in MCH and information received from the client and other third parties is accurately processed in the draft shareholder reports.

Securities Finance

16. Controls provide reasonable assurance that new lending program participants are authorized and set up on the applicable lending application accurately.
17. Controls provide reasonable assurance that loan processing, maintenance and returns are recorded completely, accurately and timely.
18. Controls provide reasonable assurance that securities lending collateral is invested in the investment vehicle selected by the client and related income is calculated and distributed accurately and timely.

Tests of Controls

The control environment was considered in determining the nature, timing and extent of testing of the operating effectiveness of controls relevant to achievement of the control objectives.

EY has determined the nature, timing and extent of testing to be performed to obtain evidence about the effectiveness of State Street's control procedures in meeting the identified control objectives during the period from October 1, 2022 to September 30, 2023. The procedures performed to test operating effectiveness are listed next to each of State Street's respective control objectives and control procedures, and are the responsibility of EY. Test procedures in connection with determining the operating effectiveness of controls include the following:

Test Description

Inquiry

Interviewed applicable State Street personnel about the relevant control descriptions, processes and procedures described within Section IV A to ensure these procedures are completed in accordance with State Street's documented Standard Operating Procedures or applicable guidelines.

Observation

Witnessed, on a sample basis, the performance of controls by organizational personnel. This includes, among other things, viewing the functionality of applications, automated controls and scheduling utilities and witnessing the interactions with clients.

Inspection

Examined documents and reports that contain an indication of performance of the control. This includes, among other things, examining documents and reports to determine that authorization is evidenced and fund information is properly recorded and controlled and examining reconciliations and evidence of review to determine that outstanding items are properly monitored, controlled and resolved.

Reperformance

Independently performed the relevant control. This includes, among other things, comparing reconciliations to proper source balances, identification of reconciling items and recalculating mathematical solutions.

Computer Assisted Audit Techniques ("CAAT")

Computer Assisted Audit Techniques ("CAAT") provide for efficient testing of transaction processing. CAAT tests may be used by EY to reperform a control process performed by the service provider such as the automated creation of a reconciliation report or other exception report that is used by processing personnel to follow up on exception items. In such a test, EY uses its own computer programs to reperform one client reconciliation or other exception report using the same client data that was used to create the exception report, to determine whether the exception report reperformed by EY matches the exception report created by State Street.

Integrated Test Facility (“ITF”)

In connection with the review of certain controls, an Integrated Test Facility (“ITF”) was established. In an ITF, test transactions are processed through the production processing system, or a test environment that mirrors production in all material aspects, using the same data entry and processing procedures used by State Street personnel. Testing through the ITF focuses on accounting for transactions rather than security trade settlement and vaulting functions.

Online Testing

Online testing was used to test various applications’ edit and validation controls used to prevent the acceptance of erroneous, invalid or unauthorized transactions. When online testing is used to test edit and validation controls, an attempt is made to enter transactions that should not be accepted for processing. These tests, combined with valid transactions processed through the ITF, were determined to be the most appropriate to test certain edit and validation controls. Certain online testing was performed in conjunction with the ITF.

The testing of edit and validation controls for various applications includes the following:

- Incomplete approvals or levels of review
- Erroneous trade data
- Proper inclusion or exclusion in activity files immediately updated or held in temporary storage for later processing with no further user involvement
- As-of portfolio transactions
- Duplicate portfolio transactions
- Dividend receipt and adjustment data
- Entry of dividend, interest and paydown cash receipts in excess of receivable amounts
- Inconsistent or invalid accrual/amortization parameters
- Duplicate accrual/amortization batch processing
- Unavailable pricing sources, erroneous or incomplete pricing data, out-of-tolerance items and various acceptance/reject functions

Information Produced by the Entity

When using information produced by the entity ("IPE"), EY evaluated whether the information was sufficiently reliable for our purposes, including, as necessary, obtaining evidence about the completeness and accuracy of the information and evaluating whether the information was sufficiently precise and detailed for our purposes (e.g., controls requiring system-generated populations for sample-based testing and reports used by management in the performance of controls). These test procedures were performed as a component of evaluation and testing the controls identified by State Street. The types of information produced by State Street that EY obtained as evidence may have included, but was not limited to:

- Standard reports that are configured within an application;
- Parameter-driven reports generated by an application;
- Reports generated to facilitate testing of control populations;
- Custom reports that are not configured within the application (i.e., scripts, report writers and queries);
- Spreadsheets that include information utilized for the performance or testing of a control; and
- Analyses, schedules or other evidence manually prepared.

EY performs a combination of the following procedures where possible based on the nature of the IPE to address the completeness, accuracy and data integrity of the data or reports used:

- (1) Inspect the source of the IPE;
- (2) Inspect the query, script or parameters used to generate the IPE;
- (3) Tie data between the IPE and the source; and/or
- (4) Inspect the IPE for anomalous gaps in sequence or timing to determine the data is complete, accurate and maintains its integrity.

Control Objective 1

Controls provide reasonable assurance that new accounts are set up completely and accurately on MCH.

State Street Controls	EY Tests	EY Test Results
Account Set-Up		
1.1 New fund set-up personnel within Global Delivery or Client Support (requestor) set up new funds on MCH via AFW using fund information provided by the client and/or investment manager (via applicable fund governing documents, default settings for new accounts and/or any additional documented client instructions). A review of the AFW package for completeness and accuracy by a second individual (approver) is performed in AFW prior to the fund being completely loaded to MCH.	Inquired of management regarding the controls in place regarding the completion and approval of the new account set-ups on AFW by Client Support in accordance with client instructions.	No deviations noted.
	Utilized an online test to observe that new accounts set up with the AFW application require a second-level review for completeness and accuracy prior to the new account being completely loaded to MCH.	No deviations noted.
	Inspected a sample of new accounts set up on the AFW application for evidence of review by a second individual for accuracy based on fund governing documents, default settings for new accounts, and/or any additional client instructions.	No deviations noted.
1.2 AFW automatically generates a variance report highlighting any differences between what a user inputs on AFW and what AFW posted to MCH. AFW generates a notification to the requestor and the approver notifying them that a variance, if existing, needs to be addressed. Identified items on the variance report are followed up on and resolved by Global Delivery, Client Services or Client Support personnel, if applicable.	Observed an AFW administrator monitor the review queue for reconciliations with variances for follow-up and resolution.	No deviations noted.
	Utilized an online test to observe that reconciliations of variances between account information input on AFW and information posted to MCH are completed for new funds set up during the period.	No deviations noted.
	Inspected a sample of variance reports, if existing, showing reconciliation of new account information between AFW and MCH, if no variances are identified, inspected that notification of no errors was provided. Identified items on the variance report are followed up and resolved by Global Delivery, Client Services or Client Support personnel, if applicable.	No deviations noted.

Control Objective 2

Controls provide reasonable assurance that security transactions received from the client or third parties are authorized.

State Street Controls	EY Tests	EY Test Results
Receipt and Authentication of Transaction Instructions		
2.1 Certain transaction delivery methods are considered secure (e.g., SWIFT, DTCC ID and Secure Transport) and do not require additional authentication procedures. For transmissions to ETD Common the client ID contained in the trade instruction is systematically compared with the fund header record on MCH to review that the trade is authorized.	Utilized an online test to observe the systematic matching of the client ID contained in the trade instruction to the fund header record on MCH for transmissions to ETD Common.	No deviations noted.
	Observed a sample of transmissions to determine electronic trade files are received through the following secure methods: SWIFT, DTCC ID and Secure Transport.	No deviations noted.
2.2 Procedures employed to authenticate non-ETD transactions (except for a subset of trades) received via facsimile, TLS secure email or non-ETD SWIFT messages may include test key, callback, end-of-cycle messaging providing the unique transaction numbers of the sender or signature verification.	Observed procedures performed to authenticate non-ETD transactions.	No deviations noted.
	Inspected a sample of non-ETD transactions instructions received for evidence of appropriate authentication.	No deviations noted.
2.3 SWIFT Transmissions are encrypted and decrypted through the use of the Relationship Management Application ("RMA"). RMA set-up requests are processed upon receipt of an authorized RMA set-up request and approval.	Observed the approval and set-up of an authorized RMA request to enable SWIFT messaging.	No deviations noted.

Control Objective 3

Controls provide reasonable assurance that security transactions received from the client or third parties are processed and recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Recording of Transaction Instructions		
3.1 If State Street is responsible for trade affirmation, broker confirmations from non-ETD trades in the DTCC Interactive Institutional Delivery ("IID") application are compared in MCH to trade instructions received from the investment manager. ETD trades are electronically matched and the trade is processed to MCH. If transaction terms agree, an electronic affirmation message is sent back through the Bank's Institutional Delivery ("BID") application to IID. Unaffirmed trades are researched and resolved with the client, investment manager and/or broker.	For a sample of trades observed the monitoring of trade affirmation, including the research and resolution of unaffirmed trades.	No deviations noted.
ETD Trades		
3.2 ETD transmissions (including the Custody-Only model) are delivered to ETD Common where record counts and trade amounts from the trailer file are compared to the records sent. If in agreement and requested by the client, an auto acknowledgement message is generated.	Observed a trade file received through ETD transmissions to test that the corresponding acknowledgement message was generated by the application.	No deviations noted.
3.3 The status (accept or fail) of transmissions received by ETD Common is reviewed online by the Global Delivery groups or Centralized Processing units. Transmissions with errors in ETD Common are investigated and corrected through inquiry with the investment manager, client, and/or broker.	For a sample of ETD trades observed the online review of transmission status and resolution of unprocessed trades to ETD Common.	No deviations noted.
3.4 A reconciliation report or checklist is utilized to determine whether all transactions received by ETD Common are processed in the accounting region. Transmissions that are not successfully loaded to the accounting region are reviewed, investigated and corrected within specified time frames through inquiry with the investment manager or client.	For a sample of reconciliation reports or checklists, observed the review, investigation and resolution of transmissions that are not successfully loaded to the accounting region.	No deviations noted.
	Inspected a sample of reconciliation reports or checklists to verify that unprocessed trades were researched in a timely manner and were subject to review.	No deviations noted.
SWIFT Messaging		
3.5 SWIFT messages are monitored for completeness, and incomplete files are sent to an exception queue for research and resolution.	Observed the monitoring by Centralized Processing unit personnel of incomplete SWIFT transmissions in the exception queue and the subsequent resolution.	No deviations noted.
Non-ETD Trades		
3.6 Authenticated manual trade instructions are reviewed for completeness. Completeness of transaction receipt is monitored via callbacks, transmission status, confirmation sheets or end-of-day reporting with the investment manager or client.	Inquired of management as to the controls surrounding completeness of receipt of manual trade instructions.	No deviations noted.
	Observed the monitoring by Centralized Processing unit personnel of manual trade transmission receipts through the various indicated methods.	No deviations noted.

Control Objective 3

Controls provide reasonable assurance that security transactions received from the client or third parties are processed and recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
3.7 Trade details, including FX transactions, are input manually or through IIP into MCH or the custody applications (for Custody-Only model) by Global Accounting groups or Centralized Processing unit personnel. Manual trades directly input into MCH or respective custody applications are reviewed by a second individual. International and certain domestic trades (based on pre-determined risk criteria such as dollar amount and settlement date) processed through IIP require a review by a second individual before the transaction can be released for downstream processing.	Inspected a sample of non-ETD trade instructions for timely review of posting to MCH or custody applications and performed management's comparison of non-ETD trade instructions to MCH for accuracy. Refer to Control Objective 9 for controls surrounding cash disbursements.	No deviations noted.
ETD/Non-ETD		
3.8 Prior to the trades passing to MCH or SMAC/GSMAC a series of edit checks are performed in GTM to determine whether the trade information is complete and can be automatically processed.	Utilized Computer Assisted Audit Techniques ("CAAT") to trace ETD trade transmissions to verify proper posting to the MCH purchase and sale report.	No deviations noted.
	Utilized an Integrated Test Facility ("ITF") to execute a sample of trades and traced to proper posting on MCH. Refer to Section IV B for additional information on the types of trades processed.	No deviations noted.
	Utilized an ITF to execute a sample of FX transactions and traced to proper posting on MCH.	No deviations noted.
	Utilized an ITF to test a sample of trade entry edit and validation functions in MCH.	No deviations noted.
3.9 Trades not passing the edit checks (e.g., settlement location and dates, valid asset ID, coupon rate, etc.) are systematically sent to a series of queues in GTM which are continuously monitored by either the Global Delivery groups or Centralized Processing units. Exception trades are identified and corrected (systematically or by an individual within the Centralized Processing unit, as applicable) before trades are released to the ETA.	Observed the online edit checks applied to trades before they are released to ETA and the resolution of items that do not pass the edit checks.	No deviations noted.
	Inspected a sample of exception trades for evidence of monitoring through IIP.	No deviations noted.
3.10 ETA or concurrent post release trade instructions to the custody applications. Trades exceeding certain thresholds may require additional online authorization before they are released within the custody applications for settlement (fund headers may be added to allow the auto-authorization for ETD trades).	Observed internal application online authorization requirements in place for trades exceeding certain thresholds.	No deviations noted.

Control Objective 3

Controls provide reasonable assurance that security transactions received from the client or third parties are processed and recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Recording of Transactions – DHub		
3.11 Trades automatically or electronically processed to DHub are monitored via Trade Hub Status User interface to identify trade status (success, warning, error). Trades with a “Warning” or “Error” status are reviewed, investigated and resolved.	<i>EY’s testing did not include futures and options not processed on DHub as these are not in the scope of this report.</i>	
	Observed a sample of trades in “Warning” or “Error” status for evidence of review, investigation and resolution.	No deviations noted.
	Utilized an online test to observe that DHub systematically generates validation checks (success, warning, error) for users’ monitoring of trade status.	No deviations noted.
3.12 Trades manually loaded into DHub via file upload or manual input are subject to review against the original trade directive.	Utilized an ITF to process a sample of trades on DHub, and verified that the transactions posted completely and accurately to the DHub-generated reports. Refer to Section IV B for additional information on the types of trades processed.	No deviations noted.
	Inspected a sample of manually input or file uploaded trades for review and reperformed management’s comparison of trade instructions to DHub for accuracy.	No deviations noted.
	Utilized an ITF to process a sample of trades on DHub, and verified that the transactions posted completely and accurately to the DHub-generated reports. Refer to Section IV B for additional information on the types of trades processed.	No deviations noted.
3.13 DHub sends trades to MCH throughout the day (i.e., reference, pricing and accounting information). Trades entered into DHub are automatically sent to MCH with calculated cost, proceeds and gain/loss information.	Utilized an ITF to process a sample of variation margin postings on DHub and verified that DHub automatically posts variation margin completely and accurately to the DHub-generated reports. Refer to Section IV B for additional information on the types of trades processed.	No deviations noted.
	Observed the manual entry of futures and options transactions into DHub and subsequent online edit checks.	No deviations noted.
	Utilized an ITF to test a sample of DHub trade entry online edit and validation functions for completeness.	No deviations noted.
3.14 U.S. swap transactions manually loaded into MCH are subject to review by a second individual against the original trade directive.	Utilized an ITF to execute a sample of trades entered into DHub and traced to proper posting of the cost, proceeds and gain/loss information to MCH.	No deviations noted.
	Inspected a sample of U.S. swap entries into MCH for evidence of review by a second individual against the original trade directive.	No deviations noted.

U.S. Swap Transactions

Control Objective 3

Controls provide reasonable assurance that security transactions received from the client or third parties are processed and recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Recording of Institutional Loans – Wall Street Office (“WSO”)		
3.15 Authorized institutional loan trades received from clients or investment managers are received electronically via FTP or manually recorded in WSO.	See Control Objective 2 for testing related to receipt and authentication of trades.	
3.16 For institutional loan positions recorded and maintained in MCH, WSO trade activity is manually updated in MCH by Loan Services. Manually input trade activity is reviewed by a second individual for completeness and accuracy of the posting in WSO.	<i>EY’s testing did not include institutional loan positions manually input directly into MCH as these are not included in the scope of this report.</i> Observed the automatic and manual update of WSO trade activity in WSO and the procedures surrounding the review of manual postings.	No deviations noted.
	Inspected a sample of WSO trade activity postings to MCH for completeness and accuracy and inspected for evidence of review by a second individual for manual postings in WSO.	No deviations noted.
Realized Gains and Losses		
3.17 MCH and DHub calculate and post security cost transactions and realized gains and losses based upon the selected costing method (i.e., FIFO, LIFO, Specific Identification and Average Cost).	See Control Objective 14 for testing of controls related to subsidiary ledger accuracy review. Utilized an ITF to test the accumulation of investments at cost on MCH and DHub.	No deviations noted.
	Utilized an ITF to recalculate cost amounts and realized gain and loss amounts for a selection of transactions, including equity and fixed income securities, futures, options, swaps contracts and foreign currency, and holding periods for a sample of transactions and traced them to proper posting on MCH.	No deviations noted.
3.18 For loan positions recorded and maintained solely in WSO, realized gains and losses are automatically calculated based upon the selected costing method (i.e., FIFO, LIFO, Weighted Average, Lowest Cost and Highest Cost). Realized gains and losses are then posted to MCH.	Observed the automatic calculation of realized gains and losses and accurate posting to MCH.	No deviations noted.
	Reperformed the calculation of realized gains and losses using each of the following costing methods: FIFO, LIFO, Weighted Average, Lowest Cost and Highest Cost. Refer to the section titled Recording of Institutional Loans – Wall Street Office, within this control objective, for the testing related to the posting of trade activity from WSO to MCH.	No deviations noted.
Tax Efficient Lot Selector		
3.19 State Street’s Tax Efficient Lot Selector will allow a sell transaction from MCH to automatically process through to the iTELS application, calculate the tax per share for each security lot based on the applicable shareholder tax rates, identify the most efficient selection of lots based on a pre-determined Business Rule selected by the client and post the lots to MCH. Prior to the posting of a sell within iTELS, various edit and validation checks are performed.	Utilized an ITF to verify that iTELS calculated the tax per share, identified the most effective lots to sell based on a pre-determined Business Rule and traced to the proper posting on MCH.	No deviations noted.
	Utilized an ITF to test a sample of online edit and validation checks for the iTELS application.	No deviations noted.

Control Objective 3

Controls provide reasonable assurance that security transactions received from the client or third parties are processed and recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Wash Sales		
3.20 For funds subject to U.S. tax law, wash sale activity is identified and captured on the MCH Wash Sales Review report or the Automated Wash Sales application reports. Subsequent reversals are identified on the Automated Wash Sales application reports.	Utilized an ITF for a sample of transaction scenarios to test that the MCH Wash Sales Review report accurately identifies potential wash sale situations and accurately calculates related deferred loss amounts.	No deviations noted.
	Utilized an ITF to test that the Automated Wash Sales Review Reports accurately identified wash sales reversals and deferrals for a sample of transaction scenarios.	No deviations noted.
	<p><i>EY's testing did not include the following as these were not within the scope of this report:</i></p> <ul style="list-style-type: none">• <i>Determination if transactions create wash sale reversals as the MCH Wash Sales Review report does not reflect wash sales situations where the repurchased security is subsequently sold at a later date and the related wash sale loss is therefore eliminated.</i>• <i>Testing of transactions not recognizable by MCH or the Automated Wash Sales application including, but not limited to, the following transactions:</i><ul style="list-style-type: none">– <i>Derivative transactions</i>– <i>Merger activity</i>– <i>Foreign denominated debt security bifurcation calculation</i>– <i>Corporate actions</i>– <i>Constructive sales</i>• <i>Determination if the purchase of substantially identical securities creates a potential wash sale.</i>• <i>Evaluation of the completeness and accuracy of feeds other than MCH into the Automated Wash Sales ("AWS") application.</i>	
Security Masterfile Additions and Amendments		
Alveo Sourced Securities		
3.21 AQM monitors the feed processing progress into Alveo. Vendor feeds that do not meet established processing criteria (i.e., are not received at their scheduled time or take longer than the expected processing time) are reported to Reference Services via the AQM GUI and all activity is captured for reporting. Reference Services personnel will then take appropriate research and remediation actions based on the specific facts and circumstances. Activity performed by Reference Services personnel is captured in an audit view in the application for reporting purposes and all activity is reviewed and requires a comment to be input to track resolution. The transmission is monitored for completeness through record counts and date checks.	Observed a sample of vendor feeds received through AQM for completeness checks.	No deviations noted.
	Observed AQM generated alerts that require Reference Services personnel to add a resolution comment before closing.	No deviations noted.
	Utilized online testing to observe that appropriate error notifications are generated for non-compliant feeds and that all errors are recorded completely and accurately on the system log.	No deviations noted.

Control Objective 3

Controls provide reasonable assurance that security transactions received from the client or third parties are processed and recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
3.22 Data may be input manually into Alveo if there is no vendor data available, or if a manual override of vendor data is required. All processing is subject to established rules and when Alveo identifies a data discrepancy, the record is marked for review and action by Reference Services personnel. All manual activity in Alveo is subject to a second level of review by Reference Services personnel that approves the record prior to distribution to MCH.	Utilized online testing to observe that data manually input into Alveo requires second level review before distribution to MCH.	No deviations noted.
3.23 Throughout the day, DME distributes the completed records from Alveo to the RSM. DME monitors the successful distribution and processing by RSM and displays processing errors in the DME GUI for research and remediation based on the specific facts and circumstances. Activity performed by Reference Services personnel is captured in an audit view for reporting purposes, reviewed and requires a comment to be input to track resolution.	Utilized online testing to observe that appropriate error notifications are generated and that all errors are recorded completely and accurately on the DME GUI.	No deviations noted.
	Observed DME-generated alerts that require Reference Services personnel to add a comment before resolution.	No deviations noted.
Security Addition and Amendment Requests		
3.24 For securities originally sourced through Alveo or non-Alveo sources, Reference Services personnel process security addition and amendment requests by entering data in Alveo after agreeing the security addition or amendment details to source information.	For a sample of security addition and amendment requests, reperformed the agreement of MCH or Alveo detail to source information for accuracy and timeliness of input.	No deviations noted.
3.25 MCH automatically cross-references to review that the security has not already been set up. If no duplication is identified, the security is automatically added. If the security is already set up, personnel will reject the addition request and inform the requestor.	Observed the edit and validation controls surrounding updates to the MCH securities masterfile.	No deviations noted.
3.26 Supervisory personnel regularly monitor unprocessed request queues.	Observed the online monitoring of unprocessed request queues by supervisory personnel.	No deviations noted.
3.27 DTCC provides U.S. MMI transmissions initially to AQM and then to Alveo. The transmissions to AQM are monitored for successful receipt by Reference Services personnel and a secondary review is performed.	Observed the Reference Services personnel monitoring successful receipt of a sample of data transmissions into Alveo, and obtained evidence of secondary review being performed.	No deviations noted.
Collateral Management		
3.28 Collateral requirements and pricing parameters are established on CMW/Colline by the onboarding team using the eligibility requirements in the Client Questionnaire. Details of the final agreement set up in CMW/Colline are reviewed for accuracy.	<i>EY's testing did not include controls surrounding collateral management for funds domiciled outside of Germany and the U.S. as this was not included within the scope of this report.</i>	No deviations noted.
	Inspected a sample of new accounts set up on CMW/Colline for accuracy of input and evidence of review.	

Control Objective 3

Controls provide reasonable assurance that security transactions received from the client or third parties are processed and recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
3.29 CMW/Colline automatically calculates the credit exposure based on underlying positions. Collateral sufficiency information calculated by CMW/Colline is used to confirm or issue margin calls as needed. Appropriate action is taken and results are represented on various reports sourced from CMW/Colline, which are subject to review, including any manual inputs to CMW/Colline.	For a sample of client collateral, recalculated the credit exposure of the underlying valuations against the valuation of client collateral posted to the counterparty, or counterparty-owned collateral held per agreement and appropriate action was taken for under-collateralized agreements.	No deviations noted.
	Inspected evidence of review and comparison to source data for manual inputs, as applicable.	No deviations noted.
3.30 Collateral positions on CMW/Colline are reconciled to third-party records automatically or manually on a predetermined basis. Position breaks, if any, are researched and resolved timely.	Inspected a sample of collateral position reconciliation to third-party records for evidence of research and resolution of position breaks (excluding line of credits).	No deviations noted.
ETF		
3.31 The ETF team requests new account configurations and changes to existing configurations to ETF Global Platform to be processed by ETF personnel based on information received from the client. ETF personnel perform a review (performed by a second individual) for accuracy of the new account configuration set up or the changes to the existing set up and evidence review on the ETF Global Platform or the account configuration coversheet.	Inspected a sample of new account configurations and changes to existing account configurations in the ETF Global Platform for evidence of review by a second individual in ETF Operations and reperformed the comparison of ETF Global Platform against information received from the client for accuracy.	No deviations noted.
3.32 Upon receipt of the PLF from the client or authorized third party, the ETF Global Platform systematically checks for missing or invalid data. PLFs with no missing or invalid data are automatically placed in "Success" status and are loaded by the ETF Global Platform. PLFs with missing or invalid information are automatically placed in "Error" status by the ETF Global Platform.	Utilized online testing to observe that PLFs with no missing or invalid data are automatically placed in "Success" status and PLFs with missing or invalid data are automatically placed in "Error" by the ETF Global Platform.	No deviations noted.
3.33 ETF personnel perform an online review of the required basket components (i.e., PLF, Market Value, NAV) to verify that components have been updated and are available for processing on the ETF Global Platform and evidence review on the ETF Global Platform or the daily checklist. The ETF Global Platform will not systematically process the basket until all required basket components are available. Once all required basket components are available, the basket creation will occur. ETF personnel verify that baskets are in "Approved" status by the end of the day.	Observed ETF personnel perform an online review of the required basket components to verify that components have been updated and are available for processing on the ETF Global Platform and evidence review on the daily checklist.	No deviations noted.
	Utilized online testing to observe that ETF Global Platform will not systematically process the basket until all required basket components are available.	No deviations noted.
	Inspected a sample of daily checklists to verify that online reviews of required basket components were performed.	No deviations noted.
	Inspected a sample of baskets to verify that baskets were in "Approved" status by the end of the day.	No deviations noted.

Control Objective 3

Controls provide reasonable assurance that security transactions received from the client or third parties are processed and recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Dynamic Cash Allocation		
3.34 Dynamic Cash Allocation ("DCA") personnel set up new funds or investment vehicle changes to existing funds in DCA as instructed by an authorized individual. A review for accuracy of the instructions to the setup of the funds and asset allocation profiles in DCA is performed timely in DCA.	Inspected that a sample of new funds or investment vehicle changes for existing funds in DCA were instructed by an authorized individual and were reviewed timely and accurately.	No deviations noted.
3.35 DCA automatically allocates cash in MCH accounts into predefined investment vehicles.	Utilized an online test to observe that cash was accurately allocated by DCA into the predefined investment vehicles.	No deviations noted.
Limited Partnerships – eCFM		
3.36 For limited partnership transactions recorded and maintained in MCH, upon receipt of the partnership cash flow information or partnership statement from an authorized individual, AOPM/ Limited Partnership personnel manually update the accounting inputs or the starting period capital balance in eCFM. Capital balance inputs are reviewed by a second individual, for accuracy and completeness.	Utilized an online test to test that eCFM will not post partnership cash flow information prior to approval.	No deviations noted.
	Inspected a sample of partnership cash flow information for accuracy of posting to eCFM and evidence of review by a second individual for accuracy and completeness.	No deviations noted.

Control Objective 4

Controls provide reasonable assurance that security transactions are settled completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
U.S. Settlement		
U.S. Depositories		
4.1 U.S. trade instructions are recorded on SMAC/STS. Delivery transactions are automatically transmitted from State Street to the settlement depository. Purchase and sale transaction records that match depository records are automatically settled on SMAC, STS and MCH.	Utilized an ITF to automatically settle a sample of portfolio trades on SMAC and traced to proper posting on MCH. See Control Objective 5 for testing of controls surrounding cash and position reconciliations between State Street and U.S. depositories.	No deviations noted.
4.2 Trades that do not match (i.e., trade exceptions) are reviewed by the settlement area, and communicated to the originating department for resolution. Trades with monetary differences over a predetermined threshold that are force matched are reviewed by a second individual for completeness and accuracy. Trades not matched by the end of the day are automatically placed in a failed status.	Observed the daily online identification of U.S. depository rejected SMAC transactions and trade exceptions.	No deviations noted.
	Inspected a sample of U.S. depository trade exceptions for evidence of timely review, research and resolution or communication to the originating department for resolution.	No deviations noted.
	Inspected a sample of FED unmatched SMAC transactions for evidence of review, research and resolution or communication to the originating department for resolution.	No deviations noted.
4.3 Daily, the State Street Settlement group performs a balancing procedure reconciling SMAC to depository activity (DTCC and FED), and Hogan. Reconciling items are researched and resolved timely. The end-of-day balancing package is subject to secondary review.	Reperformed the multiple-step end-of-day balancing procedure for a sample of SMAC to U.S. depository settlement reconciliations for a selection of days, and inspected for evidence of review for completeness and accuracy, and research and resolution of out of balances, if any.	No deviations noted.
	Reperformed the multiple-step end-of-day balancing procedure for a sample of SMAC/STS to Hogan settlement reconciliations for a selection of days, and inspected for evidence of review for completeness and accuracy, and research and resolution of out of balances, if any.	No deviations noted.
	Utilized CAAT to test that SMAC cash payment files post funds to client DDA accounts on the Hogan application completely and accurately.	No deviations noted.
4.4 The DTC Settlement group monitors State Street's intra-day cash position at DTCC periodically throughout the day. If needed, net funds are transferred to/from the depository after review and authorization by the appropriate levels of management.	Inspected a sample of intraday settlement transfers to U.S. depositories for evidence of review and authorization and reperformed the review for accuracy.	No deviations noted.
4.5 Settlement wires are sent/received (upon review and authorization by management) through a central master money account. Failing transactions are monitored, researched and communicated to the responsible parties for resolution and sell fails are reported to management daily.	Refer to section titled Accounting to Custody reconciliations within Control Objective 5. Refer to Control Objective 9 for controls surrounding cash disbursements.	

Control Objective 4

Controls provide reasonable assurance that security transactions are settled completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Non-U.S. Settlement		
4.6 Authorized non-U.S. trade instructions are automatically transmitted from GTM to GSMAC. GSMAC performs a series of online edit checks (e.g., completeness of instructions). If the instructions pass all the edits, GSMAC will forward the trade to the subcustodians or depositories via SWIFT or LCCS.	Observed receipt of non-U.S. trade instructions for evidence of GSMAC edit checks and acknowledgement of receipt by the SWIFT network or LCCS.	No deviations noted.
4.7 The Global Custody Communications Unit monitors, notifies and escalates edit exceptions.	Inspected a sample of GSMAC edit exceptions pending instruction errors for evidence of monitoring, notification and escalation.	No deviations noted.
4.8 The Global Custody Communications Unit administrators monitor GSMAC for acknowledgement of receipt by the SWIFT Network.	Inspected a sample of trades transmitted by GSMAC for evidence of timely SWIFT Network acknowledgement.	No deviations noted.
4.9 Settlement notifications received from subcustodians and non-U.S. depositories (CREST, Euroclear and Clearstream) via SWIFT (automatically) or other secure methods (manually) are utilized to update the trade and related position records on GSMAC and currency accounts on IBS and ICASH. Upon settlement, this information is transmitted to MCH on a real-time basis.	Observed a sample of settlement notifications received from subcustodians and non-U.S. depositories (CREST, Euroclear and Clearstream) via SWIFT or facsimile, noting the trade and related position records were appropriately updated on GSMAC and transmitted to MCH.	No deviations noted.
4.10 Settlement exceptions are monitored online throughout the day by Global Custody Settlements.	Observed the online review of non-U.S. settlement exceptions.	No deviations noted.
4.11 End-of-day system processing updates any remaining unsettled authorized non-U.S. trades to a failed status.	Refer to the section titled Failed Trades within this control objective.	
Australia		
Australian/New Zealand Unlisted Investment Processing		
4.12 Unlisted investment transaction instructions are automatically uploaded, or manually entered by UIT personnel to IIP. The instructions flow automatically to DMH-UIT for enrichment and validation. Upon passing a series of edit checks, the instruction is uploaded to the automated communication tool or sent via facsimile to the relevant external registries or State Street Unit Registry. Instructions that do not pass the series of edit checks are investigated and resolved by UIT personnel.	Inspected a sample of Unlisted Investment checklists and documentation for evidence of reconciliation and resolution of trade instructions between IIP and the DMH-UIT system or the reconciliation and resolution between the Unit registry template and the original trade instructions and a review by a second individual.	No deviations noted.
4.13 DMH automatically creates the appropriate accounting entry and sends the posting to MCH. For clients that elect to record pending trades in MCH, transactions are moved to pending status within MCH while awaiting unit confirmation. Upon receipt of the unit confirmation from the external registries or State Street Unit Registry, DMH-UIT is automatically updated and the entry to reverse the pending entry is sent to MCH.	Observed a sample of accounting entries posted in MCH from the DMH application, and MCH applying the pending status flag as applicable.	No deviations noted.
	Inspected the required confirmation from the external registries or State Street Unit Registry for the sample observed.	No deviations noted.
	Observed that MCH automatically reverses the pending entry, once confirmation is received.	No deviations noted.

Control Objective 4

Controls provide reasonable assurance that security transactions are settled completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Australia Global Cash Operations		
4.14 The Cash Utility Payments team generates a report from the Austraclear application which shows matched trade details entered into Austraclear by State Street to those entered by the counterparty. The Cash Utility Payments team provides the report to the relevant Global Accounting groups for review and follow-up and resolution of unmatched trades.	Observed the Global Transactions, Controls and Banking team perform a review of unmatched trade details and subsequent follow-up of unmatched trades.	No deviations noted.
Canada		
4.15 The North America Securities Settlement Unit matches settlement instructions from GSMAC to CDS using LCCS. Exceptions are monitored and resolved.	Observed a sample of settlement instructions matched from GSMAC to CDS using LCCS, including monitoring and resolution of exceptions, as applicable.	No deviations noted.
4.16 Enterprise Reconciliation personnel match positions from GSMAC to CDS using GSR. Exceptions are monitored, resolved and reviewed timely by the Canadian self-custody unit or Enterprise Reconciliation personnel.	Inspected a sample of GSMAC to CDS security exception reports for evidence of timely follow-up, resolution and review of exceptions.	No deviations noted.
	Inspected the underlying process configurations and matching rules of the GSR reconciliation tool for reasonableness.	No deviations noted.
4.17 GSMAC is updated via an electronic file (converted into a SWIFT format) received from the CDS. Settlement exceptions are monitored, resolved and documented by the North America Securities Settlement Unit through review of GSMAC. GSMAC automatically updates the settlement status on MCH.	Inspected a sample of Failed Trade Reports for evidence of timely monitoring, research, and resolution.	No deviations noted.
4.18 A detailed recap report from CDS is compared daily to GSMAC positions on LCCS generated reports. The final settlement amounts from CDS are reconciled to LCCS totals to determine whether all cash transactions are properly accounted for. Discrepancies are researched and resolved and a review is performed by a second individual.	Inspected a sample of GSMAC to CDS settlement reconciliations for accuracy and research and resolution of discrepancies and review by a second individual.	No deviations noted.
Germany		
4.19 In Germany, the GmbH self-custody unit monitors settlement instructions from CBF to GSMAC using LCCS. LCCS transmits trade instructions received from GSMAC to CBF. Trades where criteria match settle automatically at CBF. Trades where criteria does not match do not settle automatically and are monitored and resolved throughout the day by GmbH self-custody personnel. Notifications of settlements are received via an electronic file (converted into a SWIFT format) from CBF via LCCS which updates GSMAC and the client cash accounts on IBS. GSMAC automatically updates the settlement status on MCH.	Utilized an online test to verify that trades where criteria does not match do not settle automatically at CBF.	No deviations noted.
	For a sample of trades where criteria does not match, observed the monitoring and resolution by GmbH self-custody personnel of trade that are not settling automatically.	No deviations noted.
	Inspected a sample of trades where criteria does not match and the trade does not settle automatically for evidence of monitoring, follow up, and resolution by GmbH self-custody personnel.	No deviations noted.

Control Objective 4

Controls provide reasonable assurance that security transactions are settled completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
United Kingdom and Ireland		
4.20 In the U.K. and Ireland, the U.K. and Ireland self-custody unit affirms settlement instructions from CREST to GSMAC using LCCS. LCCS transmits trade instructions received from GSMAC to CREST. Trades where criteria match settle automatically at CREST. Trades where criteria does not match do not settle automatically and are monitored and resolved throughout the day by Global Delivery U.K. Notifications of settlements are received via an electronic file (converted into a SWIFT format) from CREST via LCCS which updates GSMAC and the client cash accounts on IBS.	Observed the daily monitoring and resolution of unmatched CREST transactions. Refer to the section titled Failed Trades within this control objective.	No deviations noted.
Foreign Exchange Settlement		
4.21 On contractual settlement date, FX transactions are settled on MCH manually or automatically via ETD transmissions from IBS, Hogan or ICASH. The clients' DDA accounts are automatically updated. Upon notification from subcustodian, Global Custody Settlements notifies client support personnel of any failed FX transactions. Client support personnel monitor settlement via MCH cash reconciliations and failed reports (i.e., unidentified credit report and non-receipt report).	Observed the daily procedures performed when Global Custody Settlements receives notification of failed FX transactions from subcustodian and communication of the fails to client support personnel. See Control Objective 5 for controls surrounding cash reconciliations.	No deviations noted.
Contractual Trade Settlement		
4.22 Contractually eligible U.S. buy and sell transactions are communicated to Global Custody via SMAC/GSMAC. The cash portion of the security transaction is funded to the client's DDA account and the applicable general ledger accounts on the contractual settlement date. The State Street buy and sell fail accounts are reconciled daily by Global Custody. Reconciliations are reviewed timely, by a Senior Associate or above.	Observed the daily process of identifying sell transactions eligible for contractual settlement.	No deviations noted.
	Inspected a sample of buy fail and sell fail account reconciliations for evidence of timely review by a Senior Associate or above and reperformed the review for accuracy of funds transferred.	No deviations noted.
Failed Trades		
4.23 End-of-day system processing updates any remaining unsettled authorized trades to a failed status. Non-U.S. failed trades are monitored daily through online reviews of GSMAC. Failed trades are researched by ABO and updated on GSMAC as applicable.	Inspected a sample of non-U.S. failed trades for evidence of proper research and appropriate update of GSMAC records as applicable.	No deviations noted.
	Utilized an ITF to test that the MCH Failed Trades Report accurately classifies failed trades at end of day. Refer to section titled U.S. Settlement for controls surrounding domestic failed trades.	No deviations noted.

Control Objective 5

Controls provide reasonable assurance that security holdings and cash balances are completely and accurately stated.

State Street Controls	EY Tests	EY Test Results
Depository to Custody		
Securities		
5.1 Daily, automated reconciliations are performed between SMAC and DTCC activity, and SMAC and FED activity. Reconciling items are researched, assigned to the appropriate teams timely, and followed-up/escalated as appropriate. The reconciliations are subject to secondary review.	Utilized CAAT to match system records used to create the system-generated U.S. domestic depository to SMAC position reconciliations and respective exception reports to assess their completeness and accuracy.	No deviations noted.
	Observed the automatic generation of exception reports and subsequent research and resolution of aged items by Alveo or Enterprise Reconciliation personnel.	No deviations noted.
	Inspected a sample of U.S. domestic depository to SMAC security position exception reports for evidence of research and resolution of out-of-balance records.	No deviations noted.
5.2 Omnibus and non-omnibus accounts are reconciled via receipt of SWIFT statement of holding messages into GSR. GSR reconciles security positions between GSMAC and the subcustodians or depositories as reported in the SWIFT messages or statements based on security ID. Enterprise Reconciliation personnel review exceptions and code them by unit responsible for exception resolution (e.g., Corporate Actions Processing). The exceptions are reviewed online by the responsible unit, resolved and updated.	Utilized CAAT to reperform the security position reconciliation between GSMAC and a selected depository to assess the completeness and accuracy of the reconciliation.	No deviations noted.
	Inspected a sample of automated GSMAC to subcustodian/CREST/CDS security position exception reports for evidence of timely research and/or resolution of exceptions.	No deviations noted.
5.3 Reconciliations between collective investment scheme holdings on GSMAC and collective investment scheme manager position statements are performed monthly. Exceptions are coded and routed to the unit responsible for resolution.	Inspected a sample of reconciliations between GSMAC and collective investment scheme manager position statements for evidence of performance and timely resolution of exceptions.	No deviations noted.
Cash		
5.4 On-book currency transactions maintained on the IBS application are reconciled to the subcustodian, central depository or settlement bank daily by GSR. Exceptions are downloaded from GSR and retrieved by Enterprise Reconciliation for review and coding to the unit responsible for exception resolution. The exceptions are reviewed online by the responsible unit, resolved and updated.	Utilized CAAT to match system records used to create the system-generated IBS to subcustodian or central depository cash reconciliations to assess their completeness and accuracy.	No deviations noted.
	Observed the timely and accurate review of exceptions in GSR and matched or coded to the responsible unit for resolution.	No deviations noted.
	Inspected a sample of subcustodian/central depository to IBS cash reconciliations for evidence of coding, review and resolution of exception items.	No deviations noted.

Control Objective 5

Controls provide reasonable assurance that security holdings and cash balances are completely and accurately stated.

State Street Controls	EY Tests	EY Test Results
5.5 Off-book currency transactions are reconciled daily by GSR and reviewed. GSR compares the transactions per SWIFT to those on ICASH. Off-book currency balances for subcustodians without access to SWIFT are manually input to GSR, which reconciles the balances or activity to ICASH. Detailed exception information is available on GSR and downloaded into weekly reports for distribution to Senior Vice Presidents and/or Managing Directors for each business unit and applicable Vice Presidents in their organization.	Utilized CAAT to match system records used to create the system-generated ICASH to SWIFT reconciliation to assess their completeness and accuracy.	No deviations noted.
	Observed the accurate posting of off-book currency balance information received manually or from the subcustodian to GSR.	No deviations noted.
	Inspected a sample of subcustodian/central depository to IBS/ICASH cash reconciliations for evidence of coding and review.	No deviations noted.
Accounting to Custody		
Securities		
5.6 MCH to SMAC/GSMAC or third-party (e.g., external custodian, counterparty, recordkeeper, etc.) position reconciliations are performed periodically using the following tools: eHorizon CARS, SRD, UCM or manually. Discrepancies are reviewed and coded to the unit responsible for exception resolution. Appropriate action is taken to resolve exceptions and the reconciliations are reviewed by a second individual.	Utilized CAAT to match system records used to create the system-generated eHorizon CARS and SRD custody to fund accounting security position reconciliations to assess their completeness and accuracy.	No deviations noted.
	Utilized online testing to observe that a UCM security position reconciliation between the accounting application and custodian records to assess completeness and accuracy of the reconciliation.	No deviations noted.
	Inspected a sample of security position reconciliations using eHorizon CARS, UCM, SRD or manually for evidence of accurate performance, review by a second individual and timely research and resolution of discrepancies.	No deviations noted.
Futures		
5.7 DHub automatically calculates the daily unrealized value (open trade equity) and the client cash balances and agrees the balances to counterparty statements. Differences between the counterparty and MCH are researched and resolved. These reconciliations are reviewed by Derivatives COE personnel.	Inspected a sample of daily open trade equity values and cash balances reconciliations between MCH and counterparty records for evidence of research, resolution and secondary review.	No deviations noted.
Cash		
5.8 Cash reconciliations are performed systematically on a daily basis (using downloads from Hogan, IBS, ICASH, MCH, and SWIFT), through TLMP and UCM. Exceptions are reviewed and coded to the unit responsible for exception resolution. Appropriate action is taken to resolve exceptions and the reconciliations are reviewed by a second individual for accuracy.	Utilized an ITF to reperform a TLMP cash reconciliation between the ledger and statement records to determine whether the reconciliation results were complete and accurate based on defined parameters.	No deviations noted.
	Reperformed a UCM cash reconciliation between the accounting application and custodian records to assess completeness and accuracy of the reconciliation.	No deviations noted.
	Inspected a sample of cash reconciliations using TLMP, UCM or manually for evidence of accurate performance, resolution of exceptions, if any, and review by a second individual.	No deviations noted.

Control Objective 5

Controls provide reasonable assurance that security holdings and cash balances are completely and accurately stated.

State Street Controls	EY Tests	EY Test Results
Institutional Loans – WSO		
5.9 The WSO loan portfolio's separate DDA account on Hogan is reconciled daily to WSO unapplied cash activity. Manually prepared reconciliations are reviewed by Loan Services personnel daily. Loan Ops Portal automatically reconciles the WSO to Hogan activity and in the absence of any discrepancies systematically approves the reconciliation. Discrepancies, if any, are identified, tracked per WSO loan portfolio, researched and resolved by Loan Services.	Inspected a sample of DDA to WSO cash activity reconciliations for evidence of performance, follow-up of exceptions, if any, and review of manually prepared reconciliations.	No deviations noted.
	For a sample of DDA to WSO cash activity reconciliations, reperformed the reconciliation between WSO and the DDA account by tracing cash activity back to Hogan and WSO for completeness and accuracy.	No deviations noted.
	Inspected reconciliation scripts and job scheduler configurations within Loan Ops Portal to determine whether DDA account activity is automatically reconciled between WSO and Hogan.	No deviations noted.
	Inspected reconciliation logic within Loan Ops portal to determine whether DDA account reconciliation is systematically approved if no discrepancy is identified.	No deviations noted.
	Inspected reconciliation logic within Loan Ops Portal to determine whether DDA account activity discrepancies between WSO and Hogan are automatically identified.	No deviations noted.
	For a sample of DDA accounts with no discrepancy, inspected evidence to determine whether Loan Ops Portal systematically approved the reconciliation.	No deviations noted.
	For a sample DDA account with a discrepancy, inspected evidence to determine whether the discrepancy was correctly identified by the Loan Ops Portal.	No deviations noted.
Accounting to DHub		
Direct to MCH		
5.10 For certain clients, for swap and option positions on DHub or MCH, a periodic reconciliation between DHub/MCH and the investment manager or third-party statements is performed by Centralized Processing units or the Derivatives COE. Exceptions are researched, escalated and resolved, where applicable.	Inspected a sample of reconciliations between MCH and DHub, and the investment manager for evidence of research, escalation and resolution of exceptions, where applicable.	No deviations noted.
	Utilized an ITF to reperform a TLMP reconciliation between MCH and DHub to determine whether the reconciliation results were complete and accurate based on defined parameters.	No deviations noted.
DHub G/L Post Model (includes locations in Gdansk, Hangzhou, Kilkenny, Quincy and Sacramento)		
5.11 Daily, total market value and realized gain/loss are automatically calculated in DHub based upon the selected costing method (i.e., FIFO, LIFO, Specific Identification and Average Cost) and systematically or manually posted to MCH. The postings are reviewed for accuracy and variances above a predetermined threshold are identified, researched and resolved.	Observed the procedures performed surrounding the review of the total market value and realized gain/loss posted to MCH as well as the identification, research, and resolution of any variances.	No deviations noted.
	Utilized an ITF to execute a sample of trades entered into DHub and traced to complete and accurate posting of the cost, market value, proceeds and gain/loss information to MCH and DHub-generated reports.	No deviations noted.

Control Objective 5

Controls provide reasonable assurance that security holdings and cash balances are completely and accurately stated.

State Street Controls	EY Tests	EY Test Results
(See previous page.)	For funds on DHub, inspected a sample of total market value, realized gains/losses reconciliations between DHub and MCH to determine whether variances were identified, researched and resolved.	No deviations noted.
5.12 CFD positions recorded on DHub are reconciled to broker records periodically. Variances are investigated, timely resolved or escalated and reviewed.	Inspected a sample of CFD position reconciliations between DHub and broker records for evidence of review, timely escalation and resolution of exceptions, where applicable.	No deviations noted.
5.13 For CFD funds, financing accrual changes are posted to MCH. The financing accrual on MCH is reconciled to the broker statement. Differences are investigated timely and resolved.	For CFD funds on DHub, observed the procedures performed surrounding the review of the financing accrual reconciliation between MCH and broker records.	No deviations noted.
	For CFD funds, inspected a sample of reconciliations between MCH and the broker statements to determine whether differences were identified and timely resolved.	No deviations noted.
Accounting to WSO		
5.14 For loan positions recorded and maintained in MCH, institutional loan positions on WSO are automatically reconciled to institutional loan positions on MCH by Loan Services or reconciled manually by the Global Accounting groups. Discrepancies are timely researched and resolved. These reconciliations are reviewed by a second individual.	Inspected a sample of WSO to MCH Institutional Loan position reconciliations for evidence of performance, review by a second individual and follow-up of exceptions, if any.	No deviations noted.
	For a sample of WSO to MCH Institutional Loan position reconciliations, reperformed the reconciliation between WSO and MCH by tracing position detail back to MCH and WSO for completeness and accuracy.	No deviations noted.
Germany		
Accounting to Depository (Securities)		
5.15 In Germany, position reconciliations between the Clearstream depository and MCH are performed for accounts opened in the name of State Street Bank International GmbH regularly, at least annually, by a reconciliation team. Exceptions are researched and resolved.	Inspected a sample of Clearstream to MCH reconciliations for evidence of performance, research and resolution of exceptions.	No deviations noted.
Australia		
Accounting to Unit Registry		
5.16 A reconciliation between MCH records and external registries or State Street Unit Registry for Unlisted investment positions is performed at the end of each month. The reconciliation is completed by Enterprise Reconciliation personnel with oversight by the Unlisted Investment Department. Differences are investigated and resolved.	Observed the procedures surrounding the monthly reconciliation between MCH records and external registries or State Street Unit Registry by the Unlisted Investment Department.	No deviations noted.

Control Objective 5

Controls provide reasonable assurance that security holdings and cash balances are completely and accurately stated.

State Street Controls	EY Tests	EY Test Results
Collateral Held Internally		
5.17 The Collateral Services team receives the required collateral documents from the investment manager, Global Delivery, Client Services or Client Support personnel for processing. Upon receipt, the Collateral Services team will process complete and accurate instructions for securities as collateral on SMAC/GSMAC and cash as collateral on Hogan/IBS, and, where applicable, review the processing for completeness and accuracy. Incomplete instructions will be followed up on and resolved.	Inspected a sample of Collateral Services team's review for completeness and accuracy of the processing instructions into SMAC/GSMAC related to security positions and Hogan/IBS related to cash as collateral.	No deviations noted.
5.18 The Collateral Service team reviews all processing of securities as collateral on SMAC/GSMAC and cash as collateral on Hogan/IBS for completeness and accuracy to the corresponding instructions. Once review is complete, the collateral is authorized to be released within SMAC/GSMAC and Hogan/IBS.	Inspected a sample of Collateral Service team's review and authorization of cash segregation and release of cash and securities within Hogan/IBS and SMAC/GSMAC respectively, and reperformed the review for completeness and accuracy.	No deviations noted.
5.19 To pledge/release a security for an option contract, Collateral Transaction personnel must obtain approval from the client and/or broker and complete the applicable form requesting pledge/release of the collateral. The form is signed by supervisory personnel in the Derivatives groups and forwarded to the Collateral Processing team for processing on SMAC/GSMAC.	Inspected a sample of DTCC/OCC option forms for evidence of Derivatives team's supervisory approval and subsequent Collateral Processing team for processing of complete and accurate instructions into SMAC/GSMAC.	No deviations noted.
5.20 For cash escrow receipts issued at the OCC, in the event of a fund liquidating its option position before exercise date, collateral is not released until the broker approves the early withdrawal posted at the OCC.	Observed the procedures surrounding early release transactions and the Derivative team's processing subsequent to receipt of the broker approval.	No deviations noted.
	Inspected a sample of early release transactions to verify broker approval occurred before the release of collateral.	No deviations noted.
Dynamic Cash Allocation		
5.21 Each business day, DCA personnel perform a reconciliation between the share positions recorded on DCA to MCH as well as DCA to the Transfer Agent. Exceptions are reported, investigated and resolved timely.	Utilized a CAAT to reperform the share position reconciliation between DCA and MCH/Transfer Agent to assess the completeness and accuracy of the reconciliation.	No deviations noted.
	Inspected DCA application access to update job schedule configurations used to run the reconciliation report and inquired with State Street personnel to determine whether access was restricted to designated personnel.	No deviations noted.
	Inspected a sample of reconciliation's between DCA and MCH or DCA and the Transfer Agent for evidence of timely research and resolution of exceptions.	No deviations noted.

Control Objective 5

Controls provide reasonable assurance that security holdings and cash balances are completely and accurately stated.

State Street Controls	EY Tests	EY Test Results
Limited Partnerships – eCFM		
5.22 Global Accounting personnel perform a reconciliation of MCH to custody (DDA cash transactions). Differences are investigated, resolved and reviewed by a second individual for completeness.	Inspected a sample of MCH to Custody reconciliation reports for evidence of review and resolution of variances, if any.	No deviations noted.
5.23 Periodically (i.e., daily or monthly), Global Accounting personnel perform a comparison of the total CAMV in MCH to eCFM. Differences are investigated and resolved and the comparison is reviewed by a second individual for accuracy and completeness.	Inspected a sample of MCH to eCFM comparisons for evidence of review and resolution of differences, if any.	No deviations noted.

Control Objective 6

Controls provide reasonable assurance that subcustodians are authorized and monitored on a timely basis.

State Street Controls	EY Tests	EY Test Results
6.1 Following a detailed review of a completed Request for Proposal ("RFP") by Global Product which includes State Street's operating requirements, and the completion of a RFP review of the prospective provider, if a recommendation to authorize a new subcustodian relationship is proposed to senior management and senior management decides to appoint a new subcustodian, Legal and Network Management personnel within Global Product work jointly to negotiate and execute the subcustody contract which includes defined service levels.	Inspected a sample of new subcustodian relationships for evidence of completion of RFPs and an authorized subcustody contract.	No deviations noted.
6.2 Network Management reviews the performance of subcustodians in the Network on an ongoing basis. Network Management conducts formalized due diligence reviews with subcustodian relationships annually. These reviews are facilitated through arranged conference calls between State Street and a Subcustodian as standard, on-site visits by State Street to a subcustodian or scheduled visits by a subcustodian to State Street.	Observed the monitoring and due diligence review performed by Network Management for subcustodian relationships.	No deviations noted.
	Inspected a sample of formalized due diligence reviews for evidence of ongoing monitoring of subcustodians by management in compliance with State Street guidelines.	No deviations noted.
6.3 Annually, ERM performs a credit analysis of subcustodians which is circulated to State Street management for approval.	Observed the procedures surrounding ERM's annual performance of subcustodian credit analysis and subsequent circulation.	No deviations noted.
	Inspected the subcustodian's credit analysis for a sample of subcustodians for evidence of completion and to confirm approval by management in compliance with State Street guidelines.	No deviations noted.
6.4 On an ongoing basis, ERM tracks the financial condition of subcustodians and on a weekly basis prepares an Interim Monitoring report for distribution to senior management. The report provides updates of various subcustodian risk factors by geographic market such as earnings releases, ratings changes, regulatory issues, country risk events and other significant issues.	Observed the generation and distribution of weekly Interim Monitoring reports by ERM.	No deviations noted.
	Inspected a sample of weekly Interim Monitoring reports for evidence of completion and distribution to senior management.	No deviations noted.

Control Objective 7

Controls provide reasonable assurance that investment income and receipts are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Interest Income and Interest Receivables		
7.1 MCH automatically calculates and posts interest income based on portfolio holdings and income characteristics on an accrual basis from the lot level position files.	Observed variable interest rates being updated in MCH.	No deviations noted.
	Utilized an ITF to recalculate a sample of interest income accruals and traced them to proper posting on MCH.	No deviations noted.
	Utilized an ITF to recalculate a sample of compounding formulas and reinvestment elections for Guaranteed Investment Contracts and traced them to proper posting on MCH.	No deviations noted.
	See Control Objective 3 for controls surrounding Security Masterfile Additions and Amendments. See Control Objective 14 for controls surrounding reconciliations between the general ledger and subsidiary ledger.	
7.2 Income accruals calculated by MCH are regularly reviewed for accuracy by the Global Income groups. Income accrual exceptions are reviewed using the Income Verification report, Open System Accounting – Accounting System Audits (“OSA-ASA”) audits or comparable reports (e.g., Income Tracker, Income Workbook). Exceptions to the OSA-ASA audits or comparable reports are reviewed by supervisory personnel for completeness.	<i>EY’s testing did not include manually calculated income accruals from off-line spreadsheets as these were not included in the scope of this report.</i>	
	Observed the timely review of income accruals performed by individual Global Accounting groups.	No deviations noted.
	Utilized online testing to observe that Income Tracker, Income Workbook, and OSA-ASA reports are accurate based on activity in MCH.	No deviations noted.
7.3 MCH automatically calculates and posts the inflation adjustment for TIPS based on inflation factors input into MCH.	Inspected a sample of income accrual reports for evidence of timely review for accuracy by Global Accounting, and if applicable, evidence of supervisory review for any exceptions.	No deviations noted.
	<i>EY’s testing did not include controls surrounding the manual input of the inflation factor adjustments for TIPS as this was not included in the scope of this report.</i>	
	Utilized an ITF to recalculate a sample of inflation factor adjustments and traced to proper posting on MCH.	No deviations noted.
DHub G/L Post Model		
7.4 Interest accruals are calculated on DHub, where applicable, reviewed for reasonableness and systematically or manually posted on MCH. The entry to MCH is reviewed for accuracy in a timely manner.	Inspected a sample of interest accruals between DHub and MCH to determine whether variances were identified, researched and resolved.	No deviations noted.

Control Objective 7

Controls provide reasonable assurance that investment income and receipts are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
7.5 For Single Name Equity CFD and Single Name Equity Total Return Swaps, on ex-date, DHub automatically identifies dividends for positions held and systematically calculates and posts the correct dividend income and related accrual for confirmed events where ex-date equals the current date or date in the past. The posting to DHub is reviewed for accuracy timely.	Observed the procedures performed surrounding the review of the automatic dividend income accrual posting to MCH.	No deviations noted.
	Inspected a sample of dividend income accruals on DHub for evidence of review.	No deviations noted.
	Utilized an online test to observe that DHub systematically and accurately calculates and posts dividend income and related accruals for confirmed events.	No deviations noted.
Institutional Loans – WSO		
7.6 For manual bank loan transactions (i.e., borrowings, combined contract, conversion, interest, interim interest, LOC fees, LOC increase/reduction, optional prepayment, PIK (payment in kind), paydown, prime rate change, rate set, rollover, split contracts, spread change), the Global Loan Processing team manually inputs agent notice information into WSO. Manually input agent notice information is reviewed by a second individual in the Global Loan Processing Team for accuracy.	<i>EY's testing did not include controls surrounding manual inputs of trade settlement information or manual bank loan transaction types other than borrowings, combined contract, conversion, interest, interim interest, LOC fees, LOC increase/reduction, optional prepayment, PIK (payment in kind), paydown, prime rate change, rate set, rollover, split contracts and spread change, as these were not included in the scope of this report.</i>	
	Observed the Global Loan Processing team monitor the Loan Services Notice System queue for any unprocessed agent notices.	No deviations noted.
	Inspected a sample of manual bank loan transactions input into WSO for accuracy and inspected for evidence of review by a second individual.	No deviations noted.
The WSO loan portfolio's separate DDA account on Hogan is reconciled daily to WSO unapplied cash activity. Manually prepared reconciliations are reviewed by Loan Services personnel daily. Loan Ops Portal automatically reconciles the WSO to Hogan activity and in the absence of any discrepancies systematically approves the reconciliation. Discrepancies, if any, are identified, tracked per WSO loan portfolio, researched and resolved by Loan Services.	Inspected a sample of DDA to WSO cash activity reconciliations for evidence of performance, follow-up of exceptions, if any, and review of manually prepared reconciliations.	No deviations noted.
	For a sample of DDA to WSO cash activity reconciliations, reperformed the reconciliation between WSO and the DDA account by tracing cash activity back to Hogan and WSO for completeness and accuracy.	No deviations noted.
7.7 WSO automatically calculates interest and fee accruals based on the Agent Notice information.	Inspected job scheduler configurations to determine whether interest accruals are calculated daily within WSO.	No deviations noted.
	For each relevant accrual basis, reperformed the interest accrual calculation to determine whether interest accrual was calculated accurately by WSO.	No deviations noted.
7.8 WSO automatically processes paydown activity on effective date based on the reference information maintained in WSO and transaction activity.	Observed the automatic processing of paydown activity by WSO.	No deviations noted.
	Utilized an online test to observe the accurate processing of a sample of paydowns in WSO.	No deviations noted.

Control Objective 7

Controls provide reasonable assurance that investment income and receipts are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
7.9 WSO income activity is automatically updated to MCH by Loan Services or manually input to MCH by Global Accounting groups. For completeness and accuracy of the posting to MCH, WSO income balances are automatically reconciled to MCH general ledger balances by Loan Services or manually reconciled by Global Accounting groups. Discrepancies above a predetermined threshold are researched and resolved. These reconciliations of subsidiary to general ledger balances are reviewed by a second individual.	Observed the procedures performed around the WSO to MCH income reconciliations for evidence of accurate performance, review by a second individual and follow-up of discrepancies above a predetermined threshold.	No deviations noted.
	Inspected a sample of WSO to MCH income reconciliations for evidence of accurate performance, review by a second individual and follow-up of discrepancies above a predetermined threshold.	No deviations noted.
Amortization/Accretion		
7.10 Prior to or on settlement date of the trade, the Global Income group manually or eHorizon automatically determines if the security should accrete discount or amortize premium.	<i>EY's testing did not include controls surrounding the determination of the amortization/accretion method in accordance with client instructions as this was not included in the scope of this report.</i> Inquired of management concerning procedures performed in the Global Accounting groups surrounding the review of amortization/accretion set up for new securities.	No deviations noted.
7.11 Amortization/accretion (e.g., Straight Line, Effective Interest Method) for certain security types is automatically calculated by MCH based on the client elections established in eHorizon.	<i>EY's testing did not include amortization/accretion calculated off-line as this was not included in the scope of this report.</i> Utilized an ITF to recalculate the amortization/accretion for a sample of securities purchased at either a discount or premium and traced to proper posting on MCH.	No deviations noted.
	Utilized an ITF to test that amortization/accretion for certain security types is automatically calculated based off the client elections established in eHorizon.	No deviations noted.
7.12 For loan positions recorded and maintained solely on WSO, straight-line accretion/amortization is calculated automatically within WSO and then posted to MCH.	Observed the automatic calculation of straight-line accretion/amortization in WSO and posting to MCH.	No deviations noted.
	For a sample of loans, reperformed the calculation of straight-line accretion/amortization in WSO. Refer to the section titled Institutional Loans – WSO, within this control objective, for the testing related to the posting of income from WSO to MCH.	No deviations noted.

Control Objective 7

Controls provide reasonable assurance that investment income and receipts are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Accounting Adjustments		
7.13 The "Intra-period" adjustment using the "effective interest method" is automatically calculated by MCH and generates the AICPA Mandatory Amortization Review Reports (the "Reports"). The Reports are only appropriate for investment companies using the identified cost methodology.	<p>Utilized an ITF to recalculate the amortization/accretion for a sample of securities purchased at either a discount or premium and traced to the proper postings on the AICPA Mandatory Amortization Review Reports.</p> <p><i>EY's testing of the AICPA Mandatory Amortization Review Reports did not include controls surrounding the completeness and accuracy of amortization calculations for the following security types as these were not included in the scope of this report:</i></p> <ul style="list-style-type: none"> • <i>When-issued securities.</i> • <i>Open trades.</i> • <i>Convertible bonds.</i> • <i>Jumbo coupon bonds.</i> • <i>Mortgage-backed securities.</i> <p><i>Additionally, EY's testing did not include controls surrounding the accuracy and completeness of amortization/accretion adjustments to prepare financial statements in accordance with applicable accounting standards as this was not included in the scope of this report.</i></p>	No deviations noted.
7.14 eHorizon automatically generates income change alerts for missing data and changes to critical security reference data. Alerts must be cleared prior to the end of the day in order for eHorizon to process the amortization/accretion and post to MCH.	Utilized an ITF to test the automatic generation of a sample of alerts for missing data and changes to critical security reference data.	No deviations noted.
	Observed that alerts must be cleared prior to the end of day in order for eHorizon to process the amortization/accretion and post to MCH.	No deviations noted.
Multi-Basis		
7.15 State Street's Multi-Basis functionality within MCH automatically calculates the amortization on the second set of books based on the amortization rules established in Multi-Basis.	<i>EY's testing did not include the controls surrounding the initial set-up of the fund on Multi-Basis as this was not included in the scope of this report.</i>	No deviations noted.
	For a sample of securities, recalculated the amortization or accretion and traced the amounts to proper posting on the second set of books based on amortization rules established in Multi-Basis.	
7.16 In the U.S., real-time and reporting alerts from Multi-Basis are researched and resolved by the Global Accounting group prior to the books being closed at each reporting period.	<i>EY's testing did not include funds using Multi-Basis for purposes other than financial reporting as this was not included in the scope of this report.</i>	No deviations noted.
	U.S. – Inspected a sample of funds for evidence that real-time and reporting alerts from Multi-Basis are researched and resolved by the Global Accounting groups prior to the books being closed at each reporting period.	

Control Objective 7

Controls provide reasonable assurance that investment income and receipts are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
7.17 In Canada, reports are generated using the Multi-Basis functionality in MCH and/or reconciliations are prepared at each reporting period to identify discrepancies between the anchor and second basis. Discrepancies above the defined tolerance limits are researched and resolved.	Canada – Inspected a sample of Multi-Basis reports and reconciliations for evidence that discrepancies above the defined tolerance limits are researched and resolved.	No deviations noted.
7.18 For clients electing to amortize for IFRS reporting, MCH automatically calculates amortization/accretion based on amortization rules established in Multi-Basis and using the IFRS effective interest method.	Recalculated the amortization/accretion using the IFRS effective interest method and traced it to proper posting on the second set of books based on amortization rules established in Multi-Basis.	No deviations noted.
Dividend Income and Receivables		
7.19 Dividend rate information is automatically retrieved through vendor feeds nightly and processed to MCH. Global Income reviews reports generated by vendor feeds and internal postings for accuracy, timeliness and completeness of dividend accruals.	Utilized online testing to observe that dividend rate feeds contain completeness checks through record counts and date comparisons.	No deviations noted.
7.20 Multiple vendors or sources are compared and matching data is automatically confirmed by SMAC/GSMAC. Vendor reported discrepancies, including rejected transactions, are researched and upon validation with a second source, the dividend record is manually confirmed by an Income Services staff member. Vendor reported discrepancies that match a confirmed dividend on SMAC/GSMAC are not researched further.	For a sample of unmatched events reports, reperformed Income Services' confirmation to a secondary source, if applicable, and inspected for evidence of review.	No deviations noted.
7.21 Dividend data entered into the dividend files is subjected to format, missing field, second source validation, limit and check digit controls.	Observed the input of manual source dividend data for timely processing and online edit and validation checks.	No deviations noted.
7.22 On ex-date, confirmed dividends, both auto confirmed and manually posted, are systematically posted to a holder's accounting records by MCH. Confirmed events where ex-date equals the current date or in the past, are systematically posted to MCH. Global Income performs a review via the Dividend Review Service to determine whether applicable records have successfully posted to MCH.	Utilized an ITF to test the identification of shares entitled to a cash and stock dividend by MCH and traced to proper posting on MCH.	No deviations noted.
	Observed the review of the systematic posting of auto confirmed and manually confirmed dividends to MCH by Global Income.	No deviations noted.
7.23 Receivables (or payables for short sales) are automatically created for each confirmed dividend matched to a holder and posted on MCH as of the ex-dividend date. These receivable records are also systematically posted to SMAC and GIC prior to ex-date.	Utilized an ITF to recalculate a sample of dividend receivables and payables and traced to proper posting on MCH.	No deviations noted.
	Utilized an ITF to manually settle a sample of dividend receivables and payables on MCH and traced to proper posting on MCH.	No deviations noted.
7.24 Global Income groups monitor late dividend announcements as well as new events or changes to existing accruals via information published to the Market Data Services internal website as well as email notification from Global Dividend Database for late dividend announcements.	Observed the communication of late dividend announcements by Global Dividends to the Global Accounting groups.	No deviations noted.

Control Objective 7

Controls provide reasonable assurance that investment income and receipts are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Income Receivables and Cash Receipts		
U.S.		
7.25 SMAC income receivable records are automatically reconciled to U.S. depositories. Differences are identified, researched and resolved.	Observed the daily online identification and resolution of domestic income exceptions between SMAC income receivables and depository payments.	No deviations noted.
	Observed the follow-up procedures for unmatched income payments.	No deviations noted.
7.26 At the end of the day, once items are in matched status, a SMAC totals report is printed and reconciled to the depository cash settlement reports and reviewed by supervisory personnel.	Inspected a sample of reconciliations comparing daily SMAC cash settlement totals to U.S. domestic depository cash totals for evidence of performance and supervisory review and reperformed the review for accuracy.	No deviations noted.
7.27 A batch job updates matched records to a PAID status, posts cash payments to client DDA accounts on Hogan and updates the individual MCH receivables. Reconciliations are performed between paid custody and accounting receivables and differences are investigated and resolved.	Utilized CAAT to test that SMAC cash payment files post funds to client DDA accounts on the Hogan application completely and accurately.	No deviations noted.
	Utilized an ITF to reperform a TLMP reconciliation between custody to accounting receivables to determine whether the reconciliation results were complete and accurate based on defined parameters.	No deviations noted.
	Observed the procedures surrounding U.S. depository income payment processing including posting of cash amounts to the Hogan application.	No deviations noted.
	Observed the follow-up procedures for unmatched income payments.	No deviations noted.
	Inspected a sample of U.S. MCH income exceptions for evidence of timely research and resolution.	No deviations noted.
Contractual U.S. Income Processing		
7.28 On pay date, U.S. income eligible for contractual settlement is automatically posted to SMAC and MCH.	Utilized an ITF to test the automatic posting of income to SMAC and MCH.	No deviations noted.
7.29 A daily reconciliation between the SMAC Outstanding Contractual Income report and contractual income general ledger is performed by U.S. Income team and reviewed.	Observed the reconciliation of SMAC Outstanding Contractual Income reports to contractual income general ledger reconciliations for evidence of review by U.S. Income team.	No deviations noted.
7.30 Contractually eligible income exceptions over the predetermined threshold and aged greater than 30 days are researched and resolved by U.S. Income team.	Inspected a sample of SMAC Outstanding Contractual Income reports for evidence of research and resolution of U.S. Contractual Income exceptions over the predetermined threshold and aged greater than 30 days.	No deviations noted.
7.31 After the end-of-day SMAC payment feed, payments that have not been received from the issuer are credited to the clients' DDA accounts on Hogan and the applicable State Street general ledger account in MCH is debited.	Utilized an ITF to test that contractual income identified within Hogan is properly applied to MCH.	No deviations noted.

Control Objective 7

Controls provide reasonable assurance that investment income and receipts are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Non-U.S.		
Non-U.S. income processing is based on market type ("on" or "off" book).		
On-Book Income Processing		
7.32 On-book non-U.S. income receivables are automatically created and maintained on GIC based on information provided from the Security Masterfile, Global Tax Tables and dividend files, which are then applied to the GSMAC security positions to calculate entitlements. Cash payment information is received directly by GIC via SWIFT from the subcustodian or depository and is posted to client accounts via IBS automatically.	Utilized an ITF to reperform a TLMP cash reconciliation between the ledger and statement records to determine whether the reconciliation results were complete and accurate based on defined parameters.	No deviations noted.
7.33 For contractual income eligible markets, income payments are released on a predetermined basis (currently all markets are paid on pay date) to automatically post the local currency to the client's DDA on IBS and the paydown to the MCH client receivables.	Utilized an ITF to test the automatic posting of contractual income to IBS and MCH.	No deviations noted.
7.34 Cash payments posted to IBS are then matched to MCH receivable records. Exceptions are researched. If appropriate, an income receivable may be created or adjusted, allowing the income payment to be posted to MCH.	Inspected a sample of IBS to MCH income exceptions from GIC for evidence of timely research and resolution.	No deviations noted.
Off-Book Income Processing		
7.35 Cash receipt information is received via SWIFT or facsimile messages from the subcustodian and is posted to client accounts on ICASH (manually or systematically).	Observed the posting of off-book income payments to ICASH.	No deviations noted.
7.36 Cash receipts posted to ICASH are matched to MCH receivable records (receivables are not maintained on GIC). Exceptions are researched and resolved. If appropriate, an income receivable may be created or adjusted, allowing the income payment to be posted to MCH.	Inspected a sample of ICASH to MCH income exceptions for evidence of research and resolution.	No deviations noted.
	Utilized an ITF to reperform a TLMP cash reconciliation between the ledger and statement records to determine whether the reconciliation results were complete and accurate based on defined parameters.	No deviations noted.
Collection of Past-Due Income		
7.37 Income receivables are identified through review of the Income Tracking System or custody records. Global Income Services determines if the receivable is valid and assigns a status code to the Income Tracking Record.	Utilized an ITF to test the aging by MCH for a selection of interest and dividend receivable amounts.	No deviations noted.
	Utilized an ITF to recalculate a selection of interest receivables and traced to proper posting on MCH.	No deviations noted.
	Observed the review of the Income Tracking record and the research of past-due income receivables.	No deviations noted.

Control Objective 7

Controls provide reasonable assurance that investment income and receipts are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
7.38 A claim for past-due income is sent to the appropriate broker if necessary. Periodic follow-up on the open claim continues until receipt of the past-due income, and updates are recorded on the Income Tracking System.	Inspected a sample of items from the Income Tracking System or custody record for evidence of timely research of past-due income and/or submission of claims, as appropriate, by centralized income processing departments.	No deviations noted.
7.39 Past-due income status reports, including an aging analysis, are produced and regularly reviewed by Income Services.	Inquired of Income Services as to the regular review of past-due income status reports for assessment of collectability and follow-up.	No deviations noted.

Global Tax Processing

Account Openings and Maintenance

7.40 Account Openings and Maintenance collects beneficiary data and operating documentation for new account opening requests from State Street's global client base. The information in the request is reviewed against the operating documentation for accuracy. The Account Openings and Maintenance Client Profiling Team uses this beneficiary information and information provided by Tax Research to determine the appropriate tax treatment and the account placement for the fund/market requested. Tax treatments, account placements and beneficiary data have a review completed by a second individual prior to making the updates to the custody header fields within Global Beneficiary Reference ("GBE"), GTT and the cash and security masterfiles, all of which are within MCH. Appropriate currency placement is determined after the review of tax treatment, account placement and beneficiary data. Daily additions, changes and deletions to the GTT are captured on a report and reviewed for accuracy for all recently updated accounts.	Inspected a sample of account opening requests for evidence of verification with operating documentation and review by a second individual and reperformed the review for accuracy of the input of details (tax treatment and GTT review, account placement, currency placement, beneficiary data) for accuracy.	No deviations noted.
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Tax Services (Full Service and Custody-Only Clients)

7.41 Treaty and Domestic Law tax changes are tracked by the Custody Tax Services/Tax Research team. Changes in withholding tax and reclaim rates are checked to independent sources and reviewed by management for accuracy before sending a request to the appropriate business unit to update GTT with the change.	Inspected a sample of Treaty and Domestic Law tax changes for agreement to independent sources and evidence of review.	No deviations noted.
7.42 MCH automatically calculates withholding taxes timely and establishes accruals for income and tax reclaim receivables.	Utilized an ITF to test accurate and timely posting for a sample of foreign withholding taxes and tax reclaim receivables to related receivable records on MCH.	No deviations noted.

Control Objective 7

Controls provide reasonable assurance that investment income and receipts are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
7.43 The tax reclaim coordinator monitors accrued tax receivables, and prepares and files required documentation with the subcustodian or the country's tax authority. Market practice and, in some cases, residency dictate filing frequency and follow-up confirmation steps. Reclaims are monitored by Custody Tax Services via a weekly Status Summary Report. Follow-up steps are taken as needed to confirm filing status prior to the expiration of the statute of limitations and again to ensure timely payment receipt. Payment information is processed automatically or manually by the Tax Payment Team, which updates TRS and the receivable on MCH to a PAID status.	Observed the manual posting for a sample of reclaim payments monitored by Global Income on MCH as well as the status updating on the Tax Reclaim System ("TRS").	No deviations noted.
	Inspected a sample of tax reclaim receivables monitored by Custody Tax Services for evidence of preparation and filing of tax reclaim documents with the subcustodian or the country's tax authority.	No deviations noted.
	Reperformed Custody Tax Services' agreement of the tax reclaim documents received to the detail in Tax Reclaim System.	No deviations noted.
	Inspected a sample of weekly Status Summary Reports for evidence of monitoring of tax reclaims, and follow-up confirmation steps, if necessary. <i>EY's testing did not include reclaims that are recorded and claimed pursuant to tax treaties that provide for retroactive or transitional treatment as these were not included in the scope of this report.</i>	No deviations noted.
Security Factors and Rate Resets		
7.44 Government paydown factors and rate resets for VRDNs are received into the reference database from outside vendors and are either manually or automatically updated to MCH. File transmission is monitored for completeness through record counts. MCH performs automatic tolerance checks prior to the data upload to the Government Factor Database.	Utilized online testing to test that variable rate feeds contain completeness checks through record counts.	No deviations noted.
	Utilized CAAT to reperform the tolerance check for government paydown factors on the CMO Factor Report to assess its completeness and accuracy.	No deviations noted.
7.45 For VRDNs, a Reference Services administrator reviews the reports online to identify errors and views a summary of total rate changes for tolerance checks.	Utilized CAAT to reperform the rate change tolerance on the VRDN Master Rate Control Report for variable rate securities to assess its completeness and accuracy.	No deviations noted.
	Observed the Reference Services administrator's daily review of rate reset reports for VRDNs for reasonableness.	No deviations noted.
7.46 Rate resets and factors are automatically applied to client holdings. Factor changes greater than the predetermined tolerance level on the daily ICE transmissions (e.g., CMOs, IOs and other asset-backed securities) are summarized in an exception report. Reference Services personnel research factor changes to outside sources and, if necessary, manually update MCH on a timely basis. The exception report is reviewed by a second individual.	Utilized CAAT to reperform the Out of Prescribed Range report for government securities to assess its completeness and accuracy.	No deviations noted.
	Inspected a sample of out-of-tolerance government paydown factors for evidence of review by a second individual, and if necessary, timely update to MCH.	No deviations noted.
	Refer to the sections within this control objective detailing reconciliations between paid SMAC/GSMAC receivables and MCH accruals.	
	See Control Objective 5 for controls surrounding cash reconciliations. See Control Objective 14 for testing of controls related to the review and resolution of out-of-tolerance information on eHorizon/ MyNAV.	

Control Objective 8

Controls provide reasonable assurance that corporate actions and related settlements are identified and processed accurately and timely.

State Street Controls	EY Tests	EY Test Results
Corporate Action Processing		
Identification		
8.1 Corporate action events are identified through automatic and manual sources, including vendor transmissions, nominee/ direct mail and periodical review. Vendor feeds with missing or conflicting information are researched and resolved timely by Corporate Actions Operations personnel. Corporate action feeds are monitored for completeness through record counts and date checks.	Utilized online testing to observe that corporate action feeds contain edit checks surrounding the feed through record counts and date comparisons.	No deviations noted.
	Observed the online resolution of U.S. and non-U.S. corporate action exception queues for research and timely resolution.	No deviations noted.
8.2 Manual and automated source information requiring intervention is input manually into GCAS and, when possible, verified to a second source. All manual input into GCAS is subject to a review by a second individual for accuracy. Data entered into GCAS is subject to format, missing field, validation, limit and check digit controls.	Observed the screening, input, review and edit checks of manual source corporate action data for accuracy and timeliness.	No deviations noted.
	Inspected a sample of voluntary, non-voluntary, U.S. and non-U.S. corporate actions in GCAS for evidence of review by a second individual and reperformed the review of manually input data for accuracy and verification to independent sources where applicable.	No deviations noted.
8.3 GCAS retrieves entitled share positions for identified corporate actions automatically from SMAC/GSMAC.	Utilized an ITF to test the propriety of automated processing of confirmed dividend and corporate action records against fund holdings.	No deviations noted.
Notification		
8.4 Full notifications are generated by GCAS prior to ex-date or expiration date. If applicable, notifications are reviewed by Corporate Action Operations personnel prior to being sent to Centralized Processing units or investment managers via SWIFT or CapTAIN.	Inspected a sample of corporate action notifications for evidence of timely distribution to the appropriate party and evidence of review by a second individual, if applicable.	No deviations noted.
ETF		
8.5 ETF personnel process corporate actions, effective on the next fund trading day based on applicable parameters (i.e., split ratio, price change). Once processed, ETF personnel perform a review to verify that the corporate action parameters were applied completely and accurately. This review is evidenced on the ETF Global Platform or the daily checklist.	Inspected a sample of corporate actions for evidence of review and reperformed the review for accurate posting in the ETF Global Platform.	No deviations noted.
Voluntary Corporate Action Response Processing		
8.6 Responses may be delivered via CapTAIN, SWIFT or facsimile. SWIFT responses passing certain IT validity, accuracy and completeness checks will be processed automatically. SWIFT responses that cannot be processed automatically or responses received via facsimile are reviewed for both validity and accuracy, by Corporate Action Operations personnel prior to being updated in GCAS. Discrepancies are identified and researched. Responses received from the investment manager automatically update CAMS and are reviewed by Corporate Actions Operations personnel to support fund accounting updates.	Observed the online review of response processing exception queues for accuracy and timeliness.	No deviations noted.
	Inspected a sample of voluntary corporate action responses for evidence of timeliness and accurate input to GCAS. For all manually input responses verified evidence of review by a second individual. For automatic SWIFT responses, verified that the response was updated automatically in CAMS. Also see Control Objective 2 for data transmission controls surrounding SWIFT messaging.	No deviations noted.

Control Objective 8

Controls provide reasonable assurance that corporate actions and related settlements are identified and processed accurately and timely.

State Street Controls	EY Tests	EY Test Results
8.7 Corporate Action Operations personnel investigate or resolve items for which the client response contains a discrepancy or for which no response has been received. For responses not received by the State Street deadline date, standing instruction is applied. If no standing instruction exists, the default option is processed.	Inspected a sample of corporate actions for which client responses contained discrepancies or were not received, for evidence of investigation and application of standing instructions.	No deviations noted.
8.8 Instructions are released to the subcustodian or non-U.S. depository through GCAS via SWIFT, DTCC/CREST or the appropriate agent based upon the client response and in accordance with the terms of the corporate action created by GCAS. Instructions are reviewed by Corporate Actions Operations personnel for accuracy prior to release.	Inspected a sample of voluntary corporate action execution instructions for review and evidence of timely preparation and communication to DTCC/CREST, the subcustodian or appropriate agent, and reperformed the review for accuracy.	No deviations noted.
Custody Processing		
8.9 Custody processing for corporate actions is performed centrally by Corporate Actions Operations personnel. SMAC/GSMAC is automatically or manually updated by Corporate Actions Operations personnel for corporate action settlements.	Observed the automatic and manual updates to SMAC/GSMAC for settlement of corporate actions.	No deviations noted.
	Inspected a sample of corporate actions for evidence of timely and accurate settlement to SMAC/GSMAC.	No deviations noted.
Accounting Processing		
8.10 Corporate actions such as stock dividends, bonus shares, most name and CUSIP changes and domestic stock splits are automatically posted to MCH. Each day, the Centralized Corporate Actions groups reconcile the confirmed corporate actions to activity that is automatically posted on MCH. Unconfirmed corporate actions are manually posted and reviewed by a second individual.	Inquired of management concerning controls in place to determine whether manual corporate action accounting entries are accurately posted to MCH.	No deviations noted.
	Utilized an ITF to manually settle a sample of corporate actions and traced to proper posting on MCH.	No deviations noted.
	Inspected a sample of manually posted corporate actions for evidence of timely supervisory review and reperformed the review for accuracy of posting to MCH.	No deviations noted.
8.11 The Centralized Corporate Actions groups generate a daily report detailing activity from GCAS and check the Market Data Services website for late corporate action notifications posted by the Corporate Actions Operations personnel to ensure completeness of daily corporate action activity for daily priced funds.	Inquired of management concerning controls performed by Centralized Processing units for funds that are priced daily to determine whether late corporate action notices are timely identified and accurately reflected in the portfolio.	No deviations noted.
	Observed the communication of late corporate action notifications by Corporate Actions Processing to Centralized Corporate Actions units.	No deviations noted.
Past-Due Corporate Actions		
8.12 Past-due cash and share exception reports of corporate actions are monitored by Corporate Actions Operations personnel and aged items are researched and resolved with the paying agent.	Inspected a sample of past-due cash and share exception reports of corporate actions for evidence of timely monitoring and resolution of unsettled corporate actions by Corporate Actions Processing. Also see Control Objective 5 for controls surrounding cash and security position reconciliations.	No deviations noted.

Control Objective 8

Controls provide reasonable assurance that corporate actions and related settlements are identified and processed accurately and timely.

State Street Controls	EY Tests	EY Test Results
DHub		
8.13 For CFD and Single Name Equity Total Return Swaps, on ex-date, DHub automatically identifies corporate actions for positions held. Identified events are manually calculated and posted on DHub. A secondary review for accuracy of the posting is performed timely.	Inspected a sample of corporate actions posted in DHub for CFD and Single Name Equity Total Return Swap positions for evidence of review by a second individual.	No deviations noted.
	Reperformed the review of manually input corporate action data for accuracy and verification.	No deviations noted.

Control Objective 9

Controls provide reasonable assurance that cash disbursements are authorized, processed and recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Cash Disbursements		
9.1 Cash disbursements are authenticated for appropriate client authorization in accordance with the client's signed FTTOP agreement or alternative security procedures agreed to by the business unit and client.	<p>Inspected a sample of cash disbursements for appropriate authorization in accordance with the client's signed FTTOP agreement or alternative security procedures agreed to by the business unit and client.</p> <p>Refer to Control Objective 12 for controls surrounding the authorization of cash disbursements via Expense Manager.</p>	No deviations noted.
9.2 Cash disbursements (e.g., capital activity, variation margin, dividend distributions) are automatically posted to MCH (via Expense Manager or eCFM functionality) or manually recorded to MCH directly. Manually input transactions are compared to supporting documentation by a second individual for accuracy and timeliness.	<p>Inquired of management concerning controls surrounding the authorization and preparation of wires as well as the comparison to supporting documentation.</p> <p>Inspected a sample of cash disbursements for accuracy and timeliness of posting to MCH as well as evidence that a second individual compared the transactions to supporting documentation for transactions that are input manually.</p> <p>Also see Control Objective 5 for controls surrounding cash reconciliations for completeness.</p>	No deviations noted.
9.3 Expense Manager automatically calculates the amount of the vendor invoice to be allocated to each fund on MCH based on the selected methodology.	Reperformed the automated allocation of expenses, including the allocation ratio, on Expense Manager and observed the proper posting on MCH for the average net assets and straight line allocation methodologies.	No deviations noted.
9.4 Expense Manager does not release the payment to post to MCH and Hogan until approved. See Controls 9.1 and 9.2 above for the cash disbursement controls to process the vendor payment from the internal DDA clearing account.	Utilized an online test to observe that Expense Manager will not release a payment to MCH and Hogan prior to approval.	No deviations noted.
9.5 eCFM automatically posts the cash disbursement to the MCH general ledger based on the accounting treatment identified in the pre-established template.	Utilized an online test to test that eCFM automatically posts the cash disbursement to the MCH general ledger based on the accounting treatment identified in the pre-established template and inspected for complete and accurate posting of the cash disbursement to MCH.	No deviations noted.
9.6 eCFM does not release the payment to post to MCH and Hogan until approved. See Controls 9.1 and 9.2 above for the cash disbursement controls to process the vendor payment from the internal DDA clearing account.	Utilized an online test to test that eCFM will not release a payment to MCH and Hogan prior to approval.	No deviations noted.
9.7 Various applications (e.g., VMW, MCH, Hogan/OMP and IIP) perform online edit and validation checks to determine whether the payment information is complete. Applications used to initiate and release wires or money transfers require one individual to initiate a payment and another individual to release the transaction based on approved authorization levels. In addition, these applications provide view access to monitor payment status (pending, approved, rejected).	<p>Utilized an online test to test edit, validation and authorization controls surrounding the initiation and release of wires and money transfers for VMW, MCH and OMP.</p> <p>Also see Control Objective 5 for controls surrounding cash reconciliations for completeness.</p>	No deviations noted.

Control Objective 9

Controls provide reasonable assurance that cash disbursements are authorized, processed and recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Monitoring Controls		
<p>9.8 State Street's access request tool has been configured to prevent MCH, SMAC and GSMAC users requesting access with the ability to initiate and release cash.</p> <p>At least annually, designated State Street personnel review the access request tool for completeness and accuracy of MCH, SMAC, and GSMAC access entitlements that would allow a user to initiate and release cash. Any modifications required are managed by the team managing the access request tool.</p>	Inspected the configuration of the access request tool to determine whether the tool was configured to prevent users from requesting access to MCH, SMAC and GSMAC entitlements which would allow them to initiate and release cash.	No deviations noted.
	Observed a user attempt to request access to entitlements for the MCH, SMAC and GSMAC applications that would allow the ability to initiate and release cash to determine whether the access request was systematically prevented.	No deviations noted.
	Inspected the review of MCH, SMAC and GSMAC access entitlements with the ability to initiate and release cash to determine whether the list of toxic access was reviewed on a periodic basis and at least once every calendar year by designated personnel and updated as required within the access request tool.	No deviations noted.

Control Objective 10

Controls provide reasonable assurance that capital activity received from the client or authorized third parties is recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Capital Activity		
10.1 Capital activity, including subscriptions, redemptions, estimates and dividend reinvestments for mutual funds or other collective investment vehicles and contributions, withdrawals and benefit payments for benefit plans and other institutional accounts, is received via electronic transmission or hard copy from the client's transfer agent, recordkeeper, trustee or other servicing agent. Incomplete transmissions or manual posting variances are identified, researched and resolved.	Observed the receipt and posting of capital stock activity to MCH, including the research and resolution of rejected data received via electronic feed or of manual posting variances.	No deviations noted.
10.2 MCH updates the general ledger to record capital stock transactions after the entries are posted automatically or manually by the Global Accounting groups. MCH performs various edit and validation checks with regard to capital stock activity.	Utilized an ITF to reperform a sample of automatic posting of capital stock transactions on MCH.	No deviations noted.
	Utilized an ITF to test a sample of online edit and validation controls surrounding capital stock prices within MCH.	No deviations noted.
	Utilized an ITF to manually process a sample of capital stock transactions to proper posting on MCH.	No deviations noted.
10.3 MCH, eHorizon and Livewire compare capital transaction (e.g., subscription, redemption and dividend reinvestments) prices against the previous day's NAV and issue a warning message if the price does not agree.	Utilized an online test to observe that MCH generates a warning message when the transaction price does not agree to the previous day's NAV file.	No deviations noted.
	Inquired of management concerning the review for the identification of capital stock transactions not processed at the prior day NAV. Refer to Control Objective 14 for controls surrounding eHorizon and Livewire.	No deviations noted.
10.4 MCH accepts capital stock general ledger journal entries for estimated capital stock activity in the client's records. The estimated capital stock is reversed automatically the next day when the actual activity is posted.	Inquired of management concerning the process surrounding the receipt and manual posting of estimated capital stock activity.	No deviations noted.
	Utilized an ITF to reperform the automatic reversal of estimated capital stock the next day when actual activity is posted to MCH.	No deviations noted.
10.5 Unit/share and/or cash capital balances recorded on MCH are regularly reconciled to the client's transfer agent, trustee or other servicing agent's records either via an automatic reconciliation or manually. Discrepancies greater than a predetermined threshold are researched and resolved by the Global Accounting groups with the transfer agent or other designated recordkeeper and reviewed.	Observed that transfer agent capital stock balances post to MCH completely and accurately.	No deviations noted.
	Observed the automatic and manual reconciliation of capital balances and the procedures performed by the Global Accounting groups to review for any discrepancies.	No deviations noted.
	Inspected a sample of MCH to transfer agent, recordkeeper, trustee or other servicing agent reconciliations of capital stock activity and inspected for evidence of performance, review, and research and resolution of discrepancies greater than the predetermined threshold.	No deviations noted.

Control Objective 10

Controls provide reasonable assurance that capital activity received from the client or authorized third parties is recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
10.6 Cash movement for capital activity may be performed manually (i.e., via VMW, MCH or OMP) or automatically through Hogan. For portfolios set up on MCH to move cash automatically, money movement occurs automatically through an overnight feed processed at the transfer agent/recordkeeper.	Utilized an ITF to trace a sample of capital stock cash movement transactions to proper posting on MCH.	No deviations noted.
	Utilized an ITF to reperform automatic cash movement from the transfer agent to State Street.	No deviations noted.
	See Control Objective 9 for tests surrounding cash disbursements.	
ETFs		
10.7 Upon receipt of the subscription and redemption file from the Transfer Agent, activity is automatically or manually input into the ETF Global Platform which systematically produces the in-kind trade file for distribution. Manually adjusted subscriptions and redemptions which were loaded into the ETF Global Platform are subject to review for accuracy and completeness against the original data from the Transfer Agent and evidence of review is maintained on the daily checklist.	Observed the procedures performed by ETF personnel to process manual adjustments of subscriptions and redemptions not automatically processed into ETF Global Platform.	No deviations noted.
	Utilized an online test to observe that Transfer Agent activity input into the ETF Global Platform systematically produces the in-kind trade file for distribution upon receipt of the subscription and redemption file from the Transfer Agent.	No deviations noted.
	Inspected a sample of subscriptions and redemptions loaded into the ETF Global Platform for evidence of review and reperformed the review for accuracy of original data from the Transfer Agent.	No deviations noted.
Germany		
10.8 Capital orders are aggregated by type (i.e., subscriptions and redemptions) and electronically recorded to MCH.	<i>EY's testing did not include the controls in Germany surrounding the receipt of capital activity prior to processing on MCH as this was not included in the scope of this report.</i>	
	Observed the receipt and posting of capital stock activity to MCH.	No deviations noted.
10.9 Individual client orders (i.e., units) are recorded to a single account on MCH for reconciliation purposes. State Street Bank International GmbH Fund Administration reconciles daily each security position in the MCH reconciliation account to the units outstanding for each depot fund on MCH.	Inspected a sample of daily reconciliations between the MCH reconciliation account and the depot fund on MCH.	No deviations noted.
10.10 Shares outstanding for each depot fund on MCH are reconciled daily to Clearstream by State Street Bank International GmbH Fund Administration.	Inspected a sample of daily reconciliations between MCH and Clearstream.	No deviations noted.

Control Objective 11

Controls provide reasonable assurance that dividend and distribution rates are authorized and dividend amounts are accurately and timely recorded.

State Street Controls	EY Tests	EY Test Results
Periodic Distribution		
11.1 Distribution rates may be based on calculations determined by the client, trustees or other servicing agents (which may include State Street). The Global Accounting groups confirm that instructions are received from a designated authorized individual. The Global Accounting groups compare the total outstanding shares from the MCH trial balance to the total outstanding shares from the transfer agent, trustee or other servicing agent documentation. On ex-date, distribution amounts are automatically calculated and posted to MCH through DR&Y or manually calculated and posted to MCH. Distributions are reviewed for accuracy by a second individual.	For a sample of distributions, reperformed the automatic calculation of periodic distribution amounts through DR&Y and traced to proper posting on MCH.	No deviations noted.
	Utilized an ITF to trace a sample of dividend and distribution transactions to proper posting on MCH.	No deviations noted.
	Observed the automatic calculation and posting of distribution amounts to MCH through DR&Y and the procedures surrounding the second individual's review of manually posted distributions for accuracy.	No deviations noted.
	Inspected a sample of periodic distributions for evidence of comparison of the total outstanding shares from the MCH trial balance to the total outstanding shares from the transfer agent, trustee or other servicing agent and for evidence of review by a second individual for accuracy and authorization of the posting.	<p>Out of a combined sample of 175 periodic distributions selected for testing globally, the following deviations were identified:</p> <ul style="list-style-type: none">• For 4 distributions out of 25 selected for testing in Ireland, evidence of timely review could not be provided. For the 4 selections, evidence of timely performance was obtained. <p>Management Response</p> <p>Management acknowledges that for 4 periodic distributions selected for testing, evidence of timely review could not be provided. Management performed a subsequent review of the distributions and confirmed that the total outstanding shares on MCH agreed to the shares from the transfer agent and the distribution amounts manually calculated using the client authorized distribution rate were accurately posted to MCH.</p> <p>Management notes that:</p> <ul style="list-style-type: none">• eHorizon compares capital transactions against the previous day's NAV and issues a warning if the price does not agree (see control 10.3); and• Out-of-tolerance information is reported to Global Accounting by MyNAV for daily review and resolution (see control 14.2). <p>Additionally, management has reinforced with the appropriate personnel the requirement to properly evidence review of dividend distributions via required training sessions.</p>

Control Objective 11

Controls provide reasonable assurance that dividend and distribution rates are authorized and dividend amounts are accurately and timely recorded.

State Street Controls	EY Tests	EY Test Results
(See previous page.)	Inspected a sample of instructions to confirm they were received from an authorized individual.	No deviations noted.
	Reperformed a sample of manually calculated distributions based on the distribution rate determined by the client, trustees, or other servicing agent.	No deviations noted.
	Refer to Control Objective 14 for controls surrounding eHorizon and Livewire.	
Daily Distribution		
11.2 Some funds distribute income daily based on the funds' prospectus or standing instructions from the client. Distributions are automatically calculated and posted to MCH through DR&Y or manually calculated and posted to MCH. Distributions are reviewed by a second individual through eHorizon, MyNAV or MCH. The rates are disseminated to the transfer agent or third-party agent.	Reperformed the automatic calculation of daily distribution amounts through DR&Y and traced to proper posting on MCH.	No deviations noted.
	Observed the procedures surrounding the second individual's review of the posting of manual distributions to MCH based on the fund's prospectus or standing instructions and the dissemination of daily dividend rates to the transfer agent or third-party agent.	No deviations noted.
	Inspected a sample of daily dividend distributions for evidence of review by a second individual of the Global Accounting groups' accurate posting of manual distributions to MCH based on the fund's prospectus or standing instructions.	No deviations noted.
	Inspected a sample of daily dividend distributions for evidence of the dissemination of the daily dividend rate to the transfer agent or third-party agent. Refer to Control Objective 14 for controls surrounding eHorizon, and MyNAV.	No deviations noted.
German Tax (Luxembourg, Ireland and the U.K.)		
11.3 German tax calculations are initiated by importing data from MCH and EPW into GTS. GTS performs the calculations according to the fund's valuation frequency and regulatory requirements and highlights tolerance breaches based on predefined tolerance levels that require investigation and disposition and review by a team leader or manager prior to dissemination.	Utilized an online test to observe that tax calculations require review and approval prior to dissemination.	No deviations noted.
	Inspected a sample of funds requiring a German tax calculation to determine whether variations highlighted as being in excess of predefined tolerance levels were properly reviewed, disposed of and validated prior to dissemination.	No deviations noted.

Control Objective 12

Controls provide reasonable assurance that expenses and related accruals are authorized, accurately calculated and recorded in accordance with client instructions.

State Street Controls	EY Tests	EY Test Results
Expense Accruals		
12.1 Expense accruals are automatically or manually recorded on MCH directly or via Expense Manager functionality as instructed by or agreed with the client or other authorized party. A review of manually posted expense accruals or adjustments on MCH/Expense Manager is performed for accuracy.	<i>EY's testing did not include manually calculated expense items from off-line spreadsheets as these were not included in the scope of this report.</i>	
	Inquired of management concerning controls surrounding the set-up of expense accruals and adjustments on MCH and review to determine the accuracy of expense calculations.	No deviations noted.
	Inspected a sample of expense accruals or adjustments to determine whether they were accurately posted on MCH/Expense Manager in accordance with client or authorized party instructions, and for evidence of review of manually posted expense accruals.	No deviations noted.
12.2 For clients utilizing Expense Manager, Expense Manager automatically calculates periodic expense accruals and adjustments for transmission/posting to MCH.	Reperformed the automatic calculation of periodic expense accruals by Expense Manager, and observed the accurate posting to MCH.	No deviations noted.
12.3 Expense Manager does not post changes to expense accruals to MCH until approved.	Utilized an online test to observe whether Expense Manager will allow posting of and changes to expense accruals to MCH without approval from authorized individuals.	No deviations noted.
12.4 For certain expenses MCH automatically calculates and posts accruals based upon the accrual rates established by the Global Accounting groups.	Utilized an ITF to process a sample of expense accruals and trace to proper posting on MCH.	No deviations noted.
12.5 Expense entries are subject to online edit and validation checks on MCH.	Utilized an ITF to test a sample of online edit and validation checks surrounding expense entries into MCH.	No deviations noted.
12.6 For daily priced funds, the Global Accounting groups monitor the impact to the fund of expense accrual adjustment changes manually (e.g., Global Accounting groups review for large or unusual fluctuations) or automatically (e.g., MyNAV or eHorizon).	Refer to Control Objective 14 for controls surrounding eHorizon and MyNAV.	

Control Objective 13

Controls provide reasonable assurance that security valuations are recorded completely, accurately and timely in accordance with client instructions.

State Street Controls	EY Tests	EY Test Results
Global Pricing Services		
13.1 Security price data is systematically obtained daily from third-party pricing vendors via real-time or batch data feeds. Received security price data is automatically populated in the pricing database, NAVigator.	For one third-party pricing vendor using a real-time data feed, inspected evidence of scripts and/or configuration logic to determine whether security price data was systematically obtained from the vendor and automatically populated to the pricing database.	No deviations noted.
	For one security from a third-party pricing vendor using a real-time data feed, inspected evidence from the third-party vendor system and the pricing database to determine whether the price was accurately obtained from the vendor.	No deviations noted.
	For one third-party pricing vendor using a batch data feed, inspected evidence of scripts and/or configuration logic to determine whether security price data was systematically obtained from the vendor and automatically populated to the pricing database.	No deviations noted.
	For one security from a third-party pricing vendor using a batch data feed, inspected evidence from the third-party vendor system and the pricing database to determine whether the price was accurately obtained from the vendor.	No deviations noted.
13.2 GPS performs second source data quality checks on listed equity securities for which prices are available from both the primary and secondary equity pricing vendors. Exceptions are researched and reviewed to a third source and prices are updated in NAVigator, if required. NAVigator systematically sends the updated prices to EPW and MCH users.	Inspected a sample of data quality reports for proper research, resolution and review of exceptions, if applicable, and evidence of second source quality checks.	No deviations noted.
13.3 Tolerance failures on fixed income securities are generally returned to the original vendor in the form of a price challenge.	Observed the process performed by GPS personnel to review and research fixed income securities which exceed day-to-day State Street tolerance levels.	No deviations noted.
13.4 EPW systematically identifies pricing exceptions (including derivatives security prices). EPW systematically requires all exceptions to be cleared prior to the prices being delivered to the applicable receiving systems.	Inspected scripts and/or configuration logic to determine whether EPW will identify relevant pricing exceptions.	No deviations noted.
	For each relevant pricing exception type defined within EPW, inspected evidence to determine whether EPW correctly identified the exception.	No deviations noted.
13.5 GPS personnel set up new funds or process changes (including fair value) to existing funds in EPW upon receipt of the EPW Fund Add Form from authorized personnel. A review is performed to compare the information posted to EPW to the EPW Fund Add Form. Exceptions are followed up on and resolved.	For a sample of new funds set up or changes made during the period, inspected the EPW Fund Add Form received by GPS for evidence of authorization by appropriate personnel.	No deviations noted.
	Inspected a sample of new funds set up and changes made during the period to verify accuracy of the information posted to EPW, and evidence of timely review and resolution of exceptions.	No deviations noted.

Control Objective 13

Controls provide reasonable assurance that security valuations are recorded completely, accurately and timely in accordance with client instructions.

State Street Controls	EY Tests	EY Test Results
Exchange Rates		
13.6 Currency exchange rates are obtained automatically at specific hourly intervals throughout the day from WM Company via data feeds. Vendor pricing feeds are systematically monitored for completeness.	Inspected job scheduler configurations to determine whether vendor currency exchange rates were automatically imported based on defined schedules throughout the day.	No deviations noted.
	Inspected job scheduler logic to determine whether an alert is raised for an unsuccessful vendor currency exchange rate import.	No deviations noted.
	For a sample of days, inspected evidence to determine whether vendor currency exchange rates were successfully imported or if unsuccessful, an alert was raised and processing errors were timely addressed, as necessary.	No deviations noted.
	For one vendor exchange rate file, inspected the vendor source file and the imported data in the recipient system to determine whether the import was processed completely and accurately.	No deviations noted.
EPW Pricing		
13.7 Identified exceptions are researched and resolved daily. The Rejected Pricing Report, detailing price exceptions and corrective actions taken, is subject to secondary review.	Inspected a sample of Rejected Pricing Reports and supporting documentation, as applicable, for evidence of daily review by the Centralized Processing unit's personnel of unpriced, stale, out-of-tolerance prices and manually updated prices.	No deviations noted.
	Reperformed a sample of tolerance checks to test the mathematical accuracy of the EPW tolerance checks for security pricing and agreed EPW parameters to client agreements.	No deviations noted.
	Inspected scripts and/or configuration logic to determine whether the parameters and logic used to generate the rejected pricing report were accurate.	No deviations noted.
EPA Team		
13.8 Certain vendor pricing feeds are received directly by the EPA team to meet specific client requests and for intraday pricing purposes. These feeds are monitored and transmitted to EPW when received.	Observed the monitoring controls over vendor pricing feeds received by the EPA team and transmitted to EPW.	No deviations noted.
International Fair Value Pricing		
13.9 EPW automates the ability to invoke systematic fair value pricing based on available market triggers such as S&P 500®, Russell 1000®, Russell 2000® or daily as specified in the EPW Fund Add Form.	Utilized an ITF to test a sample of market triggers and observed that EPW automatically invokes systematic fair value pricing of the portfolio when the trigger was achieved.	No deviations noted.

Control Objective 13

Controls provide reasonable assurance that security valuations are recorded completely, accurately and timely in accordance with client instructions.

State Street Controls	EY Tests	EY Test Results
13.10 EPW automatically applies the fair value factors to the security prices in EPW, based on the selected confidence level/significant measure, if applicable.	Utilized an ITF to observe that fair value factors from the vendor pricing feeds are automatically updated in EPW based on the selected confidence level/significant measure, if applicable.	No deviations noted.
13.11 EPW automatically applies the correct price (Regular or Fair Value) for funds set up to use an automated trigger.	Utilized an online test to observe that EPW will automatically apply the correct price for funds set up to use an automated trigger.	No deviations noted.
MCH Pricing		
13.12 For securities priced on MCH, GPS generates unpriced security reports from the daily holding files, which are researched throughout the month, such that an alternative/tertiary pricing source may be obtained for month-end pricing on MCH. At month-end, GPS retrieves prices from the previously identified sources recorded in the unpriced security database and updates these prices to MCH for application to client holdings.	Observed the process performed by GPS personnel to research securities listed on the MCH unpriced securities report and to update the price in MCH.	No deviations noted.
13.13 For funds priced monthly, once securities are priced, exception reports are generated from either MCH or OSA-ASA. The MCH or OSA-ASA price tolerance audit performed by the Global Accounting groups identifies prices requiring further review, including manual, out-of-tolerance, new buys, unpriced, stale, delisted and no-tolerance securities.	Inquired of management concerning controls surrounding the price tolerance audit and the identification of prices requiring further review.	No deviations noted.
	Inspected a sample of monthly reconciliations for evidence of research, resolution and timely review.	No deviations noted.
Money Market Pricing		
13.14 Money market funds maintaining a stable NAV (i.e., \$1.00) are recorded on MCH at amortized cost. Periodically, in accordance with regulatory requirements and client instructions, Global Accounting personnel will obtain market prices, where available, or use alternative pricing methods as authorized by the client. The fund's NAV using the market prices is calculated using either a database or priced through EPW and calculated using eHorizon functionality and compared to the NAV at amortized cost. The report comparing amortized cost to market value is disseminated to the client for their review.	Observed the periodic pricing of Money Market funds using actual prices for confirmation that pricing via amortized cost approximates market value.	No deviations noted.
	Inspected a sample of amortized cost to market value comparison reports for evidence of preparation and dissemination to the client.	No deviations noted.
	Utilized an online test for funds priced through EPW to observe the accurate calculation of the fund's NAV using eHorizon, including the comparison of the fund's amortized cost to market value.	No deviations noted.

Control Objective 14

Controls provide reasonable assurance that NAV is calculated accurately and timely.

State Street Controls	EY Tests	EY Test Results
Net Asset Value		
14.1 The eHorizon and MyNAV applications are used for certain clients/funds to validate the fund's NAV. Warning messages are generated by eHorizon and MyNAV for certain types of transactions posted to MCH.	Utilized an online test to observe a sample of alerts generated on the eHorizon and MyNAV applications.	No deviations noted.
14.2 Out-of-tolerance information is automatically reported to the Global Accounting groups as an alert by the MyNAV, eHorizon, and Livewire applications for daily review and resolution. Activity impacting funds' NAVs is reviewed by Global Accounting personnel within required time frames. For funds domiciled in APAC countries and serviced in Hangzhou, a periodic tolerance review is performed based on predetermined thresholds. If the predetermined threshold is exceeded, activity impacting the funds' current day NAV is reviewed and resolved by senior Global Accounting personnel within required time frames.	Inquired of Global Accounting groups concerning controls surrounding the review of activity impacting the funds' NAVs within required time frames.	No deviations noted.
	Utilized an online test to observe that all alerts in MyNAV and eHorizon must be cleared prior to the final NAV being distributed. Out-of-tolerance alerts, if any, were researched and resolved timely by senior Global Accounting group personnel.	No deviations noted.
	Observed the Global Accounting personnel's review and follow-up of out-of-tolerance information reported by eHorizon and MyNAV.	No deviations noted.
	Inspected a sample of MyNAV, eHorizon and Livewire packages for evidence of timely research and resolution of out-of-tolerance information by Global Accounting personnel, if applicable.	No deviations noted.
14.3 For certain funds priced on MCH, OSA-ASA audits are systematically generated. The audits reconcile general ledger to subsidiary ledger account balances for cash, cost of investments, open trades, payables/receivables and pending foreign exchanges, and rollforwards of prior period balances to the current period using current period activity for portfolio cost and shares, open trades, foreign exchange and realized gain/loss. Exceptions to OSA-ASA audits are reviewed, resolved and closed on OSA-ASA. For funds priced on MCH for which no OSA-ASA audits are generated, activity reports directly obtained from MCH are tied out periodically to the trials. Exceptions are followed up and resolved.	Utilized online testing to observe that OSA-ASA audit reports are accurately generated based on activity in MCH.	No deviations noted.
	Observed the OSA-ASA audits performed by Global Accounting groups and the follow-up and resolution of exceptions. Refer to the section titled General Ledger to Subsidiary Ledger Accuracy Review within this control objective.	No deviations noted.
14.4 Month-end reports such as the fund/trust's trial balance, statement of condition, portfolio appraisal, portfolio purchases and sales, and gain/loss are generated and reviewed by a second individual.	Inquired of management concerning controls surrounding completion and review of month-end reports for accuracy of NAV.	No deviations noted.
	Observed the procedures surrounding the generation and review of Month-end reports.	No deviations noted.
	Utilized an ITF to process a sample of transactions and verified that the transactions posted completely and accurately to the MCH and eHorizon (via the Ledger to Sub-ledger functionality) generated reports.	No deviations noted.
	Utilized an ITF to process a sample of transactions, within a multi-managed fund, and verified that the transactions posted completely and accurately to the MCH, eHorizon (via the Ledger to Sub-ledger functionality), and MySS generated reports.	No deviations noted.

Control Objective 14

Controls provide reasonable assurance that NAV is calculated accurately and timely.

State Street Controls	EY Tests	EY Test Results
(See previous page.)	Inspected a sample of month-end reports for evidence of timely generation and review of reports by a second individual.	For 1 of 45 month-end reports selected for testing, evidence of timely generation and review of reports by a second individual could not be provided. Management Response Management acknowledges that for 1 of 45 month-end reports selected for testing, evidence of timely generation and review of reports by a second individual could not be provided. Management has reinforced with the appropriate personnel the requirement to maintain evidence of secondary review.
Money Markets		
14.5 Money market funds maintaining a floating NAV receive security valuations from EPW. Alerts are automatically generated through eHorizon for each valuation period (i.e., intra-day) and are period specific. A review of the NAV change is performed and differences in account balances exceeding predefined thresholds are investigated and resolved timely. A review of the NAV change is performed by a second individual.	Observed the automatic generation of security pricing notification alerts through eHorizon for the period specific valuation period, the manual review of NAV changes within the intra-day period and the research and resolution for changes exceeding the predetermined threshold and the review of NAV changes by a second individual.	No deviations noted.
	Inspected a sample of valuation periods for a sample of money market funds maintaining a floating NAV for timely evidence of review of the NAV change, and timely research and resolution of NAV changes exceeding the pre-determined threshold.	No deviations noted.
Multi-Class		
14.6 A multiple share class allocation ratio to allocate fund-level income, expenses and realized/unrealized gain/loss amounts to the share classes is calculated daily. The ratio is calculated automatically through MCH.	<i>EY's testing did not include controls surrounding the manual input of the multiple share class allocation ratios into MCH as this was not included in the scope of this report.</i> Utilized an ITF to recalculate the multiple class allocation ratio automatically calculated by MCH.	No deviations noted.
14.7 MCH calculates the amount to allocate to the share classes based on the predetermined ratio defined at the fund level.	Utilized an ITF to recalculate the multiple class allocation of a selection of various income items, expenses and realized gains or losses to the individual classes of capital stock, and traced them to proper posting on MCH.	No deviations noted.
14.8 eHorizon or MyNAV automatically generate an alert if the fund-level net assets do not reconcile to the sum of the class-level net assets.	Utilized online testing to observe that eHorizon and MyNAV generate an alert if the fund-level net assets do not reconcile to the sum of the class-level net assets.	No deviations noted.

Control Objective 14

Controls provide reasonable assurance that NAV is calculated accurately and timely.

State Street Controls	EY Tests	EY Test Results
Luxembourg		
14.9 Luxembourg investment funds and structures are required to send financial data on a monthly, quarterly and annual basis to the Luxembourg regulators and/or supervisory bodies. The content and reporting period/deadline requirements for such reports are defined by the regulators in respective circulars, which are subject to updates and adjustments. Period-end reports are generated using accounting data (MCH/eHorizon, DHub etc.) via automated tools or manually with the final report reviewed by a centralized Regulatory Reporting team. Upon approval, the reports are transmitted electronically to the regulators within the defined deadlines.	Inspected a sample of different reports for evidence of review and transmission to the regulator within required time frames.	No deviations noted.
Australia		
APRA Reporting		
14.10 RTS personnel process and review new portfolios or changes to existing portfolios on ESP based on information from the client, applicable updates or new reporting requirements (including look-through and external data). A RTS Senior Accountant or above performs a review (second individual) of the new set-up or the changes to the existing set-up and evidences review on the General Fund Set-up and Data Collection checklist.	Inquired of management regarding controls surrounding the new set-up or changes to existing client set-ups based on client information, applicable updates or new reporting requirements.	No deviations noted.
	Inspected a sample of general fund set-up and data collection checklists for new portfolios and/or existing portfolios within ESP for evidence of performance based on client information and review of the new set-up or the changes to the existing set-up.	No deviations noted.
14.11 RTS personnel update new security classifications within ESP according to client requirements and SSAL's APRA policies. Updated security classifications are reviewed by a RTS Senior Accountant or above and a review is evidenced on the APRA Security Asset Classification Checklist.	Inspected a sample of APRA Security Asset Classification Checklists for evidence of review.	No deviations noted.
14.12 A quarterly reconciliation is performed by RTS personnel between data in ESP to the MCH Trial Balance (composite level) and reviewed by a RTS Senior Accountant or above. The review is evidenced on the respective APRA form checklist. Differences are investigated and resolved.	Inquired of management concerning controls surrounding the reconciliation of data between ESP and MCH and investigation and resolution of discrepancies and review.	No deviations noted.
	For funds on ESP, inspected a sample of APRA form checklists and reconciliations between data in ESP to the MCH Trial Balance for evidence of performance, investigation and resolution of discrepancies, and evidence of review.	No deviations noted.

Control Objective 14

Controls provide reasonable assurance that NAV is calculated accurately and timely.

State Street Controls	EY Tests	EY Test Results
General Ledger to Subsidiary Ledger Accuracy Review		
14.13 Daily and/or periodically (no less than monthly), the Global Accounting groups reviews that MCH subsidiary account ledger balances agree to the related MCH general ledger account balance. Differences, if any, are researched and resolved by the Global Accounting groups. A review is performed by a second individual. For certain funds utilizing the eHorizon General Ledger to Subsidiary Reconciliation functionality, an alert is automatically generated in eHorizon when differences are identified and must be cleared prior to report generation.	Observed the system reconciliation between MCH subsidiary account ledgers and related MCH general ledger account balances and the Global Accounting groups' research and resolution of differences, if any, and review of unresolved differences by a second individual.	No deviations noted.
	Reperformed a sample of periodic reconciliations (no less than monthly) between MCH subsidiary account ledgers and related MCH general ledger account balances and inspected for evidence of preparation by Global Accounting personnel and review by a second individual.	No deviations noted.
	Utilized an online test to observe a sample of alerts generated by the eHorizon General Ledger Subsidiary Reconciliation functionality and that alerts must be cleared prior to the final report generation.	No deviations noted.
	For a sample of funds on the MCH and eHorizon applications, observed the NAV calculation logic and profile configuration within the production environment and reperformed the NAV calculation to determine whether fund NAVs were calculated accurately.	No deviations noted.
Master/Feeder Processing		
14.14 When applicable, a master fund to/from feeder fund cash movement must be processed before MCH will allow master fund allocations to be processed and posted to a feeder fund.	Observed the cash movement to/from a feeder fund to the master fund before the processing of master fund allocations.	No deviations noted.
14.15 eHorizon generates an alert each time there is a cash balance in one of the feeder funds.	Observed that eHorizon generated an alert when there was a cash balance in the feeder funds. Refer to the section titled Net Asset Value within this control objective.	No deviations noted.
14.16 MCH systematically calculates a feeder fund's ownership interest based on a feeder fund's proportional interest in a master fund. The Global Accounting group reviews an MCH allocation screen to validate that the aggregate feeder funds' ownership interests in a master fund sum to 100%, prior to allocating the master fund's economic activity to the feeder funds.	Reperformed the systematic calculation of each feeder fund's ownership interest based on the feeder fund's proportional interest in the master fund.	No deviations noted.
	Utilized an online test to observe that the feeder funds' ownership interests in the master fund sum to 100%.	No deviations noted.
14.17 MCH systematically allocates daily master fund income and expense accruals, unrealized and realized gains/losses distinctly for each ledger account to a corresponding ledger account at each feeder fund based on the respective feeder fund's ownership interest.	Reperformed the systematic calculation of each feeder fund's allocated income and expense accruals, and unrealized and realized gains/losses from the master fund.	No deviations noted.
	For a sample of funds, recalculated each feeder fund's allocated income and expense accruals, and unrealized and realized gains/losses from the master fund.	No deviations noted.

Control Objective 14

Controls provide reasonable assurance that NAV is calculated accurately and timely.

State Street Controls	EY Tests	EY Test Results
14.18 eHorizon automatically performs a daily master/ feeder reconciliation to reconcile the sum of the feeder funds' investments in master accounts to the net assets of the master fund. An alert is generated by eHorizon if the aggregate feeder fund's ownership interest in a master fund does not sum to 100%. Differences exceeding a predetermined threshold are researched and resolved by a second individual.	Observed the daily master/feeder reconciliation and the Global Accounting groups' research and resolution of differences, if any.	No deviations noted.
	Inspected a sample of eHorizon alerts for timely resolution of differences exceeding a predetermined threshold, if any, and evidence of review.	No deviations noted.
	Reperformed the daily master/feeder reconciliation to reconcile the sum of the feeder funds' investments in master accounts to the net assets of the master fund.	No deviations noted.
Fund of Funds ("FOF")		
14.19 Daily, MCH automatically calculates the per unit value for each lower-tiered fund, which is automatically approved by MCH or manually approved by an authorized user. Post review, the per unit value of lower-tiered fund is automatically applied to the higher-tiered fund, in order to calculate the higher-tiered funds' per unit value.	Reperformed the per unit value calculation of lower-tiered fund and the allocation to higher-tiered fund.	No deviations noted.
	Utilized an online test to observe that per unit allocation from lower-tier funds cannot be released to higher-tier funds prior to the approval of the per unit value within MCH.	No deviations noted.
Flexible Fund Cycle		
14.20 The flexible fund cycle automation within MCH allows fund groups to calculate fund NAV at any time on any day. The fund's accounting records can be closed and rolled forward at any time during a day with month end or year end falling on any business day independent of scheduled cycles. Same day client reporting is available upon the close of the fund.	Utilized an ITF to test that the flexible fund cycle functionality within MCH allows the fund groups to close and roll forward fund accounting records to the next business day.	No deviations noted.
Pooling Structures		
14.21 Global Accounting personnel run the request to update the ownership ratios once the contribution/withdrawal records are allocated from the participant fund(s) to the pool. MCH calculates the new ownership ratios.	Utilized an ITF to test the update in ownership ratios once contributions/withdrawals are posted and to ensure the allocation ratio is accurate from the participant fund(s) to the pool.	No deviations noted.
14.22 If there have been no transactions for the day MCH automatically posts a zero contribution record.	Utilized an ITF to test a post of zero contribution on a day there are no transactions.	No deviations noted.
14.23 The fund group performs a reconciliation to validate the system-generated ownership ratios. Differences are researched and resolved.	Inspected a sample of reconciliations for evidence of review and to determine that the system-generated ownership ratios were complete, accurate and differences were researched and resolved, as applicable.	No deviations noted.
14.24 MCH automatically generates and posts rebalancing activity at the participating funds' level, based on the new ownership ratios.	Utilized an ITF to test rebalancing activity automatically posted on MCH at the sub-funds level were based on the new ownership ratios.	No deviations noted.
14.25 MCH automatically replicates and posts new pool activity at the participating funds' level.	Utilized an ITF to test new pool activity is automatically posted and replicated on MCH.	No deviations noted.

Control Objective 14

Controls provide reasonable assurance that NAV is calculated accurately and timely.

State Street Controls	EY Tests	EY Test Results
Limited Partnerships		
14.26 Periodically (i.e., daily or monthly), eCFM automatically obtains the partnership share from MCH as of the specified ending date and systematically calculates the new price per share. eCFM automatically updates MCH with the new price per share.	For a sample of limited partnership funds, recalculated price per share in eCFM and agreed the price per share to MCH.	No deviations noted.
14.27 Periodically, (i.e., daily or monthly), eCFM automatically calculates the Cash Adjusted Market Value (CAMV).	For a sample of limited partnership funds, recalculated total CAMV in eCFM.	No deviations noted.
14.28 A tolerance check is run to validate the CAMV calculation. Changes greater than a predetermined threshold are flagged, investigated and reviewed by a second individual.	Inspected a sample of Unrealized Gain/Loss Change Reports for evidence of investigation and review of changes greater than the predetermined threshold.	No deviations noted.
14.29 Periodically (i.e., daily or monthly), MCH automatically calculates the total CAMV and systematically updates the MCH general ledger.	For a sample of limited partnership funds, recalculated total CAMV in MCH.	No deviations noted.
14.30 Upon approval, eCFM systematically feeds the general ledger entries into MCH. MCH is monitored for completeness and accuracy of postings.	Utilized an online test to test that eCFM will not post to MCH general ledger prior to approval.	No deviations noted.
	Inspected a sample of general ledger entry postings to MCH for accuracy and completeness, and resolution of failed transactions in eCFM, if any.	No deviations noted.
Driverless NAV ("DNAV")		
DNAV Onboarding – From January 1, 2023 to September 30, 2023		
14.31 Once a fund meets certain data eligibility requirements (e.g., set up on Real Time Trial, Expense Manager, Income Change, G/L Alerts, etc.) the eHorizon Deployment Team or BOaT* sets up new funds on DNAV and EDW upon receipt of an eHorizon Fund Level Service Setup Request (which includes workflow specific to the fund, live date and fund) from authorized personnel. On a weekly basis, Fund Accounting teams perform a review of funds set up on DNAV for the prior week and communicate approval or submit required changes.	Utilized an online test to observe the request and set up of funds on DNAV using Microsoft Access funds database.	No deviations noted.
	Inspected the weekly report and email communication to the corresponding business units and stakeholders for completeness and accuracy of funds set up on the DNAV service.	No deviations noted.
*For certain business units, BOaT clones an existing service on eHorizon which brings the DNAV service to the new fund being set up.		

Control Objective 14

Controls provide reasonable assurance that NAV is calculated accurately and timely.

State Street Controls	EY Tests	EY Test Results
DNAV Event Driven Workflow – From January 1, 2023 to September 30, 2023		
14.32 The receipt and posting of the capital stock activity triggers the Capstock Milestone. (See control 10.1 for posting of capital stock activity). Specific steps (i.e., review of the capital stock feed, automated comparison of MCH ledger to transfer agent data, review of multi-class allocation ratios and related alerts, if applicable, and review of capital stock G/L alerts) are completed in EDW. Alerts generated during the processing are reported in DAS and are investigated, researched and resolved. A second individual reviews the resolution response and approves the closure of the alerts. The Capstock Milestone completes upon approval of all Capstock-related steps.	Inspected scripts and configuration logic to determine whether relevant, outstanding critical alerts in DAS systematically prevent completion of the Capstock Milestone within EDW.	No deviations noted.
	Inspected scripts and configuration logic to determine whether critical alerts within DAS require an independent secondary approval to close.	No deviations noted.
	For a sample of DAS alert configuration changes, inspected test results and sign offs to determine whether the changes were tested and approved by designated personnel.	No deviations noted.
	Inspected scripts and configuration logic to determine whether alert configuration changes within DAS require approval.	No deviations noted.
	Utilized an ITF to test the automatic generation of a sample of alerts for out-of-tolerance alerts reported within the application. Additionally, walked through the four milestones and observed alerts closing for each and that the next milestone would not open until the previous was closed.	No deviations noted.
14.33 The completion of the Capstock milestone triggers the automatic posting of expense accruals from Expense Manager to MCH, the review of the Expense Publication Report and generation of expense-related alerts, if any, are reported in DAS. Alerts are investigated, researched and resolved. A second individual reviews the responses and approves the closure of the alerts. The Expense Milestone completes upon approval of all expense-related steps.	Inspected scripts and configuration logic to determine whether relevant, outstanding critical alerts in DAS systematically prevent completion of the Expense Milestone within EDW.	No deviations noted.
	Inspected scripts and configuration logic to determine whether critical alerts within DAS require an independent secondary approval to close.	No deviations noted.
	For a sample of DAS alert configuration changes, inspected test results and sign offs to determine whether the changes were tested and approved by designated personnel.	No deviations noted.
	Inspected scripts and configuration logic to determine whether alert configuration changes within DAS require approval.	No deviations noted.
	Utilized an ITF to test the automatic generation of a sample of alerts for out-of-tolerance alerts reported within the DAS application.	No deviations noted.
14.34 Automated income accrual jobs are triggered throughout the day resulting in income accruals posting to MCH. If applicable, income accruals from DHub and WSO are automatically posted. Income change alerts exceeding tolerances are generated in eHorizon throughout the day and reported in DAS. Alerts, if any, are investigated, researched and resolved. A second individual reviews the resolution response and approves the closure of the alert. The Income Milestone completes upon the completion of the final accrual job and the completion of all income-related steps.	Inspected scripts and configuration logic to determine whether relevant, outstanding critical alerts in DAS systematically prevent completion of the Income Milestone within EDW.	No deviations noted.
	Inspected scripts and configuration logic to determine whether critical alerts within DAS require an independent secondary approval to close.	No deviations noted.
	For a sample of DAS alert configuration changes, inspected test results and sign offs to determine whether the changes were tested and approved by designated personnel.	No deviations noted.

Control Objective 14

Controls provide reasonable assurance that NAV is calculated accurately and timely.

State Street Controls	EY Tests	EY Test Results
(See previous page.)	Inspected scripts and configuration logic to determine whether alert configuration changes within DAS require approval.	No deviations noted.
	Utilized an ITF to test the automatic generation of a sample of alerts for out-of-tolerance alerts reported within the DAS application.	No deviations noted.
14.35 For daily distribution funds only, the Distribution Milestone is triggered upon completion of the Capstock, Expense and Income milestones. DR&Ys automatically calculates the daily distribution (see control 11.2). Critical distribution-related alerts, if any, are reported in DAS and are investigated, researched and resolved. A second individual reviews the resolution response and approves the closure of the alert. The distribution milestone completes upon the completion of all the distribution-related steps.	Inspected scripts and configuration logic to determine whether relevant, outstanding critical alerts in DAS systematically prevent completion of the Distribution Milestone within EDW.	No deviations noted.
	Inspected scripts and configuration logic to determine whether critical alerts within DAS require an independent secondary approval to close.	No deviations noted.
	For a sample of DAS alert configuration changes, inspected test results and sign offs to determine whether the changes were tested and approved by designated personnel.	No deviations noted.
	Inspected scripts and configuration logic to determine whether alert configuration changes within DAS require approval.	No deviations noted.
	Utilized an ITF to test the automatic calculation of the daily distribution within the DAS application.	No deviations noted.
	Utilized an ITF to test the automatic generation of critical distribution alerts reported within the DAS application.	No deviations noted.
DNAV eHorizon Mark-to-Market – From January 1, 2023 to September 30, 2023		
14.36 MCH automatically marks to market foreign-denominated balance sheet accounts (i.e., interest, dividends, payables/receivables and security holdings, etc.) using either the current day's or prior day's (based on the fund's setup) exchange rate. The unrealized appreciation/depreciation is automatically posted to the general ledger. eHorizon systematically updates the status in MyView if mark-to-market does not complete.	Utilized an ITF to test the mark to market of foreign accounts and security holdings using either the current day's or prior day's (as instructed by the client) exchange rate and the automated posting of unrealized appreciation/depreciation to the general ledger.	No deviations noted.
14.37 eHorizon systematically generates a critical alert if the appreciation/depreciation for forward or spot contracts exceeds a predefined tolerance. Alerts, if any, are investigated, researched and resolved by designated personnel based on predefined criteria. A second individual reviews the resolution response and approves the closure of the alert.	Inspected scripts and configuration logic to determine whether eHorizon compares the appreciation/depreciation of forward or spot contracts against a predefined tolerance.	No deviations noted.
	Inspected scripts and configuration logic to determine whether eHorizon automatically generates an alert in MyView when the appreciation/depreciation of forward or spot contracts exceeds the predefined tolerance.	No deviations noted.
	Observed that eHorizon prevents a user from editing the predefined tolerance and subsequently approving the edit.	No deviations noted.
	Utilized an ITF to test the automatic generation of critical alerts reported within the Mark-to-Market application for appreciation/depreciation outside of the predefined tolerance.	No deviations noted.

Control Objective 14

Controls provide reasonable assurance that NAV is calculated accurately and timely.

State Street Controls	EY Tests	EY Test Results
DNAV Hedge Workflow – From January 1, 2023 to September 30, 2023		
14.38 eHorizon will systematically post settled cash, realized gain/loss and unrealized gain/loss from the hedge sleeve to the corresponding parent share class. Failed postings appear in MyView.	Inspected scripts and configuration logic to determine whether eHorizon failed postings will trigger MyView alerts.	No deviations noted.
	Utilized an ITF to test that eHorizon will systematically post daily cash and realized/unrealized gain/loss from the hedge sleeve to the corresponding share class ledgers of the parent share class.	No deviations noted.
14.39 For U.K. domiciled funds only, eHorizon systematically calculates the income/capital split based on predefined criteria.	Inspected scripts and configuration logic to determine whether eHorizon systematically calculates the income/capital split for U.K. domiciled funds.	No deviations noted.
	Utilized an ITF to test that eHorizon will systematically calculate income/capital split for clients using this posting method.	No deviations noted.
14.40 eHorizon automatically generates an alert if the ending sum of the corresponding parent class balances do not reconcile to the child class (hedge sleeve) balances.	Inspected scripts and configuration logic to determine whether a variance between parent class balances and child class balances is identified by eHorizon.	No deviations noted.
	Inspected scripts and configuration logic to determine whether eHorizon automatically generates an alert when a variance between parent class balances and child class (hedge sleeve) balances is identified.	No deviations noted.
14.41 For daily priced funds which make the specific election, eHorizon will automatically generate a critical alert if the impact of currency hedge entries exceeds a predefined tolerance. Alerts, if any, are reported in DAS and investigated, researched, and resolved. A second individual reviews the resolution response and approves the closure of the alert.	Inspected scripts and configuration logic to determine whether eHorizon compares the impact of currency hedge entries against the defined tolerance for a daily priced fund.	No deviations noted.
	Inspected scripts and configuration logic to determine whether eHorizon automatically generates an alert in DAS when the impact of currency hedge entries exceeds the predefined tolerance for a daily priced fund.	No deviations noted.
	Observed that eHorizon prevents a user from editing the tolerance for a daily priced fund and subsequently self-approving the edit.	No deviations noted.

Control Objective 15

Controls provide reasonable assurance that financial data recorded in MCH and information received from the client and other third parties is accurately processed in the draft shareholder reports.

State Street Controls	EY Tests	EY Test Results
United States Financial Reporting		
Semi-annual and Annual Reports to Shareholders and Quarterly Schedule of Investments		
Financial Statement Template Set-up		
15.1 Financial Reporting creates customized financial statement templates for each client, or a financial statement template is provided by the client, prior to the first shareholder reporting cycle for which State Street is responsible. Templates are maintained in the FundSuite SX and FundSuiteArc (U.S.) applications. The integrity of the template design and information presented is maintained by restricting access via the application protection features.	Observed financial statement templates to verify they are appropriately restricted.	No deviations noted.
15.2 Adjustments made via the FundSuite SX and FundSuiteArc (U.S.) applications are logged; capturing the date the adjustment was made, the user name making the change and the account change details (e.g., account code, account, debit/credit amount). A system report can be generated which captures manual adjustments posted to each account.	Utilized an ITF to test that an audit trail is maintained in FundSuite SX and FundSuiteArc (U.S.) and that manual adjustments are captured in the FundSuite GL Transaction/Adjustment Report.	No deviations noted.
Report Creation and Analysis and Preparation and Maintenance of the Shareholder Report Checklists		
15.3 The Financial Reporting staff at Senior Associate and/or above reviews the draft financial statements, including the quarterly Schedule of Investments (Form N-PORT, Part F) and the completed POI Preparation and POI Review Checklists (Activity-Based Checklist), FR Combined Checklist and the GAAP and Regulation S-X Checklist (together, the Shareholder Report Checklist) for accuracy and completeness. This review includes tracing financial statement disclosures back to the fund accounting records or third-party-provided source documentation, reviewing the mathematical accuracy of the draft financial statements and providing an explanation for each "No" response documented in the GAAP and Regulation S-X checklist. Discrepancies between the draft financial statements and the source documentation are researched and resolved. Additionally, a review is performed, if applicable, by a second individual to verify that new and existing rules and regulations governing appropriate disclosures have been incorporated within the report correctly and that the report accurately reflects period operations.	Inspected a sample of GAAP and Regulation S-X, FR Combined Checklist and POI Preparation and POI Review Checklists for evidence of completion and review by a second individual, and that an explanation was provided for each "No" response, if applicable.	No deviations noted.
15.4 State Street's Disclosure Controls & Procedures Committee (the "Committee") monitors industry regulatory developments.	Inspected a sample of Disclosure Controls & Procedures Committee minutes for evidence that new regulatory developments and related guidance was monitored.	No deviations noted.

Control Objective 15

Controls provide reasonable assurance that financial data recorded in MCH and information received from the client and other third parties is accurately processed in the draft shareholder reports.

State Street Controls	EY Tests	EY Test Results
Information Provided by the Client or Third Parties		
15.5 For certain clients, Financial Reporting receives certain information for inclusion in draft shareholder reports from the client or other third-party service providers that is required disclosure in the financial statements. This information includes, but is not limited to, the Management Discussion of Fund Performance, tax disclosures, board of trustees/directors information and proxy voting results. State Street maintains documentation to support disclosures if provided by the client or other third-party service providers but does not perform procedures to determine the accuracy and completeness of those disclosures.	Inquired of management regarding the controls in place to determine whether information provided by the client or a third party is properly included in the draft shareholder reports.	No deviations noted.
	Observed the processing and inclusion of client or third-party information into the draft shareholder reports.	No deviations noted.
Australia Financial Reporting		
15.6 Customized financial statements templates are created within FundSuiteArc (Australia) for a number of Australian clients. The customized templates are prepared and reviewed by the RTS Team prior to the first reporting cycle for which State Street is responsible.	Inquired of management regarding the controls surrounding the preparation and review of the financial statements templates created.	No deviations noted.
	Inspected a sample of proforma templates for new financial statements set up within FundSuiteArc (Australia) to determine whether the financial statements templates have been prepared and reviewed.	No deviations noted.
15.7 The RTS Team's Senior Associate and/or Officer reviews the draft financial statements for accuracy and completeness and completes a reviewer checklist. This review includes tracing financial statement disclosures back to the fund accounting records. Discrepancies between draft financial statements and the source documentation are investigated and resolved.	For funds on FundSuiteArc (Australia), inspected a sample of reviewer checklists and source documentation for evidence of performance, investigation and resolution of discrepancies, and evidence of review.	No deviations noted.
15.8 The RTS Team monitors accounting and industry developments and modifies the master financial statements checklists as necessary to reflect current industry requirements, when applicable.	Inquired of management regarding controls surrounding monitoring of accounting and industry developments and reflecting current requirements in the master financial statements checklists.	No deviations noted.
	Inspected a sample of master financial statements checklists for evidence of changes to reflect current industry requirements, when applicable.	No deviations noted.
15.9 Manual general ledger adjustments made via FundSuiteArc (Australia) are logged, capturing the date the modification was made, the user name making the change and the account change details (e.g., account code, account, debit/credit amount). A system report can be generated which captures manual general ledger adjustments posted to each account, which is reviewed by a RTS Senior Accountant or above.	Inquired of management regarding the controls surrounding the review of manual journal entries.	No deviations noted.
	For funds on FundSuiteArc (Australia), inspected a sample of reviewer checklists and supporting documentation to determine whether the manual general ledger adjustments have been reviewed.	No deviations noted.
	Inspected a sample of users within the FundSuiteArc (Australia) database to determine whether the access rights have been appropriately authorized, including any changes in user profiles and disabled users.	No deviations noted.

Control Objective 15

Controls provide reasonable assurance that financial data recorded in MCH and information received from the client and other third parties is accurately processed in the draft shareholder reports.

State Street Controls	EY Tests	EY Test Results
15.10 Reports are generated by FundSuiteArc (Australia) after the completion of the financial statements preparation process and are reviewed by the RTS Team. Key reports include: Financial Workbook, Holdings, and Manual journals listing.	For funds on FundSuiteArc (Australia), inspected a sample of preparer and reviewer checklists and supporting documentation to determine whether the financial statement key reports have been reviewed.	No deviations noted.
15.11 The financial statements templates are reviewed and amended as necessary prior to issuance to clients as part of each reporting cycle for which State Street is responsible.	Inspected a sample of financial statement templates for the evidence of review and amendment prior to issuance to clients.	No deviations noted.
EMEA Financial Reporting (Ireland, Luxembourg, Switzerland and United Kingdom) <i>The below controls relate to clients using FundSuiteArc</i>		
15.12 Financial Reporting creates customized financial statement templates for each client, or a financial statement template is provided by the client, prior to the first shareholder reporting cycle for which State Street is responsible. Templates are maintained in the FundSuiteArc (EMEA) application. The integrity of the template design and information presented is maintained by restricting access via the application protection features or locating the templates in restricted network directories.	Observed financial statement templates to verify they are password protected and/or located on a restricted drive.	No deviations noted.
15.13 Adjustments made via the FundSuiteArc (EMEA) application are logged; capturing the date the adjustment was made, the user name making the change and the account change details [e.g., account code, account, debit/credit amount]. A system report can be generated which captures manual adjustments posted to each account.	Utilized an ITF to test that an audit trail is maintained in FundSuiteArc (EMEA) and that manual adjustments are captured in the FundSuite GL Transaction/Adjustment Report.	No deviations noted.
15.14 The Financial Reporting reviewers review the draft financial statements including primary statements, schedule of investments and associated notes on a per fund basis for accuracy and completeness. This review includes tracing financial statement disclosures back to the fund accounting records or third-party-provided source documentation and reviewing the accuracy of the draft financial statements. Checklists (covering local and/or fund specific controls) are used by preparer, reviewer and oversight reviewers to ensure accuracy and completeness of disclosures. Financial Reporting also verifies that new and existing rules and regulations as agreed with client (and auditor) during the prep-meeting and governing appropriate disclosures have been incorporated within the report correctly (templates and controls adjusted applying a four-eyes principle) and that the report accurately reflects period operations.	Inspected a sample of Financial Statement Detailed Review and POI Preparation and POI Review checklists for evidence of completion and review by a second individual, and that an explanation was provided for each response, if applicable.	<p>For 1 of 40 Financial Statement Detailed Review checklists selected for testing, evidence of timely review by a second individual could not be provided.</p> <p>Management Response Management acknowledges that for 1 of 40 Financial Statement Detailed Review checklists selected for testing, evidence of timely review by a second individual could not be provided. Management confirmed that the steps within the checklist were performed by the preparer completely and accurately and has reinforced with the appropriate personnel the requirement to document evidence of review on the checklist.</p>

Control Objective 15

Controls provide reasonable assurance that financial data recorded in MCH and information received from the client and other third parties is accurately processed in the draft shareholder reports.

State Street Controls	EY Tests	EY Test Results
15.15 For certain clients, Financial Reporting receives certain information for inclusion in draft shareholder reports from the client or other third-party service providers that is required disclosure in the financial statements. This information includes, but is not limited to, the Management Discussion of Fund Performance, tax disclosures, board of trustees/directors information and proxy voting results. State Street maintains documentation to support disclosures if provided by the client or other third-party service providers but does not perform procedures to determine the accuracy and completeness of those disclosures. Control framework is limited to high level plausibility checks and controls to ensure the proper and complete integration of such data (data referring to the structure reported) into the financial statement.	Inquired of management regarding the controls in place to determine whether information provided by the client or a third party is properly included in the draft shareholder reports.	No deviations noted.
	Observed the receipt and inclusion of client or third-party information into the draft shareholder reports.	No deviations noted.

Control Objective 16

Controls provide reasonable assurance that new lending program participants are authorized and set up on the applicable lending application accurately.

State Street Controls	EY Tests	EY Test Results
Agency Lending		
Borrower Authorization		
16.1 Prospective borrowers are approved in accordance with State Street's ERM guidelines. Borrower participation in the Agency Lending Program requires execution of a comprehensive borrower agreement that specifies acceptable types and percentages of collateral coverage, custody of collateral, securities subject to the lending program and risk of loss and risk bearer.	Inspected a sample of new borrowers for evidence of proper approval by ERM.	No deviations noted.
	Inspected a sample of new borrowers' agreements for evidence of proper execution of the agreement.	No deviations noted.
16.2 Upon receipt of start-up forms for new borrowers or borrower modification forms from relevant Client Managers, a review for accuracy of instructions prior to entry to the DML application is performed timely. A secondary review for accuracy of the input into DML is performed by appropriate staff.	Inspected a sample of new borrower start-up or modification forms for evidence of proper authorization and review and accurate input to DML.	No deviations noted.
	Reperformed the review by agreeing sample data from start-up or modification forms to DML.	No deviations noted.
Lender Authorization		
16.3 Lender participation in the Agency Lending Program requires execution of a comprehensive securities lending contract authorized by the lender.	Inspected a sample of new lending contracts for evidence of proper execution.	No deviations noted.
16.4 Upon receipt of start-up forms for new lenders (including collateral information), as well as lender modification forms from relevant Client Managers, a review for accuracy of instructions prior to entry to DML and Spire is performed timely. A secondary review for accuracy of the input into DML and Spire is performed by appropriate staff.	Inspected a sample of new lender start-up or modification forms for evidence of proper authorization and review and accurate input to DML and Spire.	No deviations noted.
	Reperformed the review by agreeing sample data from start-up or modifications forms to DML and Spire.	No deviations noted.
Prime Services		
Account Set-Up On Global One/Advent Workflow		
16.5 Prior to borrowers joining the Prime Services Program, the Prime Services Onboarding team checks the execution of a comprehensive borrower agreement by confirming the document is dually signed. Upon execution, the onboarding team proceeds to initiate go-live for the borrower's accounts.	Inspected a sample of new borrower agreements for evidence of proper execution of the agreement.	No deviations noted.
16.6 Prior to setup of a new borrower account or borrower modification request in Global One/Advent Workflow/ITP, Prime Services business groups review and approve start-up forms for new borrowers, as well as borrower modification forms, through a SharePoint approval workflow (new borrowers) or email (borrower modifications). The approval validates the data in the new borrower or borrower modification form used to populate into Global One/Advent Workflow/ITP. Input into Global One/Advent Workflow/ITP is reviewed for accuracy by appropriate staff within Prime Services onboarding.	Inspected a sample of new borrower start-up or modification forms for evidence of proper authorization prior to going live on Global One/Advent Workflow/ITP.	No deviations noted.
	Inspected a sample of new borrower start-up or modification forms for accurate input into Global One/Advent Workflow/ITP and evidence of review.	No deviations noted.
	Reperformed the review by agreeing sample data from start-up or modification forms to Global One/Advent Workflow/ITP.	No deviations noted.

Control Objective 17

Controls provide reasonable assurance that loan processing, maintenance and returns are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Agency		
Loan Processing		
17.1 Securities Finance receives a borrower request (automatically or manually) to loan a security or hold a security to be loaned at a future date. DML lists funds participating in securities lending and the securities available for lending. The loan is input by the trader onto the DML application and assigned an internal reference number for tracking purposes.	Observed a new loan order being received from borrowers and the input of the loan detail onto DML by the securities finance representative at the trading desk.	No deviations noted.
17.2 DML automatically calculates loan value and collateral required from the borrower.	Utilized an ITF to test that DML is obtaining prices of securities from MCH for the collateral calculation.	No deviations noted.
	Utilized an ITF to test the mathematical accuracy of the collateral calculation in DML.	No deviations noted.
17.3 For borrower requests received electronically, DML automatically matches loan requests to portfolios by CUSIP and description, and loans on securities are allocated and granted.	Utilized an ITF to test that shares are accurately allocated after the processing of the loan transaction within DML.	No deviations noted.
	Inspected scripts showing that DML is configured to allocate loans based on the automatic matching of loan requests to portfolios by CUSIP.	No deviations noted.
17.4 Operations and trading personnel have the ability to override the automated queuing process under prescribed circumstances. Users are required to enter a mandatory reason code in DML when processing override transactions.	Observed that a valid reason code was required to be entered into DML when the manual override function was applied.	No deviations noted.
17.5 DML automatically determines the borrower's credit limit, availability of free securities, opening and daily margin requirements and loan concentration based on lender restrictions.	Utilized an ITF to test that borrowers cannot borrow in excess of their credit limit within DML.	No deviations noted.
	Inspected source code to determine whether DML is configured to automatically determine if the loan request is within the borrower's credit limit, if securities are available and if the borrower is eligible.	No deviations noted.
	Utilized an ITF to test the mathematical accuracy of the daily margin calculation within DML. Also refer to ITF testing under sections titled Lender Agreement Monitoring within control 17.16.	No deviations noted.
17.6 Once a loan has been entered into DML, the loaned security as part of a multi-step process is delivered to the borrower through the various clearing organizations. Failing loans are monitored, researched and resolved by the appropriate settlement desk.	Inspected a sample of failed new loans from the failed loan log/report for evidence of proper research and resolution of failed loans.	No deviations noted.

Control Objective 17

Controls provide reasonable assurance that loan processing, maintenance and returns are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Loan Maintenance and Borrower Agreement Monitoring		
17.7 Daily, as part of a multi-step reconciliation process, Securities Finance personnel reconcile the DML loan activity totals (including new loans, loan terminations and mark-to-market) on Securities Finance's DML broker transaction sheets.	Inspected a sample of daily DML broker transaction sheet reconciliations of broker to DML activity for evidence of timely preparation for North America, APAC, and EMEA.	No deviations noted.
	Reperformed the reconciliation for accuracy by agreeing reconciliation of DML loan activity to underlying support for North America and APAC.	No deviations noted.
17.8 Online cash transactions are posted to transfer end-of-day balances for daily loan activity including new loans, returns and marks-to-market. Securities Finance's cash totals for all broker transaction sheets are reconciled to depository systems and are reconciled to the appropriate group's cash and security collateral accounts. Reconciliations are reviewed for accuracy by a second individual.	Inspected a sample of reconciliations of depository systems cash movement to Securities Finance broker transaction sheets for accuracy and timely preparation and review.	No deviations noted.
	Reperformed the reconciliation for accuracy by agreeing reconciliation of cash to underlying support.	No deviations noted.
17.9 For lenders who are also custody clients of State Street, Duco automatically reconciles DML on-loan security positions to SMAC/GSMAC on-loan positions daily. Differences on the DML to SMAC/GSMAC exception reports are researched and resolved.	Inspected Duco configuration reports to determine whether match passes were appropriate to reconcile DML loaned security positions and SMAC/GSMAC borrowed positions daily.	No deviations noted.
	Inspected a sample for each match pass scenario to determine whether Duco correctly applied the respective match pass rule.	No deviations noted.
	Inspected a sample of DML to SMAC/GSMAC exception reports for those clients who are custody clients of State Street for evidence of daily preparation and, if applicable, research and resolution of differences. For a sample we observed the research and resolution of differences on the DML to SMAC/GSMAC exception reports.	No deviations noted.
17.10 For lenders who are not custody clients of State Street, Duco automatically reconciles DML on-loan security positions to custodian on-loan positions per statements received from the third-party custodian daily. Differences on the DML to third-party exception reports are researched and resolved.	Inspected Duco configuration reports to determine whether DML loaned security positions and SMAC/GSMAC borrowed positions were scheduled to be reconciled daily.	No deviations noted.
	Inspected Duco configuration reports to determine whether match passes were appropriate to reconcile DML loaned security positions and SMAC/GSMAC borrowed positions daily.	No deviations noted.
	Inspected a sample of DML to third-party custodian Duco exception reports for clients who are not custody clients of State Street for evidence of timely preparation and, if applicable, research and resolution of differences.	No deviations noted.

Control Objective 17

Controls provide reasonable assurance that loan processing, maintenance and returns are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
17.11 For U.S. equities, Loanet automatically compares shares on loan, cash, and rates, or a subset thereof, between State Street's DML application and the borrower's records. Exceptions identified on the Loanet Contract Comparison reports are researched daily and resolved or escalated to the appropriate counter-party (i.e., broker, settlements team or corporate actions team) or client, as appropriate.	Inspected a sample of Loanet Contract Comparison reports for evidence of timely preparation, research and resolution of on-loan position discrepancies between Securities Finance and borrowers.	No deviations noted.
17.12 For non-U.S. equities, Equilend and Pirum automatically compare shares on loan, cash, and rates, or a subset thereof, between State Street's DML application and the borrower's records. Exceptions identified on the Equilend and Pirum Contract Comparison reports are researched daily and resolved or escalated to the appropriate counter-party (i.e., broker, settlements team or corporate actions team) or client, as appropriate.	Inspected a sample of Equilend and Pirum contract comparison reports for evidence of timely preparation, research and resolution of on-loan position discrepancies between Securities Finance and borrowers.	No deviations noted.
Tri-party Collateral		
17.13 For clients who utilize tri-party collateral, Securities Finance receives a statement daily from each tri-party bank, which reports the collateral balance in each of the segregated broker accounts. Upon receipt of the statements, Securities Finance personnel compare the collateral balances per the tri-party bank to DML for appropriate collateralization-level requirements. The end of day collateral balances and secondary review are evidenced in the end of day balance packet.	Inspected a sample of daily tri-party collateralization requirements for evidence of review.	No deviations noted.
	Reperformed the review by agreeing collateral balances per the tri-party bank to collateralization requirements in DML.	No deviations noted.
Lender Agreement Monitoring		
17.14 Loan restrictions (e.g., loan programs, collateral types, restricted borrowers) detailed in lender start-up forms as well as relevant modification forms are input to DML. Restrictions input are reviewed by a second individual for accuracy.	Inspected a sample of restrictions input to DML for evidence of review by a second individual.	No deviations noted.
	Reperformed the review by agreeing loan restrictions from authorized start-up or modification forms to DML.	No deviations noted.
17.15 The DML application tracks loan restrictions (regulatory, borrower or lender requested) and automatically removes the participating lender's restricted securities from the pool of available securities.	Utilized an ITF to test that DML prevents a lender from performing transactions with restricted entities and restricted securities.	No deviations noted.
	Inspected scripts showing that DML is configured to automatically remove the lender securities based on loan restrictions.	No deviations noted.
Borrower Agreement Monitoring		
17.16 Loan restrictions (e.g., loan programs, collateral types) detailed in borrower start-up forms as well as relevant borrower modification forms are input to DML. Restrictions input are reviewed by a second individual for accuracy.	Inspected a sample of restrictions input to DML for evidence of review by a second individual.	No deviations noted.
	Reperformed the review by agreeing loan restrictions from authorized start-up or modification forms to DML.	No deviations noted.

Control Objective 17

Controls provide reasonable assurance that loan processing, maintenance and returns are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
Collateral Maintenance		
17.17 To monitor borrower exposure daily, loan market value is compared to collateral market value for each broker account in the aggregate and individual loan level. If the borrower is not adequately collateralized, the borrower is contacted and required to deliver additional collateral.	Observed the daily loan mark-to-market process and review of collateral adequacy by Securities Finance personnel.	No deviations noted.
17.18 Securities Finance performs an End-of-Day Proof Balance Sheet that reconciles DML activity for the day, including mark-to-market adjustments, by broker on DML. This reconciliation is reviewed by a second individual.	Inspected a sample of End-of-Day Proof Balance Sheets for timely preparation and evidence of review by a second individual.	No deviations noted.
	Reperformed the review by agreeing reconciliation of DML activity for the day to underlying support.	No deviations noted.
17.19 DML systematically recalculates the collateralization threshold utilizing security prices that are automatically received from Global Pricing Services or an internationally recognized pricing source. Based on the revised collateral threshold, DML automatically determines if additional collateral is required.	Utilized an ITF to test that DML is obtaining prices of securities from EPW for the collateral calculation.	No deviations noted.
	Inspected scripts and/or configuration logic showing that DML is configured to calculate collateral level from the security prices received.	No deviations noted.
	Utilized an ITF to test the mathematical accuracy of the collateral calculation in DML. <i>EY's testing did not include controls surrounding manual inputs to prices of securities in DML as this was not included in the scope of this report.</i>	No deviations noted.
17.20 For non-cash collateral, Duco automatically reconciles DML to the collateral received per SMAC/GSMAC the following day. Exceptions are researched and resolved.	Inspected Duco configuration reports to determine whether DML and SMAC/GSMAC non-cash collateral balances were scheduled to be reconciled daily.	No deviations noted.
	Inspected Duco configuration reports to determine whether match passes were appropriate to reconcile DML and SMAC/GSMAC non-cash collateral balances daily.	No deviations noted.
	Inspected a sample for each match pass scenario to determine whether Duco correctly applied the respective match pass rule.	No deviations noted.
	Inspected a sample of Duco daily non-cash collateral reconcilements between DML and SMAC/GSMAC for evidence of timely preparation and, if applicable, the research and resolution of exceptions.	No deviations noted.
Income on Loaned Securities		

Control Objective 17

Controls provide reasonable assurance that loan processing, maintenance and returns are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
17.21 Daily, Global Income Services generates claim sheets via SLCF for income receivables identified on loaned securities, and claims for past-due incomes are sent to the broker. Global Income Services assumes responsibility for following up on past-due income items with the borrower. Past-due income status reports are generated, reported items are monitored by Global Income Services and provided to Securities Finance management.	Observed Global Income Services management follow up with the broker regarding claims for past-due incomes. Also see Control Objective 7 for Collection of Past-Due Income.	No deviations noted.
Corporate Actions on Loaned Securities		
17.22 Corporate action notifications are compared to lending activity by Global Services. Securities that are affected by corporate actions are subject to lending activity restrictions. Required modifications are processed to the on-loan positions in DML, or the securities are called back from the borrower. Instructions are reviewed by Corporate Actions Processing for accuracy prior to release.	Inspected a sample of corporate actions on loaned securities for evidence of review by Corporate Actions Processing.	No deviations noted.
	Reperformed the review for accurate processing of execution instructions.	No deviations noted.
	Also see Control Objective 8 for controls surrounding Corporate Actions.	
Sales of Loaned Securities		
17.23 Securities Finance monitors sale and recall positions (where a client/lender security out on loan is sold or recalled by the client's investment advisor). Sales or other recall requests are either automatically fed into DML/SLE or received manually. Sales and recalls are researched and acted upon, including reallocation of loans within the program as appropriate.	Inspected a sample of sold or recall positions for evidence of accurate processing in DML by Securities Finance of a loan reallocation or loan recall.	No deviations noted.
17.24 Securities Finance personnel generates and transmits recall notices advising the corresponding borrowers that the loaned shares have been recalled and the related details of the recalls.	Inquired with Securities Finance personnel regarding the process for notifying borrowers of recalls and the related details.	No deviations noted.
Loan Returns		
17.25 U.S. loan returns are sent to State Street by the borrowers via an electronic DTCC linkage that updates DML. U.S. fixed income returns are monitored for settlement in STS. Non-U.S. loan returns are settled within the custody application and then automatically flow through SLE to update the DML records. Failed items are researched and resolved by contacting traders and brokers to reconfirm the agreed-upon amounts.	Observed the online monitoring and resolution of loan return exceptions. Also refer to the section titled Loan Maintenance within this control objective.	No deviations noted.
Prime Services		
Locate/Borrowing Processing		

Control Objective 17

Controls provide reasonable assurance that loan processing, maintenance and returns are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
17.26 Prime Services traders monitor the borrows to confirm that orders are filled prior to the settlement deadline.	Observed the monitoring of borrows to confirm that orders are filled prior to the settlement deadline.	No deviations noted.
17.27 The borrow and loan are either systematically input onto Global One by the ITP application or input by the trader onto Global One and assigned an internal reference number for tracking purposes.	Observed the automatic or manual assignment of an internal reference number for a borrow and a loan input from ITP or manually onto Global One.	No deviations noted.
Loan Maintenance		
17.28 For custody clients, Duco automatically reconciles Global One loaned security positions to SMAC/GSMAC borrowed positions daily. Differences are researched and resolved.	Inspected Duco configuration reports to determine whether Global One loaned security positions and SMAC/GSMAC borrowed positions were scheduled to be reconciled daily.	No deviations noted.
	Inspected Duco configuration reports to determine whether match passes were appropriate to reconcile Global One loaned security positions and SMAC/GSMAC borrowed positions daily.	No deviations noted.
	Inspected a sample for each match pass scenario to determine whether Duco correctly applied the respective match pass rule.	No deviations noted.
	Inspected a sample of Global One to SMAC/GSMAC exception reports for those clients who are custody clients of State Street for evidence of research and resolution of differences.	No deviations noted.
17.29 For Prime Services U.S. equities, Loanet, Equilend or Pirum automatically compare shares on loan, cash, and rates, or a subset thereof, between State Street's Global One application and the borrower's records. Exceptions identified on the Contract Comparison reports are researched daily and resolved or escalated to the appropriate counterparty (i.e., broker, settlements team or corporate actions team) or client, as appropriate.	Inspected a sample of Contract Comparison reports for evidence of research and resolution of on-loan position discrepancies between Prime Services and borrowers.	No deviations noted.
17.30 For Prime Services non-U.S. equities, Equilend and Pirum automatically compare shares on loan, cash, and rates, or a subset thereof, between Global One and the borrower's records. Exceptions identified on the Equilend and Pirum Contract Comparison reports are researched daily and resolved or escalated to the appropriate counterparty (i.e., broker, settlements team or corporate actions team) or client, as appropriate.	Inspected a sample of Equilend and Pirum Contract Comparison reports for evidence of research and resolution of on-loan position discrepancies between Prime Services and borrowers.	No deviations noted.
Collateral Maintenance		
17.31 Daily feeds from Global Pricing Services automatically update security prices, or where market practice dictates, an internationally recognized pricing source may be used. Securities Finance Agency systems recalculate the collateralization threshold and automatically determine if additional collateral is required.	Utilized an ITF to test that Global One is obtaining price of securities from MCH for the collateral calculation.	No deviations noted.
	Inspected job schedule details to determine whether automated feeds are scheduled to send security prices from DML to Global One.	No deviations noted.
	For a sample security, inspected evidence to determine whether the security price within DML matched the security price within Global One.	No deviations noted.

Control Objective 17

Controls provide reasonable assurance that loan processing, maintenance and returns are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
17.32 ITP automatically calculates the required counterparty collateral levels based on market and loan values from Global One and required margin levels.	Inspected the job scripts/queries to validate that automated feeds are configured between Global One and ITP.	No deviations noted.
	Inspected a sample of funds' collateral calculation screen in ITP to evidence the completion of the collateral calculation process.	No deviations noted.
	Reperformed the calculation of daily collateral requirements by multiplying the margin collateral percentage and market value in ITP.	No deviations noted.
	Inspected a sample of on-boarding workflows from risk management, including any modifications and client fee agreements to evidence the collateral margin percentage and collateral types used in the collateral requirement calculation within ITP are complete and accurate.	No deviations noted.
	Inspected a sample of cash collateral balances for evidence of approval in ITP prior to posting of the collateral in ITP, Global One and Hogan.	No deviations noted.
	Observed that ITP restricts users from making any adjustments to the calculation of collateral management amount.	No deviations noted.
17.33 Reconciliations of loan and market values between Global One and ITP are generated and the results reviewed daily. Discrepancies are researched and resolved.	For a sample of trades, inspected that the loan value and market value from ITP agreed to Global One.	No deviations noted.
	Inspected a sample of Global One to ITP reconciliations for evidence of timely research and resolution of discrepancies exceeding the predetermined threshold as well as evidence of secondary review.	No deviations noted.

Control Objective 17

Controls provide reasonable assurance that loan processing, maintenance and returns are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
17.34 Online cash transactions are posted to transfer end-of-day balances for daily activity including new borrows, new loans, borrow returns, loan returns and mark-to-markets. Prime Services cash totals for all cash transactions are reconciled to depository systems and to cash and security collateral accounts. Reconciliations are reviewed for accuracy.	Inspected a sample of reconciliations of depository systems cash movement to Prime Services activity reports for accuracy, timely preparation and evidence of review.	Out of a combined sample of 50 daily cash transaction reconciliations, the following deviations were identified: <ul style="list-style-type: none">• For 7 of 25 daily cash transaction reconciliations selected for testing in the U.K., secondary review was not performed in a timely manner. For all 7 selections, evidence of timely performance was obtained.
	Reperformed the review by agreeing reconciliation of Prime Services cash activity to underlying support.	Management Response Management acknowledges that for 7 out of 25 daily cash transaction reconciliations selected for testing in the U.K., secondary review was not performed in a timely manner. However, reconciliations were prepared and differences were investigated and resolved. Additionally, daily automated reconciliations are performed between Global One loaned security positions to SMAC/GSMAC (control 17.28); for U.S. and non-U.S. equities, shares on loan, cash and rates, or a subset thereof between State Street's Global One application and the borrower's records are automatically compared daily (control 17.29 and 17.30); and reconciliation of loan and market values between Global One and ITP are generated and reviewed daily (control 17.33). Management has reinforced with appropriate personnel the requirement to perform timely review of daily reconciliations. No deviations noted.
Manufactured Income and Corporate Actions		
17.35 Global One performs automatic dividend calculations. The Prime Services Operations team receives dividend claims from counterparties, which are then compared to Global One data to confirm amount and accuracy. In the U.K. this comparison is subject to secondary review.	In the U.S. and U.K., performed online test to ensure that Global One is accurately calculating dividend due.	No deviations noted.
	In the U.K., inspected a sample of claims sent to borrowers for evidence of accurate processing and review by a second individual.	No deviations noted.

Control Objective 17

Controls provide reasonable assurance that loan processing, maintenance and returns are recorded completely, accurately and timely.

State Street Controls	EY Tests	EY Test Results
17.36 Corporate actions are processed in the U.K. and the U.S. For voluntary corporate actions, Prime Services may receive elections from the lenders and will calculate the obligations owed by the borrowers. A review by a second individual is performed on the calculations and the claims and notices are sent advising of the obligations.	Inspected a sample of voluntary corporate actions on loaned securities for evidence of accurate processing and review by Prime Services.	No deviations noted.
	Reperformed the review by agreeing calculations to underlying support.	No deviations noted.
Duco		
17.37 For the Duco application, administrator access is restricted to designated personnel based on job responsibilities.	Observed a Duco user authenticate to the application to confirm whether authentication was managed through the user's network access.	No deviations noted.
	For Administrator IDs with the ability to grant access to the Duco application, and/or modify or promote reconciliation configurations within the Duco application, inquired with State Street management and/or inspected user access listings to determine whether access was restricted to designated State Street personnel based on job responsibilities.	No deviations noted.
17.38 For the Duco application, changes to reconciliations are tested and approved by designated personnel prior to promotion to production.	For a sample of Duco reconciliation changes, inspected documentation to determine whether testing was performed by designated State Street personnel and approvals were obtained from designated State Street personnel prior to change implementation.	No deviations noted.

Control Objective 18

Controls provide reasonable assurance that securities lending collateral is invested in the investment vehicle selected by the client and related income is calculated and distributed accurately and timely.

State Street Controls	EY Tests	EY Test Results
Agency Lending		
Cash Collateral Investment		
18.1 Cash collateral is invested in the investment vehicle authorized by the lender per the lender's approved start-up form or subsequent modification forms.	Performed online test to ensure that cash collateral is automatically invested in vehicles specified within DML are applied as stated.	No deviations noted.
	Inspected a sample of lender cash collateral investment vehicle selections per DML for compliance with the lender's approved start-up or modification form.	No deviations noted.
18.2 Each business day, a Spire report is generated which captures loan balances and investment activity, which is comprised of the prior day cash loan transactions from DML. The sum of the cash loan transactions are compared to the investment balances to ensure proper cash collateral investment. Discrepancies are identified, researched and resolved timely.	Inspected a sample of daily reconciliations of cash collateral investment activity for evidence of accuracy, research and resolution of discrepancies and review.	No deviations noted.
	Reperformed the review by agreeing cash collateral balances to underlying support.	No deviations noted.
Cash Collateral Income		
18.3 The FAD team performs a quarterly comparison between Spire and select client contracts to verify the completeness and accuracy of Spire's accruals (fee split, loan and earnings). Differences are investigated and resolved, if required.	Inspected a sample of clients for evidence of management's comparison and review of income allocation between the Spire application and the authorized lender agreement and inspected evidence of investigation and resolution of differences, if required.	No deviations noted.
18.4 Investment return rates on cash collateral are updated daily on Spire to calculate investment earnings. Spire automatically performs a tolerance check by comparing the current day's rate to the previous day's rate. Changes greater than a predetermined threshold are verified against the rate source and updated, if appropriate. Spire also automatically identifies missing rates. Missing rates are updated as appropriate.	For a sample of cash collateral vehicles, inspected evidence of timely and accurate update of investment return rates.	No deviations noted.
	Inspected a sample of tolerance check reports for evidence of verification of any variance over the threshold.	No deviations noted.
	Observed investment return rates being input into Spire.	No deviations noted.
18.5 Changes greater than a predetermined threshold are verified against the rate source and updated, if appropriate. Missing rates are identified and updated as appropriate. Rates are communicated from Spire to DML via an automated feed. Investment rates are communicated from Spire to DML via an automated feed. Rates in DML reviewed for completeness and accuracy.	Observed the performance of the tolerance check and the review for missing rates.	No deviations noted.
	Reperformed the DML review for missing rates for a selection of dates to determine whether DML appropriately identified differences between the rate input to DML and the rate received.	No deviations noted.
	Inspected a sample of missing rate reports from DML for evidence of review and, if applicable, obtaining management's explanation for each missing rate.	No deviations noted.

Control Objective 18

Controls provide reasonable assurance that securities lending collateral is invested in the investment vehicle selected by the client and related income is calculated and distributed accurately and timely.

State Street Controls	EY Tests	EY Test Results
18.6 On a monthly basis, the FAD team reconciles investment accruals on Spire to the investment accruals provided by the investment manager. Discrepancies over a predetermined threshold are researched and resolved. A review is performed by a second individual.	Inspected Duco configuration reports to determine whether match passes were appropriate to reconcile accruals on Spire and accruals provided by the investment manager monthly.	No deviations noted.
	Inspected a sample for each match pass scenario to determine whether Duco correctly applied the respective match pass rule.	No deviations noted.
	Inspected a sample of Spire to investment manager exception reports for evidence of monthly preparation and, if applicable, research and resolution of differences. For a sample we observed the research and resolution of differences over pre-determined thresholds on the exception reports and evidence of secondary review.	No deviations noted.
18.7 Quarterly income distributions to clients are performed by the FAD team based on earnings data sourced from Spire and combined with offline adjustments (income generated outside of Spire). Income distributions are reviewed by a second individual prior to disbursement.	Observed the generation of the earnings report at the fund level from Spire indicating gross earnings, net earnings and payout amounts.	No deviations noted.
	Recalculated the bank and client earnings based on earnings data sourced from Spire and combined offline adjustments.	No deviations noted.
	For a sample of clients, inspected that the DDA number agreed to supporting documentation for accuracy.	No deviations noted.
	Reperformed the automated allocation based on earning data from Spire.	No deviations noted.
18.8 The FAD team performs daily reconciliations for State Street operational DDA Accounts (i.e., Earnings, Cash Management, and Billings). Reconciliations are reviewed by a second individual for accuracy and completeness. Discrepancies are identified, researched (leveraging data from PSAR and MCH) and resolved.	Inspected a sample of State Street operational DDA reconciliations for evidence of investigation and timely resolution of variances and evidence of review.	No deviations noted.

B. Additional Information Provided by the Independent Service Auditor

Control Environment

The control environment represents the collective effect of various elements in establishing, enhancing or complementing the effectiveness of specific policies and procedures. In addition to the tests of specific control procedures described below, our procedures included tests of, or consideration of, the relevant elements of State Street's control environment, including:

- State Street's organizational structure and approach to segregation of duties;
- The functioning of the Board of Directors;
- Management control methods;
- Personnel policies and practices;
- Corporate Audit; and
- Regulatory oversight of State Street.

Our tests of the control environment included the following procedures to the extent we considered necessary: (a) a review of State Street's organizational structure, including the segregation of functional responsibilities, policy statements, accounting and processing manuals, personnel policies, procedures and reports; (b) discussions with management, operations, administrative and other personnel who are responsible for developing, ascertaining adherence to and applying controls; (c) observations of personnel in the performance of their assigned duties; and (d) a review of State Street's actions taken in response to recommendations to improve controls made by Corporate Audit and regulators having supervisory oversight over State Street's fiduciary activities.

Test of Controls

The control environment was considered in determining the nature, timing and extent of testing of the operating effectiveness of controls relevant to the achievement of the control objectives.

Our tests of the operating effectiveness of controls included such tests as were considered necessary in the circumstances to evaluate whether those controls, and the extent of compliance with them, is sufficient to provide reasonable, but not absolute, assurance that the specified control objectives were achieved during the period from October 1, 2022 to September 30, 2023. Our tests of the operational effectiveness of controls were designed to cover a representative number of instances of the controls throughout the period from October 1, 2022 to September 30, 2023, for each of the controls listed in the description in Section IV. Our tests did not include tests of transactions in respect of any particular client of State Street. The tests were restricted to the custody and recordkeeping functions in place for clients of State Street and their relevance to any

individual client is dependent on their interaction with the particular procedures and other circumstances of each client. The testing procedures performed and results are the responsibility of EY. In selecting particular tests of the operational effectiveness of controls, we considered: (a) the nature of the items being tested; (b) the types and sufficiency of available evidential matter; (c) the nature of the audit objectives to be achieved; and (d) the expected efficiency and effectiveness of the test. EY has determined the nature, timing and extent of testing performed to obtain evidence about the effectiveness of State Street's control procedures in meeting the identified control objectives during the period from October 1, 2022 to September 30, 2023.

Additional Information on Integrated Test Facility ("ITF")

An ITF was used to validate the application processing of transactions for the following transaction types:

Purchase and Sale Transactions

Long-term and short-term portfolio purchase and sale transactions (including DHub).

Description

Established a test fund within the production environment of MCH and tested a sample of securities. The types of securities selected included equity, debt, short-term securities, futures, non-U.S. securities, mortgage-backed securities ("MBS"), variable rate demand notes ("VRDN"), collateralized mortgage obligations ("CMO"), spot foreign currency contracts, forward foreign currency contracts, foreign futures, purchased options and written options, Treasury Inflation Protected Securities ("TIPS"), Interest Only ("IO"), Principal Only ("PO") as well as swap contracts using the swap functionality within MCH. Transactions also included paydowns, as-of trades, same-day settlements, next-day settlements, exercise of options and shares acquired via corporate actions.

Established a test fund within the production environment of DHub and tested a sample of derivatives. The types of derivatives selected included CFD, CDS, and Central Counterparty Clearinghouse Interest Rate Swaps. Transactions also included applying prices, variation margins, and closing out holdings partially and completely.

Tests of Propriety

For the purchase and sale transactions performed, we determined whether the transactions were included accurately and completely in the relevant reports listed in Section IV C, as applicable.

Tested the mathematical accuracy of the calculation of gain or loss (both market and currency related) based upon the selected costing method (i.e., FIFO, LIFO, Specific Identification and Average Cost) and the generation of general ledger journal records.

Tested mathematical accuracy of the calculation of the holding period (exclusive of tax adjustments such as wash sales and straddles) within MCH and AutoWash.

Within the iTELS application, tested functionality and mathematical accuracy of lot sales within MCH based on a sample of different business rules.

Dividend Income and Receivables

Description

Established a test fund within the production environment of MCH and tested a sample of equity securities with upcoming cash dividends, stock dividends or splits. Executed an as-of purchase subsequent to ex-date to observe that MCH properly applied all dividends/corporate actions that had occurred during the holding period, and sold a partial security position on ex-date. Tested posting of foreign tax reclaim and withholding amounts to the fund's records. Additionally, tested posting of dividend expense related to short sales.

Settled cash and share dividend receivables (and payables) from the dividend receivable file.

Tests of Propriety

For the dividend income and receivable transactions described, we determined whether the transactions were included accurately and completely in the relevant reports listed in Section IV C.

Interest Income and Accruals

Description

Established a test fund within the production environment of MCH and tested a sample of fixed income securities. Securities selected from included mortgage-backed securities, foreign bonds, short sales (of debt-related securities), corporate bonds, when-issued securities, short-term bonds, step bonds, convertible bonds, preferred stock, repurchase agreements, reverse repurchase agreements, Guaranteed Investment Contracts ("GICs"), TIPS, IOs, POs, defaulted bonds, multiple calls/puts and swap contracts. Also included debt security purchase/sold interest, VRDN rate change transactions and inflation factor adjustments for TIPS.

Established a test fund within the production environment of WSO and tested a sample of bank loan securities. Securities selected from included LIBOR and Prime Loans. Testing also included the effect of paydowns, rate changes, and fees on loans as well as a past due loan.

Tests of Propriety

For the securities selected, we determined whether the transactions/securities were included accurately and completely in the relevant reports listed in Section IV C.

Amortization and Accretion

Description

Established a test fund within the production environment of MCH and tested a sample of amortizing and non-amortizing securities. Securities selected included mortgage-backed securities, IOs, POs, CMOs, corporate bonds, municipal bonds, foreign bonds, convertible bonds, step bonds and defaulted bonds. Testing included coverage over the four types of amortization utilized by MCH:

- Straight Line (Automatic)
- Effective Interest Method (Scientific)
- User Defined (e.g., Manual)
- ABS (Asset-Backed Securities)

Established a test fund within the production environment of MCH and eHorizon, and tested a sample of rule groups for certain security types established within eHorizon and the automatic generation of a sample of alerts for missing data and changes to critical security reference data. Securities and respective rule groups selected included IOs, CMOs, and Tender Option Bonds ("TOB"). Testing included coverage over three types of alerts utilized within eHorizon:

- Missing Variable Rate Information (CMO)
- Missing Yield for Amortization Type (IO)
- Missing or Invalid Date or Price (TOB)

Tests of Propriety

For a sample of amortizing and non-amortizing securities selected, we determined whether the amortization and/or accretion was included accurately and completely in the relevant reports listed in Section IV C.

Expenses and Expense Accruals

Description

Established a test fund within the production environment of MCH and set up and executed a sample of automated fixed and variable expense accruals.

Tests of Propriety

For the automated and variable expense accruals described, determined whether they were included accurately and completely in the relevant reports listed in Section IV C.

Capital Stock Transactions

Description

Established a test fund within the production environment of MCH and executed a sample of Capital Stock transactions, including fund share subscriptions, redemptions, income distributions and capital gain distributions, as well as transaction settlements.

Tests of Propriety

For the capital stock transactions executed, we determined whether they were included accurately and completely in the relevant reports listed in Section IV C.

Contractual Income

Description

Established a fund in the MCH test (UAT) environment and booked various contractual income transactions and traced the postings to the appropriate cash management system (i.e, IBS or Hogan) to test accuracy and completeness. The MCH test environment was validated to be a mirror of the production environment in all programming and technical aspects, except client transaction data.

Trial Balance Accumulation

Description

Established a test fund within the production environment of MCH and tested that the MCH and eHorizon fund-level trial balances properly accumulated fund activity for the following accounts: Investments at cost (ID and average), Accounts Receivable (portfolio sales, capital stock, dividends and interest), Accounts Payable (portfolio purchases and capital stock), Paid-in-Capital, Shares Outstanding, Income, Gain/Loss and Expenses.

Tests of Propriety

For the activity accumulated in the various subsidiary ledger accounts listed above, we determined whether the activity was included accurately and completely in the relevant reports listed in Section IV C.

Multiple Class Structures

Description

Established a Multiple Class test fund within the MCH production environment to test a sample of transactions. Testing comprised a sample of transactions that generated realized and unrealized gains, losses, income and expenses. Additionally, we verified the accuracy of the multiple class ratio calculation in MCH and the allocation of income, expenses, unrealized and realized gains and losses.

Tests of Propriety

For the transactions processed in the Multiple Class fund, we determined whether the transactions were included accurately and completely in the relevant reports listed in Section IV C.

Multi-Managed Fund Structures

Description

Established a Multi-Managed test fund within the production environment of MCH and tested a sample of Purchase and Sale, Interest Income and Accrual, Dividend Income and Receivables, Expense and Expense Accruals, and Capital Stock transactions, and traced them to the Composite level fund.

Tests of Propriety

For a sample of transactions processed in the Multi-Managed test fund, we determined whether the transactions were included accurately and completely in the relevant reports listed in Section IV C.

Flexible Fund Cycles

Description

Established a test fund within the MCH production environment and executed a sample of purchase and sale and accrual transactions at different times of the day and adjusted the test fund's trade date cut-off time. Inspected the general ledger to determine whether activity was listed with the proper trade date in relation to the cut-off time.

Securities Finance

Description

Established a test fund within the test environment of DML and Global One and executed a sample of securities lending transactions. The DML and Global One test environments were validated to be a mirror of the production environment in all programming and technical aspects, except client transaction data. For the sample of transactions, tested the calculation of collateral requirements (including daily collateral movements), the automated process of loan assignment to client accounts based on predetermined limits as well as the validity of pricing feeds between MCH and DML and Global One.

Pooling Structures

Description

Established a test fund within the MCH production environment to test the automated calculation of the ownership percentage and allocation of trades between two contributing funds in a virtual pool. Testing comprised of calculating ownership percentages in the pool based on capital contributions, as well as the allocation of security purchases by the pool to the contributing funds based on their respective ownership percentages.

FundSuite SX

Description

Established a test fund within the production environment of FundSuite SX and tested a sample of manual adjustments.

For the sample of manual adjustments, we determined whether an audit trail was maintained in FundSuite SX and that the adjustments were captured completely and accurately in the FundSuite General Ledger Transaction Report. EY's testing did not include the evaluation of the appropriateness of the adjustments.

Ledger to Sub-Ledger

Description

Established a test fund within the production environment of eHorizon to test the automated generation of month-end reports via the Ledger to Subsidiary Ledger functionality. The relevant reports are listed in Section IV C.

EY's testing did not include the automated proof reports generated from eHorizon via Ledger to Subsidiary Ledger functionality as this is not within the scope of this report.

C. Reports Tested for Completeness and Accuracy

Various testing methods were utilized to validate transactions/securities were included accurately and completely in the following reports produced by applications in scope for this report. Completeness and accuracy of customized reports generated for specific client needs or data extract versions such as Excel files are not covered in the scope of this report.

Report	Application(s)	Testing Method	Location(s) of Test Procedures
Accrued Income Report	WSO	ITF*: Interest Income and Accruals	Control 7.7
Accrued Receivable Report	WSO	ITF*: Interest Income and Accruals	Control 7.7
Adjustments Report	MCH	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 14.4
AICPA Mandatory Amortization Review – Amortization Opening Balances Report	MCH	ITF*: Amortization and Accretion	Control 7.13
AICPA Mandatory Amortization Review – Discount Long Term	MCH	ITF*: Amortization and Accretion	Control 7.13
AICPA Mandatory Amortization Review – Discount Short Term	MCH	ITF*: Amortization and Accretion	Control 7.13

*Refer to Additional Information on Integrated Test Facility ("ITF") in Section IV B within this report for further details.

**MySS and LSL reports are sourced from financial accounting data in FDR utilizing standardized templates.

***No applicable business controls, however, the report was tested for completeness and accuracy.

Report	Application(s)	Testing Method	Location(s) of Test Procedures
AICPA Mandatory Amortization Review – Premium Long Term	MCH	ITF*: Amortization and Accretion	Control 7.13
AICPA Mandatory Amortization Review – Premium Short Term	MCH	ITF*: Amortization and Accretion	Control 7.13
AICPA Mandatory Amortization Review – Intra-Period Amortization Report	MCH	ITF*: Amortization and Accretion	Control 7.13
AICPA Mandatory Amortization Review – Intra-Period Purchases Report	MCH	ITF*: Amortization and Accretion	Control 7.13
AICPA Mandatory Amortization Review – Intra-Period Sales Report	MCH	ITF*: Amortization and Accretion	Control 7.13
Alpha Account Position Appraisal Report	MCH	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 14.4
Base Equivalent Cash Statement	MCH, MySS**	ITF*: Purchase and Sale Transactions	Control 14.4
Capstock OEIC/UT Detail Report	MCH	ITF*: Capital Stock Transactions	Control 10.2, Control 10.4 and Control 10.6
Capstock by Report Date	MySS**	ITF*: Capital Stock Transactions	Control 10.2, Control 10.4 and Control 10.6
Cash Exception Report	TLMP	ITF*: TLMP Cash Reconciliation	Control 5.8, Control 7.32 and Control 7.36
Cash Transaction Statement Report	MCH	ITF*: Purchase and Sale Transactions	Control 14.4
Custody/Accounting Reconciliation (“CARS”) Report	SMAC/GSMAC	CAAT	Control 5.6
CMO Factor Report	MCH	CAAT	Control 7.44
Computation of Net Asset Value	MCH	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions ITF*: Trial Balance Accumulation	Control 14.4
Corporate Action Report	MCH, MySS**	ITF*: Dividend Income and Receivables	Control 7.22, Control 8.3 and Control 8.10
Current Period Deferrals and Reversals Report	AWS	ITF*: Purchase and Sale Transactions	Control 3.20
Daily Accrual Activity	MCH	ITF*: Interest Income and Accruals	Control 7.1
Daily Amortization Activity	MCH	ITF*: Amortization and Accretion	Control 7.11
Detail Realized Gain/Loss Report	MCH	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 3.12, Control 3.18, Control 7.1 and Control 14.4
DHub – Trade Summary Report	DHub	ITF*: Purchase and Sale Transactions	Control 3.12, Control 3.13, Control 3.14 and Control 5.11
Dividend Income Summary	MCH, MySS**	ITF*: Dividend Income and Receivables	Control 7.22, Control 7.23, Control 11.1 and Control 14.4
Dividend Payable Report	MCH, MySS**	ITF*: Dividend Income and Receivables	Control 7.22, Control 7.23, Control 11.1 and Control 14.4

*Refer to Additional Information on Integrated Test Facility (“ITF”) in Section IV B within this report for further details.

**MySS and LSL reports are sourced from financial accounting data in FDR utilizing standardized templates.

***No applicable business controls, however, the report was tested for completeness and accuracy.

Report	Application(s)	Testing Method	Location(s) of Test Procedures
Dividend Receivable Report	MCH, MySS**	ITF*: Dividend Income and Receivables ITF*: Multi-Managed Fund Structures	Control 7.22, Control 7.23, Control 11.1 and Control 14.4
DTCC Physical Securities Nightly Reconciliation Report	SMAC	CAAT	Control 5.1
Earned Income Detail Report by CUSIP	MCH, MySS**	ITF*: Interest Income and Accruals ITF*: Amortization and Accretion	Control 7.1, Control 7.28, Control 7.30 and Control 14.4
EHZN Trial Report	eHorizon	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions ITF*: Trial Balance Accumulation	Control 14.4
Failed Trades – Purchases/Sales	MCH, MySS**	ITF*: Purchase and Sale Transactions	Control 4.1 and Control 4.23
Fair Value Holdings Appraisal Report	MySS**	ITF*	***
Fair Value Level Transfer Report	MySS**	ITF*	***
Fair Value Rollforward Report	MySS**	ITF*	***
Fair Value Summary Report	MySS**	ITF*	***
FED Book Entry Daily SMAC/STS Position Exceptions	SMAC/STS	CAAT	Control 5.1
Forward Activity Report	MCH	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 3.8 and Control 3.12
Fund Master Ledger Report	MCH	ITF*: Purchase and Sale Transactions	Control 14.4
FundSuite GL Transaction/Adjustment Report	FundSuite SX FundSuiteArc (U.S. and EMEA Instances)	ITF*: FundSuite SX ITF*: FundSuiteArc	Control 15.2 and Control 15.13
Fund Total Payable Report	MCH, MySS**	ITF*: Interest Income and Accruals ITF*: Dividend Income and Receivables	Control 7.1, Control 7.23, Control 7.37 and Control 14.4
Fund Total Receivable Report	MCH, MySS**	ITF*: Interest Income and Accruals ITF*: Dividend Income and Receivables	Control 7.1, Control 7.23, Control 7.37 and Control 14.4
FX Earned Income Report	WSO	ITF*: Interest Income and Accruals	Control 7.7
FX Forward Activity Report	MySS**	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 3.8 and Control 3.12
FX Pending Forward Activity Report	MySS**	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 3.8 and Control 3.12
FX Pending Spot Activity Report	MySS**	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 3.8 and Control 3.12
FX Spot Purchases Activity Report	MCH, MySS**	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 3.8 and Control 3.12

*Refer to Additional Information on Integrated Test Facility (“ITF”) in Section IV B within this report for further details.

**MySS and LSL reports are sourced from financial accounting data in FDR utilizing standardized templates.

***No applicable business controls, however, the report was tested for completeness and accuracy.

Report	Application(s)	Testing Method	Location(s) of Test Procedures
FX Spot Sales Activity Report	MCH, MySS**	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 3.8 and Control 3.12
General Ledger Transaction Activity Journal	MCH	ITF*: Purchase and Sale Transactions ITF*: Dividend Income and Receivables ITF*: Interest Income and Accruals ITF*: Multiple Class Structures	Control 14.4
Hogan to MCH Reconciliation	Hogan/MCH	ITF*: TLMP Cash Reconciliation	Control 5.8
Holdings Report	MySS**	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 14.4
IBS to MCH Reconciliation	IBS/MCH	CAAT	Control 7.34
IBS to Subcustodian/CREST/CDS Cash Reconciliation	IBS	CAAT	Control 5.4
IBS to SWIFT Reconciliation	IBS	CAAT	Control 5.8
ICASH to MCH Reconciliation	ICASH/MCH	ITF*: TLMP Cash Reconciliation	Control 7.36
ICASH to SWIFT Reconciliation	ICASH	CAAT	Control 5.5
Interest Payable Report	MCH, MySS**	ITF*: Interest Income and Accruals	Control 7.37 and Control 14.4
Interest Receivable Report	MCH, MySS**	ITF*: Interest Income and Accruals ITF*: Multi-Managed Fund Structures	Control 7.37 and Control 14.4

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Report	Application(s)	Testing Method	Location(s) of Test Procedures
Ledger to Sub-ledger (LSL) Package: Base Equivalent Cash Statement Capstock Class Level Statement of Condition Corporate Actions Corporate Actions – Composite Dividend Income Summary Dividend Income Summary – Composite Dividend Payable Dividend Payable – Composite Dividend Receivable Dividend Receivable – Composite Earned Income By Asset ID Earned Income By Asset ID – Composite Fund Total Payable Fund Total Payable – Composite Fund Total Receivable Fund Total Receivable – Composite FX Pending Forward Activity FX Pending Forward Activity – Composite FX Pending Spot Activity FX Pending Spot Activity – Composite Holdings Holdings – Composite Interest Payable Interest Payable – Composite Interest Receivable Interest Receivable – Composite MBS Detail Realized Gain/Loss Report MBS Interest Payable MBS Interest Payable – Composite MBS Interest Receivable MBS Interest Receivable – Composite Open Corporate Actions Open Corporate Actions – Composite Open Trades – Purchases/Sales Open Trades – Purchases/Sales Composite Purchase/Sales Adjustments Purchase/Sales Adjustments – Composite Purchase/Sales – All Reports Purchase/Sales – Composite R095 Portfolio Holdings Realized Gain/Loss Realized Gain/Loss – Composite Statement of Condition Detail Tax Expense Payable Tax Expense Payable – Composite Tax Reclaim Receivable Tax Reclaim Receivable – Composite	eHorizon**	ITF*: Ledger to Sub-Ledger	Control 14.4
Local Cash Statement	MySS**	ITF*: Purchase and Sale Transactions	Control 14.4
Marked-to-Market Sales Receivable/Purchases Payable Report	MCH	ITF*: Purchase and Sale Transactions	Control 3.8, Control 3.12 and Control 13.6
Marked to Market – Tax Expense Payables	MCH	ITF*: Expenses and Expense Accruals	Control 3.20 and Control 12.4
MBS Interest Payable	MySS**	ITF*: Interest Income and Accruals ITF*: Multi-Managed Fund Structures	Control 7.37

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Report	Application(s)	Testing Method	Location(s) of Test Procedures
MBS Interest Receivable	MySS**	ITF*: Interest Income and Accruals ITF*: Multi-Managed Fund Structures	Control 7.37
MBS Paydown/Payup	MCH, MySS**	ITF*: Purchase and Sale Transactions	Control 7.33 and Control 7.37
Monthly Expense Accrual Detail	MCH	ITF*: Expenses and Expense Accruals	Control 12.4 and Control 14.4
Mortgage-back Interest Receivable	MCH	ITF*: Interest Income and Accruals ITF*: Multi-Managed Fund Structures	Control 7.37
Mortgage-back Interest Payable	MCH	ITF*: Expenses and Expense Accruals	Control 7.37
Multicurrency Debt Issue Holdings by CUSIP	MCH	ITF*: Purchase and Sale Transactions ITF*: Amortization and Accretion	Control 3.8 and Control 7.11
Multicurrency Horizon Wash Sales Review	MCH	ITF*: Purchase and Sale Transactions	Control 3.8 and Control 3.21
Net Asset Value	MySS**	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions ITF*: Trial Balance Accumulation	Control 14.4
Open Corporate Actions Report (for certain actions)	MCH, MySS**	ITF*: Dividend Income and Receivables	Control 7.22, Control 8.3 and Control 8.10
Open Trades – Purchases/Sales Report	MCH, MySS**	ITF*: Purchase and Sale Transactions ITF*: Multi-Managed Fund Structures	Control 3.8, Control 3.12, Control 4.1 and Control 14.4
OTC Account Position Appraisal Summary Report	DHub	ITF*: Purchase and Sale Transactions	Control 3.12, Control 3.13, Control 3.14 and Control 5.11
OTC Lot Level Positions Report	DHub	ITF*: Purchase and Sale Transactions	Control 3.12, Control 3.13, Control 3.14 and Control 5.11
OTC Variation Margin Report	DHub	ITF*: Purchase and Sale Transactions	Control 3.11
Out of Prescribed Range Report	MCH	CAAT	Control 7.46
Overdue Dividend Receivable	MCH	ITF*: Dividend Income and Receivables	Control 7.23 and Control 7.37
Pending Forward	MCH	ITF*: Purchase and Sale Transactions ITF*: Multi-Managed Fund Structures	Control 3.8
Pending Spot FX Purchase	MCH	ITF*: Purchase and Sale Transactions ITF*: Multi-Managed Fund Structures	Control 3.8
Pending Spot FX Sale	MCH	ITF*: Purchase and Sale Transactions ITF*: Multi-Managed Fund Structures	Control 3.8
R095 – Portfolio Position – All Holdings	MCH	ITF*: Purchase and Sale Transactions	Control 3.8, Control 3.12 and Control 14.4
Portfolio Purchases/Sales Report	MCH	ITF*: Purchase and Sale Transactions ITF*: Multi-Managed Fund Structure CAAT	Control 3.8, Control 3.12 and Control 14.4
Prior Period Outstanding Deferrals and Reversals Report	AWS	ITF*: Purchase and Sale Transactions	Control 3.20

*Refer to Additional Information on Integrated Test Facility (“ITF”) in Section IV B within this report for further details.

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Report	Application(s)	Testing Method	Location(s) of Test Procedures
Purchase and Sales Report by Report Date	MySS**	ITF*: Purchase and Sale Transactions ITF*: Multi-Managed Fund Structures	Control 3.8, Control 3.12 and Control 14.4
Purchase & Sales Adjustments	MySS**	ITF*: Purchase and Sale Transactions ITF*: Multi-Managed Fund Structures	Control 3.8, Control 3.12 and Control 14.4
Realized Gain/Loss	MySS**	ITF*: Purchase and Sale Transactions ITF*: Multi-Managed Fund Structures	Control 3.12, Control 3.18, Control 7.1 and Control 14.4
Securities Movement and Control SMAC/FED – Reconciliation Exceptions Report	SMAC	CAAT	Control 5.1
Security Position Reconciliation (between GSMAC and Selected Depository)	GSMAC	CAAT	Control 5.2
Statement of Condition Detail	MCH, MySS**	ITF*: Purchase and Sale Transactions ITF*: Expenses and Expense Accruals ITF*: Capital Stock Transactions ITF*: Multi-Managed Fund Structures	Control 14.4
Summary Realized Gain/Loss	MCH	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions	Control 3.12, Control 3.18, Control 7.1 and Control 14.4
Tax Expense Payable	MySS**	ITF*: Expenses and Expense Accruals	Control 3.21 and Control 12.4
Tax Lot Holdings	MCH	ITF*: Purchase and Sale Transactions	Control 3.20
Tax Reclaim Receivable Report	MCH	ITF*: Multi-Managed Fund Structures ITF*: Dividend Income and Receivables	Control 7.42
Trial Balance Report (Prior Day Computation of Net Asset Value)	MCH	ITF*: Trial Balance Accumulation	Control 14.4
U.S. Domestic Depository to SMAC Position Reconciliation	SMAC	CAAT	Control 5.1
VRDN Master Rate Control Report	MCH	CAAT	Control 7.45
Working Trial Balance	MCH, MySS**	ITF*: Multi-Managed Fund Structures ITF*: Purchase and Sale Transactions ITF*: Trial Balance Accumulation	Control 14.4

*Refer to Additional Information on Integrated Test Facility (“ITF”) in Section IV B within this report for further details.

**MySS and LSL reports are sourced from financial accounting data in FDR utilizing standardized templates.

***No applicable business controls, however, the report was tested for completeness and accuracy.

D. Deviation Summary

The chart below details test deviations noted in Section IV A. Not all deviations listed below are relevant to every State Street client.

Control Number	State Street Control	EY Test	EY Test Results	Management Response	Period Deviation Identified	
					10/1/22–3/31/23	4/1/23–9/30/23
11.1	Periodic Distribution Distribution rates may be based on calculations determined by the client, trustees or other servicing agents (which may include State Street). The Global Accounting groups confirm that instructions are received from a designated authorized individual. The Global Accounting groups compare the total outstanding shares from the MCH trial balance to the total outstanding shares from the transfer agent, trustee or other servicing agent documentation. On ex-date, distribution amounts are automatically calculated and posted to MCH through DR&Y or manually calculated and posted to MCH. Distributions are reviewed for accuracy by a second individual.	Inspected a sample of periodic distributions for evidence of comparison of the total outstanding shares from the MCH trial balance to the total outstanding shares from the transfer agent, trustee or other servicing agent and for evidence of review by a second individual for accuracy and authorization of the posting.	Out of a combined sample of 175 periodic distributions selected for testing globally, the following deviations were identified: <ul style="list-style-type: none"> For 4 distributions out of 25 selected for testing in Ireland, evidence of timely review could not be provided. For the 4 selections, evidence of timely performance was obtained. 	Management acknowledges that for 4 periodic distributions selected for testing, evidence of timely review could not be provided. Management performed a subsequent review of the distributions and confirmed that the total outstanding shares on MCH agreed to the shares from the transfer agent and the distribution amounts manually calculated using the client authorized distribution rate were accurately posted to MCH. Management notes that: <ul style="list-style-type: none"> eHorizon compares capital transactions against the previous day's NAV and issues a warning if the price does not agree (see control 10.3); and Out-of-tolerance information is reported to Global Accounting by MyNAV for daily review and resolution (see control 14.2). Additionally, management has reinforced with the appropriate personnel the requirement to properly evidence review of dividend distributions via required training sessions.	✓	✓
14.4	Month-End Reporting Month-end reports such as the fund/trust's trial balance, statement of condition, portfolio appraisal, portfolio purchases and sales, and gain/loss are generated and reviewed by a second individual.	Inspected a sample of month-end reports for evidence of timely generation and review of reports by a second individual.	For 1 of 45 month-end reports selected for testing, evidence of timely generation and review of reports by a second individual could not be provided.	Management acknowledges that for 1 of 45 month-end reports selected for testing, evidence of timely generation and review of reports by a second individual could not be provided. Management has reinforced with the appropriate personnel the requirement to maintain evidence of secondary review.	✓	

Control Number	State Street Control	EY Test	EY Test Results	Management Response	Period Deviation Identified	
					10/1/22–3/31/23	4/1/23–9/30/23
15.14	EMEA Financial Reporting (Ireland, Luxembourg, Switzerland and United Kingdom) The Financial Reporting reviewers review the draft financial statements including primary statements, schedule of investments and associated notes on a per fund basis for accuracy and completeness. This review includes tracing financial statement disclosures back to the fund accounting records or third-party-provided source documentation and reviewing the accuracy of the draft financial statements. Checklists (covering local and/or fund specific controls) are used by preparer, reviewer and oversight reviewers to ensure accuracy and completeness of disclosures. Financial Reporting also verifies that new and existing rules and regulations as agreed with client (and auditor) during the prep-meeting and governing appropriate disclosures have been incorporated within the report correctly (templates and controls adjusted applying a four-eyes principle) and that the report accurately reflects period operations.	Inspected a sample of Financial Statement Detailed Review and POI Preparation and POI Review checklists for evidence of completion and review by a second individual, and that an explanation was provided for each response, if applicable.	For 1 of 40 Financial Statement Detailed Review checklists selected for testing, evidence of timely review by a second individual could not be provided.	Management acknowledges that for 1 of 40 Financial Statement Detailed Review checklists selected for testing, evidence of timely review by a second individual could not be provided. Management confirmed that the steps within the checklist were performed by the preparer completely and accurately and has reinforced with the appropriate personnel the requirement to document evidence of review on the checklist.		✓
17.34	Prime Services Online cash transactions are posted to transfer end-of-day balances for daily activity including new borrows, new loans, borrow returns, loan returns and mark-to-markets. Prime Services cash totals for all cash transactions are reconciled to depository systems and to cash and security collateral accounts. Reconciliations are reviewed for accuracy.	Inspected a sample of reconciliations of depository systems cash movement to Prime Services activity reports for accuracy, timely preparation and evidence of review.	Out of a combined sample of 50 daily cash transaction reconciliations, the following deviations were identified: <ul style="list-style-type: none"> For 7 of 25 daily cash transaction reconciliations selected for testing in the U.K., secondary review was not performed in a timely manner. For all 7 selections, evidence of timely performance was obtained. 	Management acknowledges that for 7 out of 25 daily cash transaction reconciliations selected for testing in the U.K., secondary review was not performed in a timely manner. However, reconciliations were prepared and differences were investigated and resolved. Additionally, daily automated reconciliations are performed between Global One loaned security positions to SMAC/GSMAC (control 17.28); for U.S. and non-U.S. equities, shares on loan, cash and rates, or a subset thereof between State Street's Global One application and the borrower's records are automatically compared daily (control 17.29 and 17.30); and reconciliation of loan and market values between Global One and ITP are generated and reviewed daily (control 17.33). Management has reinforced with appropriate personnel the requirement to perform timely review of daily reconciliations.	✓	



Section V

Other Information Provided by State Street (Unaudited)

A. Additional Information

1. Business Continuity Planning

State Street's Business Continuity and Disaster Recovery Programs are part of the overall Operational Resilience umbrella. The objective of the Business Continuity program is to reduce the risk to service delivery in the event of a range of disruption scenarios (severe weather, pandemic, widespread power outage, geopolitical events). The program is overseen by Enterprise Continuity Services ("ECS"), a central function that defines program policy and standards that are applicable to all areas of State Street. The standards are designed for business functions and corporate areas to ensure that operational dependencies, including technologies and third parties, maintain an appropriate level of recovery capabilities commensurate with a range of disruption scenarios and that they are in line with overall service delivery and regulatory expectations.

The objective of the Disaster Recovery Program is to help ensure that our technology infrastructure can be recovered from events that impact our premises, infrastructure or data. It governs resilient designs in our architecture, coordinates regular testing of our capabilities and ensures that our recovery procedures meet our stringent requirements for predictability, timeliness and accuracy.

2. Client Reporting

Securities Finance Reporting

Securities Finance data is made available online and is provided in report and dashboard formats. This reporting provides a comprehensive, customizable single point of access to a client's State Street data through a common set of features, functionality and tools that allows access for analysis and management of data quickly and efficiently across multiple products. The Securities Finance reporting provides clients with wide-ranging information about their Securities Finance program across a spectrum of categories, including earnings, loans, borrowers and collateral.

Online Services

State Street's clients have the ability to access a trade's settlement status including affirmation data, confirmed trades and failed trades through State Street's suite of online decision support and reporting tools. The online application integrates the investment process, facilitates decision-making and allows clients to request and receive reports at their desktops.

3. New Account Setups

State Street is currently developing a solution to streamline the account opening and KYC processes and to simplify the interaction with its clients. The solution includes a portal as well as API connectivity to allow State Street clients to submit account opening requests, manage renewals and other market initiatives. This digitized workflow offers internal/external dashboards for transparency into account opening and AML/KYC status, which can also be linked directly to its client's platform or ecosystem of choice through API.

4. Cybersecurity Program

State Street's Global Cybersecurity ("GCS") organization defines and manages the enterprise-wide Information Security Program. GCS partners with IT, corporate offices, and business units to implement controls designed to protect information assets. State Street's program currently aligns with the National Institute of Standards and Technology ("NIST") Special Publication 800 53R4 Standard.

The components of the program are:

Cybersecurity Center

- Analyzes areas such as authentication activities, risky privilege combinations, unusual printing activity, suspicious and/or inappropriate web activity, data leakage vulnerabilities, unusual web use, etc.
- Performs analysis of correlated events to more fully understand behavior and proactively identify scenarios that could lead to abuse.
- Creates actionable reporting for management, focusing on identification of emerging threats and opportunities to enhance management of security.

Cyber Defense Center

- Consists of a 24x7x365 Security Operations Center ("SOC") together with a Cyber Fusion Center, which jointly focus on enhancing network security monitoring and providing an agile, dynamic response capability. These resources allow State Street to perform near real-time monitoring of security events to identify and address risky and suspicious activity. The SIEM suite of tools collects log data from the firewall, performs intrusion detection/prevention, uses proxy and other security logging tools and generates security-related alerts as they occur. The SIEM monitors inbound and outbound web traffic, as fed to the SIEM through SSC system monitoring data feeds, to detect malicious web activity and provide a defense against shareware, malware and access to unauthorized software. Identified issues are reported centrally to the Security Operations Center and IT management.
- Provides cybersecurity monitoring, event correlation and security incident management across IT infrastructure elements.
- Regularly analyzes security information from multiple sources and industry forums to identify potential vulnerabilities.

In addition, State Street shares information on cyber threats and engages in cross-sector collaboration. Four external organizations, the Financial Services Information Sharing and Analysis Center (“FS-ISAC”), the Financial Systemic Analysis and Resilience Center (“FSARC”), the Analysis and Resilience Center (“ARC”) for systemic risk and the Financial Services Sector Coordinating Council (“FSSCC”), serve as the basis by which the financial services sector develops critical infrastructure protection policy and shares cybersecurity and other threat data.

5. Privacy and Data Protection Program

The Corporate Compliance Oversight Program supports State Street’s compliance with laws and regulations that apply to its global business activities and functions. The program cultivates a culture in which compliance is an integral part of State Street’s business environment and is recognized and rewarded in evaluating the performance of its business units and its employees.

As part of that effort, State Street has implemented the Global Privacy and Personal Data Protection Standard (“Privacy Standard”) to address the practices that must be adhered to by all employees globally in order to comply with regulatory privacy and data protection requirements and best practices. The Privacy Standard has global applicability, and addresses certain jurisdictional implications and details, including, but not limited to, the following:

- The coverage of the policy (processing and controlling of data, including collection of data and data minimization concepts)
- Roles and responsibilities
- Personal data protection principles
- Cross-border data transfers
- Breach management
- Privacy by design
- Data subject rights requests
- Sharing personal data with third parties

Jurisdictional-specific guidance is in place in countries where additional obligations are imposed by law or common practice in the financial services industry.

To support compliance with the Privacy Standard and relevant data protection laws, the Global Privacy Office, as part of State Street Corporate Compliance, is responsible for designing, maintaining and overseeing the State Street Privacy Program. The Global Privacy Office, led by the Global Head of Data Privacy, consists of global teams providing privacy compliance management.

In addition to the Privacy Standard and the oversight provided by the Global Privacy Office, business units and corporate functions assess privacy risk and the mitigating control environment as part of the annual Risk Control Self-Assessment ("RCSA") process, which takes into account operational and compliance risks. Privacy controls are periodically monitored and tested by Corporate Compliance and Corporate Audit.

B. Glossary of Terms

The following are unique acronyms utilized throughout this report.

A

ACH:	Automated Clearing House
ADR:	American Depositary Receipt
AFRD:	Automated File and Report Delivery
AFW:	Automated Fund Workflow
AICPA:	American Institute of Certified Public Accountants
AIFM:	Alternative Investment Fund Managers
APRA:	Australian Prudential Regulation Authority
AQM:	Acquisition Management
AWS:	Automated Wash Sales

B

BESS:	Bank Electronic Support System
BID:	Bank Institutional Delivery System
BOaT:	Business Onboarding and Transitions
BPO:	Business Process Outsourcing
BSA:	Bank Secrecy Act

C

CAAT:	Computer Assisted Audit Techniques
CAMS:	Corporate Action Monitoring System
CARS:	Custody Accounting Reconciliation System
CCI:	State Street's Custody Common Interface
CD:	Certificate(s) of Deposit
CDS:	Clearing and Depository Services
CEO:	Chief Executive Officer
CHIPS:	Clearing House Inter-Payment System
CLS:	Continuous Linked Settlement
CMO:	Collateralized Mortgage Obligations
CMW:	Collateral Management Workstation
COE:	Center of Excellence
CUSIP:	Committee on Uniform Security Identification Procedures

D

DCA:	Dynamic Cash Allocation
DDA:	Demand Deposit Account
DHub:	Derivatives Hub
DME:	Distribution, Metering and Entitlements
DML:	Dollar Market Logic
DTCC:	Depository Trust and Clearing Corporation

E

EDS:	Elective Dividend Service
eHorizon:	Enterprise Horizon
ERM:	Enterprise Risk Management
ETA:	Electronic Trade Authorization
ETD:	Electronic Trade Delivery
ETF:	Exchange Traded Fund
EPA:	European Pricing Automation
EPW:	Enterprise Pricing Web
ESP:	Enterprise Servicing Platform

F

FATCA:	Foreign Account Tax Compliance Act
FCA:	Financial Conduct Authority
FDICIA:	Federal Deposit Insurance Corporation Improvement Act of 1991
FED:	Federal Reserve System
FHLMC:	Freddie Mac
FIFO:	First In, First Out
FNMA:	Fannie Mae
FOF:	Fund of Funds
FpML:	Financial Products Markup Language
FR:	Financial Reporting
FRS:	Report Generator
FSA:	Financial Services Agency
FTTOP:	State Street's Funds Transfer and Transaction Origination Policy
FV:	Fair Value
FX:	Foreign exchange

G

G/L:	General Ledger
GBE:	Global Beneficiary Reference
GCAS:	Global Corporate Action System
GHRCC:	Global Human Resources and Corporate Citizenship
GIC:	Global Income Control
GICs:	Guaranteed Investment Contracts
GNMA:	Ginnie Mae
GPS:	Global Pricing Services
GSA:	Global Services Application
GSMAC:	Global Securities Movement and Control
GSR:	Global Services Reconciliation
GSS:	Global Support Services
GTM:	Global Transaction Manager
GTS:	Global Tax System
GTT:	Global Tax Tables
GUI:	Graphical User Interface

I

IBS:	Integrated Banking System
ICASH:	International Cash
ICE:	Intercontinental Exchange
ICR:	Internal Control Report
IFRS:	International Financial Reporting Standards
IFM:	Internal Financing Model
IID:	Interactive Institutional Delivery application
IM:	Investment Manager
IO:	Interest Only
IRS:	Internal Revenue Service
ISIN:	International Securities Identification Number
ISITC:	Industry Standard for Institutional Trade Communications
IT:	Information Technology
iTELS:	The Tax Efficient Lot Selection
ITF:	Integrated Test Facility

K

KVG:	German Capital Management Company
KYC:	Know Your Customer

L

LCCS:	Local Custody Control System
LIFO:	Last In, First Out
LSL:	Ledger to Sub-ledger

M

MBS:	Mortgage-backed Securities
MCH:	Multicurrency Horizon
MDFP:	Management Discussion of Fund Performance
MMD:	Municipal Market Data
MMI:	Money Market Instrument
MT:	Message Types
MySS:	MyStateStreet

N

NAV:	Net Asset Value
NBES:	National Book-Entry System
NDM:	Network Data Mover
NRA:	Non Resident Alien
NTA:	Net Tangible Asset

O

OCC:	Options Clearing Corporation
OMP:	Online Memo Post Plus System
OSA-ASA:	Open System Accounting–Accounting Systems Audit
OTC:	Over-the-Counter

P

PBS:	Proprietary DTCC Application
PLF:	Portfolio Listing File
PO:	Principal Only
POI:	Portfolio of Investments
PRA:	Prudential Regulation Authority
PTS:	Proprietary DTCC application

R

Repo:	Repurchase Agreement
RFP:	Request for Proposal
RKS:	Recordkeeping System
RMA:	Relationship Management Application
RSM:	Reference Security Masterfile

S

SEC:	Securities and Exchange Commission
SEDOL:	Stock Exchange Daily Official List
SFC:	Securities and Futures Commission
SIAC:	Securities Industry Automation Corporation
SLCP:	Securities Lending Claims Processing
SLE:	Securities Lending Enterprise
SMAC:	Securities Movement and Control
SRAs:	Site Risk Assessments
SRD:	Securities Recon Database
STARTS:	Securities Transaction and Risk Systems
STS:	Securities Transfer System
SWIFT:	Society for Worldwide Interbank Financial Telecommunication

T

TIPS:	Treasury Inflation Protected Securities
TLMP:	Transaction Lifecycle Management Premium
TRS:	Tax Reclaim System

U

UAT:	User Acceptance Testing
UCITS:	Undertaking for Collective Investment in Transferable Securities
UCM:	Universal Custody Management

V

VMW:	Variation Margin Wire Application
VRDN:	Variable Rate Demand Note

W

WSO:	Wall Street Office
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X

XML:	Extensible Markup Language
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C. Subcustodian Bank Network

Albania	Raiffeisen Bank sh.a.
Argentina	Citibank, N.A.
Australia	The Hongkong and Shanghai Banking Corporation Limited
Austria	UniCredit Bank Austria AG
Bahrain	First Abu Dhabi Bank P.J.S.C.
Bangladesh	Standard Chartered Bank
Belgium	BNP Paribas S.A., France (operating through its Paris branch with support from its Brussels branch)
Benin	via Standard Chartered Bank Côte d'Ivoire S.A., Abidjan, Ivory Coast
Bermuda	HSBC Bank Bermuda Limited
Federation of Bosnia and Herzegovina	UniCredit Bank d.d.
Botswana	Standard Chartered Bank Botswana Limited
Brazil	Citibank, N.A.
Bulgaria	Citibank Europe plc, Bulgaria Branch UniCredit Bulbank AD
Burkina Faso	via Standard Chartered Bank Côte d'Ivoire S.A., Abidjan, Ivory Coast
Canada	State Street Trust Company Canada
Chile	Banco de Chile
People's Republic of China	HSBC Bank (China) Company Limited (as delegate of The Hongkong and Shanghai Banking Corporation Limited) China Construction Bank Corporation
China Connect	Standard Chartered Bank (Hong Kong) Limited
Colombia	Cititrust Colombia S.A. Sociedad Fiduciaria
Costa Rica	Banco BCT S.A.
Croatia	Privredna banka Zagreb d.d. Zagrebačka Banka d.d.
Cyprus	BNP Paribas S.A., Greece (operating through its Athens branch)

Czech Republic	Československá obchodní banka, a.s. UniCredit Bank Czech Republic and Slovakia, a.s.
Denmark	Skandinaviska Enskilda Banken AB (publ), Sweden (operating through its Copenhagen branch)
Egypt	Citibank N.A.
Estonia	AS SEB Pank
Finland	Skandinaviska Enskilda Banken AB (publ), Sweden (operating through its Helsinki branch)
France	BNP Paribas S.A.
Republic of Georgia	JSC Bank of Georgia
Germany	Deutsche Bank AG State Street Bank International GmbH
Ghana	Standard Chartered Bank Ghana PLC
Greece	BNP Paribas S.A.
Guinea-Bissau	via Standard Chartered Bank Côte d'Ivoire S.A., Abidjan, Ivory Coast
Hong Kong	The Hongkong and Shanghai Banking Corporation Limited
Hungary	UniCredit Bank Hungary Zrt. Citibank Europe plc Magyarországi Fióktelepe
Iceland	Landsbankinn hf.
India	Deutsche Bank AG Citibank N.A. The Hongkong and Shanghai Banking Corporation Limited
Indonesia	Deutsche Bank AG Standard Chartered Bank
Israel	Bank Hapoalim B.M.
Italy	Intesa Sanpaolo S.p.A.
Ivory Coast	Standard Chartered Bank Côte d'Ivoire S.A.
Japan	The Hongkong and Shanghai Banking Corporation Limited Mizuho Bank, Ltd.
Jordan	Standard Chartered Bank

Kazakhstan	JSC Citibank Kazakhstan
Kenya	Standard Chartered Bank Kenya Limited
Republic of Korea	Deutsche Bank AG The Hongkong and Shanghai Banking Corporation Limited
Kuwait	First Abu Dhabi Bank P.J.S.C.
Latvia	AS SEB banka
Lithuania	AB SEB bankas
Luxembourg	via the international central securities depository, Clearstream Banking S.A., Luxembourg
Malawi	Standard Bank PLC
Malaysia	Standard Chartered Bank Malaysia Berhad
Mali	via Standard Chartered Bank Côte d'Ivoire S.A., Abidjan, Ivory Coast
Mauritius	The Hongkong and Shanghai Banking Corporation Limited
Mexico	Banco Nacional de México S.A.
Morocco	Citibank Maghreb S.A.
Namibia	Standard Bank Namibia Limited
Netherlands	BNP Paribas S.A., France (operating through its Paris branch with support from its Amsterdam branch)
New Zealand	The Hongkong and Shanghai Banking Corporation Limited
Niger	via Standard Chartered Bank Côte d'Ivoire S.A., Abidjan, Ivory Coast
Nigeria	Stanbic IBTC Bank Plc.
Norway	Skandinaviska Enskilda Banken AB (publ), Sweden (operating through its Oslo branch)
Oman	First Abu Dhabi Bank P.J.S.C.
Pakistan	Deutsche Bank AG Citibank, N.A.
Panama	Citibank, N.A.
Peru	Citibank del Perú S.A.
Philippines	Standard Chartered Bank
Poland	Bank Handlowy w Warszawie S.A.
Portugal	Citibank Europe plc, Dublin, Ireland

Qatar	HSBC Bank Middle East Limited (as delegate of The Hongkong and Shanghai Banking Corporation Limited)
Romania	Citibank Europe plc, Dublin – Romania branch
Russia	AO Citibank
Saudi Arabia	HSBC Saudi Arabia Limited (as delegate of The Hongkong and Shanghai Banking Corporation Limited) First Abu Dhabi Capital Financial Company J.S.C. (FAB Capital J.S.C.) (as delegate of First Abu Dhabi Bank P.J.S.C. to hold securities)
Senegal	via Standard Chartered Bank Côte d'Ivoire S.A., Abidjan, Ivory Coast
Serbia	UniCredit Bank Serbia JSC
Singapore	Citibank N.A.
Slovak Republic	UniCredit Bank Czech Republic and Slovakia a.s.
Slovenia	UniCredit Banka Slovenija d.d.
South Africa	FirstRand Bank Limited Standard Chartered Bank
Spain	Citibank Europe plc, Dublin, Ireland
Sri Lanka	The Hongkong and Shanghai Banking Corporation Limited
Republic of Srpska	UniCredit Bank d.d.
Sweden	Skandinaviska Enskilda Banken AB (publ)
Switzerland	Credit Suisse (Switzerland) Ltd UBS Switzerland AG
Taiwan (R.O.C.)	Standard Chartered Bank (Taiwan) Limited
Tanzania	Standard Chartered Bank (Tanzania) Limited
Thailand	Standard Chartered Bank (Thai) Public Company Limited
Togo	via Standard Chartered Bank Côte d'Ivoire S.A., Abidjan, Ivory Coast
Tunisia	Union Internationale de Banques
Turkey	Citibank, A.S.
Uganda	Standard Chartered Bank Uganda Limited
Ukraine	JSC Citibank

United Arab Emirates (UAE) – Abu Dhabi	First Abu Dhabi Bank P.J.S.C.
UAE – Dubai Financial Market)	First Abu Dhabi Bank P.J.S.C.
UAE – Dubai Int’l Financial Center	First Abu Dhabi Bank P.J.S.C.
United Kingdom	State Street Bank and Trust Company, U.K. branch
United States	State Street Bank and Trust Company
Uruguay	Banco Itaú Uruguay S.A.
Vietnam	HSBC Bank (Vietnam) Limited (as delegate of The Hongkong and Shanghai Banking Corporation Limited)
Zambia	Standard Chartered Bank Zambia Plc.
Zimbabwe	Stanbic Bank Zimbabwe Limited (as delegate of Standard Bank of South Africa Limited)

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