

January 03, 2023

To Whom It May Concern:

Pershing LLC ('Pershing') publishes a *System and Organization Control Report (SOC1®)* for the period of October 1, 2021, through September 30, 2022. The SOC1® Report includes the Independent Service Auditor's Report, KPMG LLP, dated November 30, 2022. The SOC 1® Report was prepared in accordance with the guidance contained in the American Institute of Certified Public Accountants Statement on Standards for Attestation Engagements no. 18 (SSAE 18) and International Standards on Assurance Engagements (ISAE) no. 3402 established by the International Auditing and Assurance Standards Board.

To the best of our knowledge there have been no significant changes to Pershing's internal controls, for the period of October 1, 2022 through December 31, 2022 as described in the SOC 1® Report and as reviewed by our Independent Auditors in conjunction with their Independent Service Auditor's Report, which would materially or adversely affect the internal control environment.

The information contained in this letter is confidential and proprietary to Pershing LLC and must be treated in accordance with the standard of care specified in your written agreement with Pershing LLC or its affiliate. You may provide copy of this letter to your independent auditors and your clients only for the purposes of their examination of the service performed by Pershing LLC as it relates to an audit of your financial statements and for no other purposes.

Pershing LLC

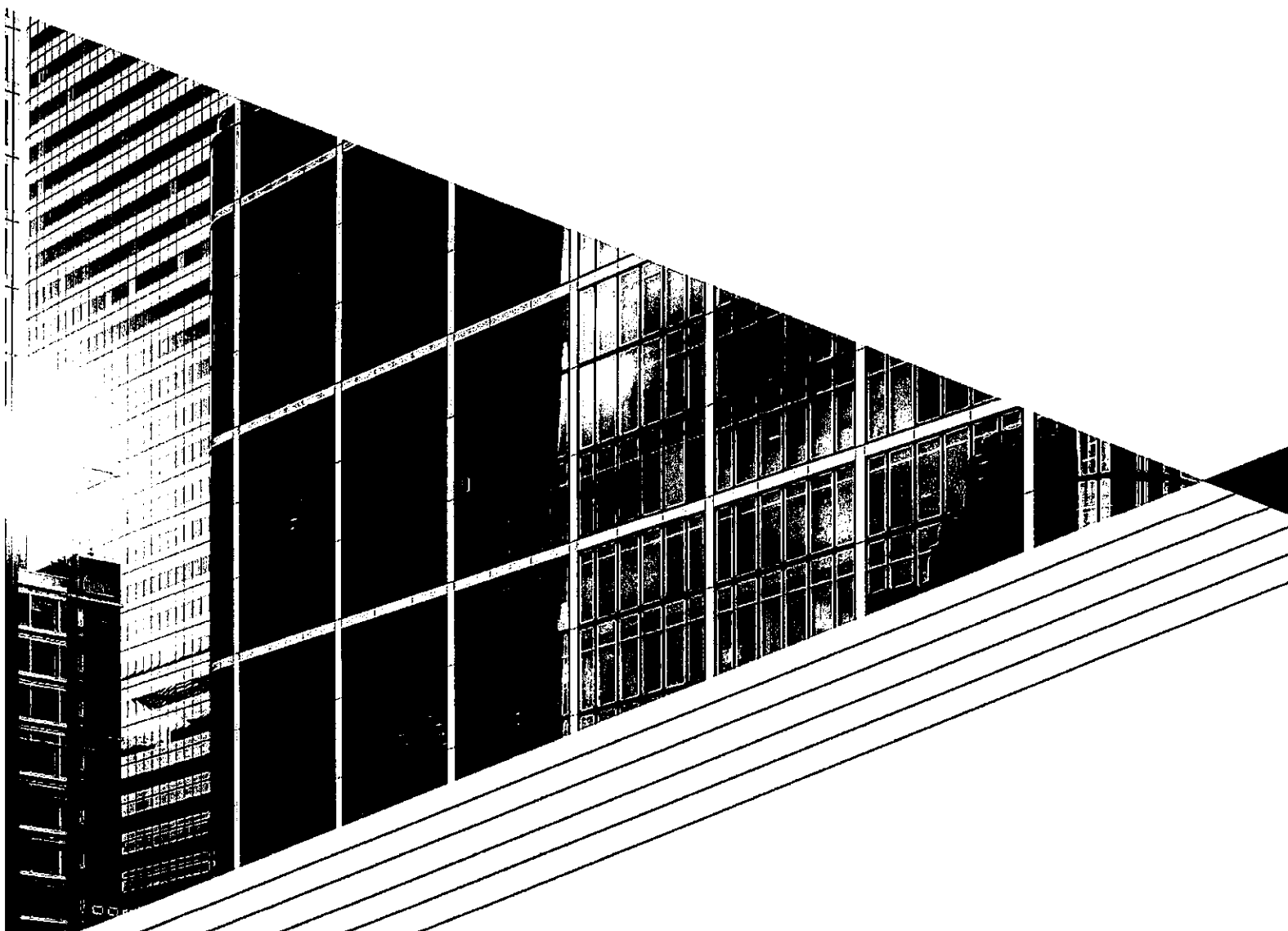
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PERSHING LLC

# System and Organization Controls (SOC 1<sup>®</sup>) Report

FOR THE PERIOD – OCTOBER 1, 2021 THROUGH SEPTEMBER 30, 2022



To Our Introducing Firms:

We are pleased to provide you with a copy of the Pershing LLC SOC 1® Report (the "Report"). The Report is furnished to you subject to the terms and conditions contained in the written agreement for services between Pershing LLC and your company. The information contained in the Report is confidential and proprietary to Pershing LLC and must be treated in accordance with the standard of care specified in your written agreement with Pershing LLC or its affiliate. You should not disclose the Report or provide a copy of it to any third party without the prior written consent of Pershing LLC. However, you can provide a copy of the Report to your independent auditors only for the purposes of their examination of the services performed by Pershing LLC as it relates to an audit of your financial statements and for no other purposes.

Pershing LLC



## **Pershing LLC**

### **Report on Controls at a Service Organization Relevant to User Entities' Internal Control over Financial Reporting (SOC 1® – Type 2 Report)**

#### **Introducing Firm Services, Prime Services, and Managed Accounts Operations**

##### **Table of Contents**

<b>SECTION I: INDEPENDENT SERVICE AUDITORS' REPORT .....</b>	<b>1</b>
<b>SECTION II: BNY MELLON   PERSHING'S ASSERTION .....</b>	<b>5</b>
<b>SECTION III: BNY MELLON   PERSHING'S DESCRIPTION OF ITS INTRODUCING FIRM SERVICES, PRIME SERVICES, AND MANAGED ACCOUNTS OPERATIONS SYSTEM .....</b>	<b>8</b>
<b>Description of System.....</b>	<b>9</b>
<b>Relevant Aspects of the Control Environment, Risk Assessment and Monitoring.....</b>	<b>11</b>
<b>Control Environment.....</b>	<b>11</b>
<b>Risk Assessment and Monitoring.....</b>	<b>15</b>
<b>Control Activities.....</b>	<b>18</b>
<b>Information and Communication .....</b>	<b>19</b>
<b>Information Technology .....</b>	<b>19</b>
<b>Description of Pershing Computerized Information Systems.....</b>	<b>29</b>
<b>Description of General Computer Controls .....</b>	<b>36</b>
<b>Description of Transaction Processing Controls.....</b>	<b>41</b>
<b>complementary User entity Controls .....</b>	<b>93</b>
<b>complementary Subservice Organization Controls .....</b>	<b>98</b>
<b>Other Information About Management's Description .....</b>	<b>102</b>
<b>SECTION IV: BNY MELLON   PERSHING'S CONTROL OBJECTIVES, RELATED CONTROLS, TESTING PERFORMED BY KPMG LLP, AND RESULTS OF TESTING .....</b>	<b>103</b>
<b>Completeness and Accuracy of Information Produced by the Entity .....</b>	<b>104</b>
<b>General Computer Controls.....</b>	<b>104</b>
<b>1) INFORMATION SECURITY GOVERNANCE.....</b>	<b>104</b>
<b>2) LOGICAL ACCESS .....</b>	<b>105</b>
<b>3) NETX SUITE OF PRODUCTS.....</b>	<b>111</b>
<b>Transaction Processing Controls.....</b>	<b>115</b>

1)	ENTERPRISE RULES ENGINE.....	115
2)	NEW ACCOUNT SETUP AND TERMINATIONS.....	116
3)	EQUITIES AND OPTIONS ORDER EXECUTION CONTROLS .....	120
4)	FIXED INCOME ORDER AND TRADE PROCESSING CONTROLS.....	123
5)	MUTUAL FUND ORDER PROCESSING CONTROLS .....	125
6)	FOREIGN EXCHANGE CONTROLS .....	129
7)	ALTERNATIVE INVESTMENTS CONTROLS .....	131
8)	OPTIONS EXPIRATION PROCESSING CONTROLS .....	134
9)	SECURITY INFORMATION CONTROLS .....	137
10)	CLEARANCE AND SETTLEMENT CONTROLS .....	142
11)	DEPOSITORY BALANCING CONTROLS .....	148
12)	PHYSICAL CUSTODY PROCESSING CONTROLS .....	150
13)	MARGIN CONTROLS.....	153
14)	CORPORATE ACTIONS PROCESSING CONTROLS .....	155
15)	MONEY MARKET FUND AND FDIC BANK SWEEP CONTROLS.....	160
16)	CASH DISBURSEMENT AND JOURNAL CONTROLS.....	164
17)	CASH RECEIPTS CONTROLS.....	174
18)	ACCOUNT TRANSFER PROCESSING CONTROLS.....	176
19)	COST BASIS REPORTING/PORTFOLIO EVALUATIONS CONTROLS .....	184
20)	CREDIT AND DEBIT INTEREST CONTROLS.....	186
21)	CLIENT AND PRODUCT BILLING OPERATIONS.....	188
22)	CONFIRM CONTROLS .....	192
23)	STATEMENT CONTROLS.....	193
24)	PRIME SERVICES CONTROLS.....	198
25)	POSSESSION OR CONTROL .....	203
26)	SUBSCRIBE ANNUITY .....	211
27)	CAPS AND FIRM TRADE REPORTING .....	214
28)	POSITION AND BALANCING.....	218
29)	NETX360 REPORT CENTER.....	221

30)	MANAGED ACCOUNTS CONTRIBUTIONS AND WITHDRAWALS.....	223
31)	MANAGED ACCOUNTS RECONCILIATION .....	224
32)	MANAGED ACCOUNTS INVESTMENT SUPPORT SERVICES .....	226
33)	MANAGED ACCOUNTS PERFORMANCE REPORTING .....	227
SECTION V: OTHER INFORMATION PROVIDED BY BNY MELLON   PERSHING.....		232
Management’s Response details.....		233
1)	LOGICAL ACCESS CONTROLS .....	233
2)	PHYSICAL CUSTODY PROCESSING CONTROLS .....	235
3)	MARGIN CONTROLS.....	236
4)	PRIME SERVICES CONTROLS.....	237
Information about relevance of the controls to the user entities.....		238
NetX360 Report Center and eAnalytics Reports – Completeness and Accuracy .....		240
Enterprise Resiliency Overview .....		242
SEC Rule 206(4)-2, “Custody of Funds or Securities of Clients by Investment Advisors” under the Investment Advisors Act of 1940 ...		244

## **SECTION I: INDEPENDENT SERVICE AUDITORS' REPORT**



KPMG LLP  
1601 Market Street  
Philadelphia, PA 19103-2499

## **Independent Service Auditors' Report**

To the Audit Committee of The Bank of New York Mellon Corporation:

### **Scope**

We have examined BNY Mellon | Pershing's ("Pershing") description of its system titled "BNY Mellon | Pershing's Description of its Introducing Firm Services, Prime Services, and Managed Accounts Operations System" for processing user entities' transactions throughout the period October 1, 2021 to September 30, 2022 (the Description) and the suitability of the design and operating effectiveness of the controls included in the Description to achieve the related control objectives stated in the Description, based on the criteria identified in "BNY Mellon | Pershing's Assertion" (the Assertion). The controls and control objectives included in the Description are those that management of Pershing believes are likely to be relevant to user entities' internal control over financial reporting, and the Description does not include those aspects of the introducing firm services, prime services, and managed accounts operations system (the System) that are not likely to be relevant to user entities' internal control over financial reporting.

The information included in Section V, "Other Information Provided by BNY Mellon | Pershing", is presented by management of Pershing to provide additional information and is not a part of Pershing's description of its introducing firm services, prime services, and managed accounts operations system made available to user entities during the period October 1, 2021 to September 30, 2022. Information about Pershing's management response details; Information about relevance of the controls to the user entities; NetX360 Report Center and eAnalytics reports completeness and accuracy; Pershing's enterprise resiliency overview including pandemic planning overview/COVID-19 impact; and SEC Rule 206(4)-2 "Custody of Funds or Securities of Clients by Investment Advisers" under the Investment Advisers Act of 1940 has not been subjected to the procedures applied in the examination of the Description and of the suitability of the design and operating effectiveness of controls to achieve the related control objectives stated in the Description and, accordingly, we express no opinion on it.

Pershing uses the subservice organizations identified in Section III to perform some of the services provided to user entities that are likely to be relevant to those user entities' internal control over financial reporting. The Description includes only the control objectives and related controls of Pershing and excludes the control objectives and related controls of the subservice organizations. The Description also indicates that certain control objectives specified by Pershing can be achieved only if complementary subservice organization controls assumed in the design of Pershing's controls are suitably designed and operating effectively, along with the related controls at Pershing. Our examination did not extend to controls of the subservice organizations and we have not evaluated the suitability of the design or operating effectiveness of such complementary subservice organization controls.

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 Pershing's controls are suitably designed and operating effectively, along with related controls at Pershing. 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.

### **Service Organization's Responsibilities**

In Section II, Pershing has provided the Assertion about the fairness of the presentation of the Description and suitability of the design and operating effectiveness of the controls to achieve the related control objectives stated



in the Description. Pershing is responsible for preparing the Description and Assertion, including the completeness, accuracy, and method of presentation of the Description and 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 stated in the Description.

### **Service Auditors' 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 to achieve the related control objectives stated in the Description, based on our examination.

Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants. Those standards require that we plan and perform the examination to obtain reasonable assurance about whether, in all material respects, based on the criteria in the Assertion, the Description is fairly presented and the controls were suitably designed and operated effectively to achieve the related control objectives stated in the Description throughout the period October 1, 2021 to September 30, 2022. We believe that the evidence we 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 stated in the description, based on the criteria in management's 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 stated in the description
- testing the operating effectiveness of those controls that management considers necessary to provide reasonable assurance that the related control objectives stated in the description were achieved
- evaluating the overall presentation of the description, suitability of the control objectives stated in the description, and suitability of the criteria specified by the service organization in its assertion

### **Service Auditors' Independence and Ethical Responsibilities**

We are required to be independent and to meet our other ethical responsibilities in accordance with relevant ethical requirements relating to the examination engagement.

### **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 stated in the Description 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 Section IV.



## Opinion

In our opinion, in all material respects, based on the criteria described in BNY Mellon | Pershing's Assertion:

- a. the Description fairly presents the System that was designed and implemented throughout the period October 1, 2021 to September 30, 2022.
- b. the controls related to the control objectives stated in the Description were suitably designed to provide reasonable assurance that the control objectives would be achieved if the controls operated effectively throughout the period October 1, 2021 to September 30, 2022, and subservice organizations and user entities applied the complementary controls assumed in the design of Pershing's controls throughout the period October 1, 2021 to September 30, 2022.
- c. the controls operated effectively to provide reasonable assurance that the control objectives stated in the Description were achieved throughout the period October 1, 2021 to September 30, 2022 if complementary subservice organization controls and complementary user entity controls, assumed in the design of Pershing's controls, operated effectively throughout the period October 1, 2021 to September 30, 2022.

## Restricted Use

This report, including the description of tests of controls and results thereof in Section IV, is intended solely for the information and use of management of Pershing, user entities of Pershing's System during some or all of the period October 1, 2021 to September 30, 2022, 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 misstatement of user entities' financial statements. This report is not intended to be and should not be used by anyone other than these specified parties.

**KPMG LLP**

Philadelphia, Pennsylvania  
November 30, 2022

## **SECTION II: BNY MELLON | PERSHING'S ASSERTION**



**BNY Mellon | Pershing's Assertion**

We have prepared the accompanying description of BNY Mellon | Pershing's ("Pershing") introducing firm services, prime services and managed accounts operations system titled, "BNY Mellon | Pershing's Description of Its Introducing Firm Services, Prime Services, and Managed Accounts Operations System" for processing user entities' transactions throughout the period October 1, 2021 to September 30, 2022 (the Description) for user entities of the system (the System) during some or all of the period October 1, 2021 to September 30, 2022, 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 subservice organizations and user entities of the System themselves, when assessing the risks of material misstatement of user entities' financial statements.

Pershing uses the subservice organizations identified in Section III to perform some of the services provided to user entities that are likely to be relevant to those user entities' internal control over financial reporting. The Description includes only the control objectives and related controls of Pershing and excludes the control objectives and related controls of the subservice organizations. 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 at Pershing. The Description does not extend to controls of the subservice organizations.

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 Pershing's controls are suitably designed and operating effectively, along with related controls at Pershing. 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 System made available to user entities of the System during some or all of the period October 1, 2021 to September 30, 2022 for processing their transactions as it relates to controls that are likely to be relevant to user entities' internal control over financial reporting. The criteria we used in making this assertion were that the Description
  - i. presents how the System made available to user entities of the System was designed and implemented to process relevant user entity transactions, including, if applicable:
    - (1) the types of services provided, including, as appropriate, the classes of transactions processed;
    - (2) 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;

- (3) 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 and other information prepared for user entities;
  - (4) how the System captures and addresses significant events and conditions other than transactions;
  - (5) the process used to prepare reports and other information for user entities;
  - (6) 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;
  - (7) 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
  - (8) other aspects of our control environment, risk assessment process, information and communication (including the related business processes), control activities and monitoring activities that are relevant to the services provided.
- ii. includes relevant details of changes to Pershing's System during the period covered by the Description.
  - iii. does not omit or distort information relevant to Pershing's 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 auditors, and may not, therefore, include every aspect of the System that each individual user entity of the System and its auditor may consider important in its 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, 2021 to September 30, 2022 to achieve those control objectives if subservice organizations and user entities applied the complementary controls assumed in the design of Pershing's controls throughout the period October 1, 2021 to September 30, 2022. The criteria we used in making this assertion were that:
- i. the risks that threaten the achievement of the control objectives stated in the Description have been identified by management of Pershing.
  - ii. 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; and
  - iii. the controls were consistently applied as designed, including whether manual controls were applied by individuals who have the appropriate competence and authority.

BNY Mellon | Pershing

November 30, 2022

**SECTION III: BNY MELLON | PERSHING'S DESCRIPTION OF  
ITS INTRODUCING FIRM SERVICES, PRIME SERVICES, AND  
MANAGED ACCOUNTS OPERATIONS SYSTEM**

## DESCRIPTION OF SYSTEM

BNY Mellon | Pershing (“Pershing” or the “firm”) is a leading provider of clearing and custody services. Pershing is uniquely positioned to help complex financial services firms transform their businesses, drive growth, maximize efficiency, and manage risk and regulation. Wealth management and institutional firms outsource to Pershing for trading and settlement services, investment solutions, bank and brokerage custody, middle and back office support, data insights, and business consulting. Pershing brings together high-touch service, an open digital platform and the Bank of New York Mellon Corporation (“BNY Mellon”) enterprise to deliver a differentiated experience for every client. Pershing (member FINRA/NYSE/SIPC) is a subsidiary of BNY Mellon. Pershing and its worldwide affiliates have over \$2 trillion in global assets and millions of investor accounts. Pershing affiliates include technology provider Pershing X. Inc (formerly known as Albridge Solutions, Inc.) and Lockwood Advisors, Inc., an investment adviser registered in the United States under the investment Advisers Act of 1940.

Pershing provides the following financial services to introducing firms (referred to as IFs or “clients”) and IFs’ clients (“end clients”):

Account Setup and Maintenance	Clearance and Settlement
Financial Products and Services	Credit Services
Trading Services	Custody Services
Mutual Funds and Money Market Funds	Technology
Prime Services	Managed Accounts Services

### *Purpose of Pershing’s Description of its System*

The description of Pershing’s system, which includes the controls for the various financial, technology and processing functions of Pershing as they apply to services provided to the IFs and IFs’ clients clearing through Pershing, has been prepared for the benefit of IFs, IFs’ clients and their independent auditors (collectively referred to as “users of this report”). The report was designed to provide information to users of this report so that they can understand Pershing’s control features as they relate to an audit of the IF’s financial statements. The description of these controls has been prepared following the guidance in the AICPA Statement on Standards for Attestation Engagements (SSAE) no. 18, under AT-C section 100, Concepts Common to All Attestation Engagements, AT-C section 205, Assertion Based Examination Engagements, and AT-C section 320, Reporting on an Examination of Controls at a Service Organization Relevant to User Entities’ Internal Control Over Financial Reporting.

The Information included in Section III and IV details the relevance of the general computing controls and transaction processing controls as they relate to the internal control over financial reporting of the user entities of this report.

As the description is intended to focus on features that generally may be relevant to the controls over certain products and services, it does not encompass all aspects of the services provided or procedures followed for all products and services provided by Pershing. Specifically, this description includes the order and trade processing, clearance and settlement, physical custody, margin monitoring, corporate actions, account transfers, security information, interest, billing, statements and confirmations, and cash management functions performed by Pershing (collectively the “IF Services”). Additionally, this description includes prime services operations related to new account setup, client reporting, and securities lending and managed accounts operations related to new account setup, contributions and withdrawals, reconciliations, investment support services (including trading), billing and performance reporting. Users of this report should refer to Section IV to understand the specific control objectives covered by this report.

#### ***Report Changes***

As part of ongoing operations, Pershing makes changes to its operations and various support groups’ roles and responsibilities to better align the business to service clients. This report reflects changes that were made during the period of October 1, 2021 to September 30, 2022.

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## RELEVANT ASPECTS OF THE CONTROL ENVIRONMENT, RISK ASSESSMENT AND MONITORING

### CONTROL ENVIRONMENT

#### *Organization*

The control environment sets the tone for an organization, influencing the control consciousness of its people. It is the foundation for all other components of internal control, providing discipline and structure. The objectives of an internal control structure are to provide reasonable, but not absolute, assurance as to the integrity and reliability of the financial information, the protection of assets from unauthorized use or disposition, and that transactions are executed in accordance with management's authorization and client instructions.

Pershing demonstrates commitment to integrity and ethical values through its Code of Conduct and corporate policies. The Code of Conduct provides the framework and sets the expectations for business conduct by defining employee responsibility. Annually, all employees are required to certify that they have read, understand and are in compliance with the Code of Conduct. Corporate policies are made available to all employees on the company's intranet and are reviewed at least annually.

Pershing exercises oversight responsibility through its governance committee structure. Risk management and oversight begins with the Executive Committee and is supported by governance committees that review new business, products and services, prioritization of technology efforts, compliance activities and enterprise-wide risk management activities. Governance committees are comprised of cross-functional teams qualified to assess risks and controls. The Business Risk Committee is responsible for helping to ensure that emerging risks are weighted against Pershing's risk appetite and oversees the risk management, compliance and ethics framework.

Pershing establishes authority and responsibility throughout its organization. Pershing's organizational structure provides the overall framework for planning, controlling and directing operations, including controls over the execution of transactions, services and operations. Authority and responsibility are assigned within the organizational structure to provide for adequate staffing, segregation of duties, efficiency of operation and adequate concentration of knowledge and skills. Legal entity structures are in place to manage business risks and comply with local rules and regulations. Pershing has supervisory and operating procedures for each business process within the organization.

Pershing demonstrates its commitment to competence through its talent management process. Pershing has formal hiring practices that are designed to help ensure employees are qualified for their job responsibilities. Employees are trained through an orientation program upon hiring, and then through a combination of on-the-job training, formal classroom training, and self-led online programs. Department managers are responsible for helping to ensure employees have completed training sufficient to perform their job responsibilities. Where appropriate, employees are required to attain professional licenses (e.g., FINRA Series 7, 24, 99).

Pershing enforces accountability through the performance management program which includes tools, training and resources to help individuals perform their jobs effectively. The performance management program is based on the concept of partnership between employees and the company, and between each employee and his or her direct manager. Staff competence is formally evaluated twice annually: mid-year and year-end. Employee performance is evaluated on objective criteria and an overall performance rating is assigned.

The Pershing organization, including related affiliates, is separated into the following groups:

- Collateral Funding & Trading
- Institutional Solutions
- Operations Trading and India Services (OTIS)
- Pershing Technology
- Wealth Solutions
- Financial Services Quality (FSQ)
- Financial Solutions
- Global Financial Institutions
- Advisor Solutions<sup>1</sup>
- Pershing X. Inc<sup>1</sup>
- Prime Services

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<sup>1</sup> Controls in place at these organizations are covered by a separate SOC 1<sup>®</sup> Report.

### *Segregation of Duties*

The management of Pershing has established and maintains an internal control structure that considers the need for adequate segregation of duties and also provides a mechanism for monitoring compliance with written supervisory and department policies and procedures. Pershing maintains segregation of duties through its organization structure and defined roles and responsibilities, including, but not limited to the following:

Pershing's employees are not authorized to initiate transactions without proper authorization from designated management or client representatives and Pershing's employees are not authorized to modify client databases other than through normal production procedures. Responsibility for system and program testing, program migration, system maintenance and daily computer operations is centralized and segregated from personnel responsible for the day-to-day business operations.

Pershing Technology develops and maintains the Pershing software applications and controls access to production systems and data. Additionally, Pershing Technology controls and monitors changes to production systems to verify whether the appropriate testing has been performed and approvals were obtained.

The Software Quality Assurance (SQA) group is responsible for performing the application and user acceptance testing (UAT) of system changes to the web front-ends as well as for maintaining and changing production software. Changes to software are only implemented in production after the changes have been approved by the control boards and validated by the Technology Quality Assurance and business testers. SQA management has a reporting line independent of the development groups of Pershing Technology.

BNY Mellon Technology provides information and technology infrastructure support to administer central information technology controls for some of the Pershing systems. BNY Mellon Technology has established control activities in the following control objective areas: Information Security Governance, Logical Access, Change Management, Job Scheduling, Backup and Recovery, Incident and Problem Management, Data Transmissions, and Physical Access. These control objectives and activities are described in the BNY Mellon Centrally Managed Information Technology Services (CMITS) SOC 1® Report. As such, these control objectives and related control activities are not included in this report.

### *Administrative Controls*

Pershing has formal hiring practices designed to verify whether new employees are qualified for their job responsibilities. New position hiring must be jointly approved by the Human Resources (HR) department and the manager of the department supervising the position. All new employees are screened and drug-tested.

Personnel are trained through supervised on-the-job training and in-house courses. Department managers are responsible for encouraging the continuous training and development of personnel. Certain positions are required to obtain industry registrations, such as the General Securities Representative Series 7, the General Securities Principal Series 24 registrations and the Operations Professional Series 99. Formal performance reviews are conducted on a periodic basis. Employee performance is evaluated on objective criteria, including the performance of defined core competencies, and an overall performance rating is assigned. Employees and departments interact and communicate through a combination of a People Services suite on Pershing's intranet and newswires to the entire firm via email.

Exit interviews and a questionnaire are administered to employees who voluntarily terminate their employment.



Each full-time and eligible part-time employee is entitled to paid time off annually. All officers and full-time non-official employees who process, approve, or can influence transactions must take at least two consecutive weeks of paid time off during the calendar year, unless an exemption is approved.

All employees are required to read and adhere to the BNY Mellon Code of Conduct Policy and Procedures. The policy is distributed to all employees and a soft copy is available on the corporate intranet.

Written supervisory procedures and department policies and procedures are maintained for all Pershing business groups. These policies and procedures are updated whenever there is a material change to the business or, at a minimum, annually.

Access to systems is granted upon the Information Security Governance group's receipt of the appropriate authorization from line managers. Development staff in Pershing Technology is only granted access in emergency situations, which are controlled through emergency access production accounts. The database administrators control access to production data and databases.

Pershing Technology develops code in the U.S. and India. The compiling, as well as the development of user acceptance and production testing, of all products is performed largely in Pershing Technology's U.S. locations, but also in India. Pershing Technology (U.S. and India) has attained Level 5 of the Capability Maturity Model (CMM) prescribed by the Software Engineering Institute (SEI). Level 5 is the "optimizing" level, the highest level in the model. Level 5 is characterized by continuous measurement-based process improvement. The fundamental concept underlying CMM and process maturity is that the software process can be defined as a set of activities, methods, practices and transformations that people use to develop and maintain software and the associated products. The maturity of the software process is the extent to which a specific process is explicitly defined, managed, measured, controlled and implemented.

## RISK ASSESSMENT AND MONITORING

### *Identification and Assessment of Risks Relating to Objectives*

Pershing maintains an internal control framework designed to manage its risk and provide a sound operational environment through assessing, measuring and monitoring key risks and controls. Pershing specifies suitable objectives with sufficient clarity to enable the identification and assessment of risks relating to objectives in its risk assessment process. Pershing establishes risk tolerance thresholds and requires that every employee be responsible for maintaining appropriate risk levels. Objectives are established annually by the executive committee and business management teams and are measured and reported monthly. Corrective action is taken, as appropriate, to realign activities to manage risk within tolerance levels.

Pershing identifies and analyzes risk at both the business organization and business process levels. Pershing employs three lines of defense in its risk management framework. Each line of defense plays a role in the continuous risk management process. Business process managers (first line) are responsible for identifying, understanding and effectively managing the risks inherent in their processes. Independent from the business process groups are control functions (second line) responsible for overseeing and reporting on risk issues and control enhancements. Internal Audit (third line), independent from the first two lines, uses a risk-based approach in its audit methodology and recommends improvements to the control environment when necessary.

Pershing assesses fraud risk through general management controls, the organizational structure, segregation of duties, personnel controls, staff awareness and training, systems access controls, independent testing (internal audit, external audit, compliance testing), physical security controls and regular management monitoring.

Pershing identifies and analyzes significant change through its change management process. Material changes to a business or technical process require a review by certain governance committees. Examples include new products or services, systems conversions, changes to laws and regulations or the reorganization of a business unit.

The organizational framework for managing risk is based on a risk culture that incorporates both governance and risk management activities, including:

Business Risk Committee	Business Acceptance Review Committee (BAR)
Executive Committee	Internal Audit department (Internal Audit)
Regulatory Review Committee	Business Line Accountability
Risk Management Council	Process Change and Product Review Council
Global Credit and Market Risk Committee	Transformation Oversight Forum

Pershing conducts ongoing and separate evaluations to ascertain whether the components of internal control are present and functioning. These evaluations entail internal and external audits and monitoring, regulatory examinations, and the governance committee structure. Independent internal review and testing are performed by Internal Audit and the Compliance Testing and Verification team. Information Risk Management is responsible for developing and maintaining policies, tools and processes for identifying, assessing, measuring and monitoring information and technology risk for Pershing. Business owners are responsible for ongoing monitoring of the risks inherent to their processes. Control functions, independent from the business process groups, are responsible for overseeing and reporting on risk issues and control enhancements.

Pershing seeks to communicate internal control deficiencies in a timely manner to those parties responsible for taking corrective action. Business units are expected to escalate significant control issues to senior management. The independent control functions monitor the remediation of control weaknesses to closure and provide periodic reporting to the Executive Committee and Business Risk Committee. Results from internal and external audits, compliance monitoring, and regulatory examinations are assessed, reported and tracked to closure.

### ***Subservice Provider Management***

Third Party Governance (TPG) is a global governance structure and process that supports BNY Mellon's oversight and risk management of third-party supplier and affiliate service engagements. All BNY Mellon companies are subject to BNY Mellon's third-party governance policies. BNY Mellon manages the onboarding of vendors and has vendor oversight specialists in areas of technology risk and operational risk. Such third party providers are subject to a due diligence review and ongoing monitoring, and must execute a services agreement addressing such matters as confidentiality, information security, performance expectations, and other obligations determined based on the services supplied.

TPG is designed to:

- Proactively identify and effectively manage third-party risks (e.g., operational, information, business continuity, financial, contractual, compliance, and reputation risks).
- Enhance existing reporting requirements and processes (e.g., metrics, Key Risk Indicators, Key Performance Indicators) for the management and oversight of third-party suppliers and affiliate services.
- Enhance tools and technology for inventorying and tracking supplier engagements.
- Improve the identification of engagements that support High and Critical rated activities and enhance oversight processes for these engagements, such as supplier exit strategies, management plans, and monitoring.

Pershing uses third-party providers to achieve operating efficiency and to obtain specific expertise. Pershing uses these service providers for market data, pricing of securities, portfolio accounting, locates for security lending, checks, disbursements, confirm and statement printing, certain information technology services, and for cloud hosting services. Pershing uses the services of BNY Mellon Technology for some of the Pershing systems. This report does not cover processes and controls at the third-party service providers nor BNY Mellon Technology.

Pershing recognizes that the complementary user entity controls (CUECs) of subservice organizations, as defined by Statement on Standards for Attestation Engagements (SSAE) 18, must also be in place at Pershing, along with controls at the subservice organizations. Pershing has considered the design of its controls to cover the interaction with the subservice organizations and has a formal risk-based framework in place to assess potential service providers that may include, based on the risk ranking of the provider:

- Risk assessment and analysis of potential subservice organizations, including onsite evaluations when appropriate.
- Review of subservice organization auditor reports.

Subservice organizations, as defined by SSAE 18, are described in Section III – “Complementary Subservice Organization Controls” of this report to help users of this report understand the interaction between Pershing and these subservice organizations.

## CONTROL ACTIVITIES

Pershing selects and develops control activities designed to mitigate risks to the achievement of its objectives. Pershing's control activities are detailed throughout this section and the remainder of this report. These control activities incorporate preventive and detective controls, including policies, procedures, systems and people (e.g., segregation of duties, training and communication). Other examples of control activities in place are the supervision of activities, documented policies and procedures, peer reviews, and reconciliation of activity.

Pershing selects and develops general controls over technology. Pershing's mainframe and client server applications are hosted by BNY Mellon Technology in BNY Mellon data centers on various system infrastructure platforms. Change management, monitoring and administration of daily operations for the mainframe and applications are performed by BNY Mellon. Information security and physical and logical access controls are implemented according to established information security policies and standards. Automated technology controls are in place around logical access, change management, job scheduling, backup and recovery, incident and problem management, data transmissions and physical access. Access profiles of users are generated and sent to the employee's manager for review. Inappropriate access identified by management is reported to the Access Management Operations group for removal. Pershing has controls in place that segregate the roles of system and security administrators from ordinary users. Separation of access rights is based on job function and responsibilities.

Additionally, Pershing uses Amazon Web Services (AWS) to host the e-Delivery system. AWS is responsible for the controls that address control objectives for Logical Access, Change Management/Program Development (with the exception of user acceptance testing, which is managed by BNY Mellon Technology), Job Scheduling, Backup & Recovery, Incident & Problem Management, Data Transmission and Physical Access.

Pershing deploys its control activities through policies and procedures. Corporate policies play a significant role in managing the risks of Pershing's business by setting forth clear standards. Functional business areas are required to have written operating and supervisory procedures that clearly define roles, responsibilities and functions to be performed. All corporate policies, operating procedures and supervisory procedures are reviewed and updated in accordance with a predetermined review cycle.

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## INFORMATION AND COMMUNICATION

Pershing adheres to applicable BNY Mellon policies and requires employees to acknowledge the Code of Conduct at least annually.

Pershing utilizes information at multiple levels of the organization to monitor the control environment and the proper and effective functioning of operations. This includes daily, weekly and monthly control and operational reporting utilized directly within operations and business processes as well as reporting designed for senior management.

Pershing uses various methods to communicate internally to help employees understand their roles and responsibilities, escalation procedures, and significant business or process changes. These methods include internal emails, intranet sites, information sessions and learning events.

Pershing communicates regularly with external parties, including clients, regulators and external auditors, through electronic and mailed communications, and scheduled or ad hoc discussions.

## INFORMATION TECHNOLOGY

### *Computerized Information Systems*

The information systems processing environment within Pershing involves an array of hardware, operating software, application software and data-communication infrastructure networks. Pershing uses the services of BNY Mellon Technology to establish central information technology controls within its information systems processing environment and to maintain and support Pershing systems hosted in their environment.

The Pershing mainframe and client-server applications are hosted by BNY Mellon Technology in BNY Mellon's data centers on various system infrastructure platforms and operating systems. Monitoring of daily operations for these applications is performed by BNY Mellon Technology's Command Center Operations located at their data center facilities. These applications are backed up at BNY Mellon's recovery data centers, which are also administered by BNY Mellon Technology.

The information technology control environment established by BNY Mellon Technology includes central information technology controls implemented on various technology platforms hosted in data centers within specific geographic locations. These platforms are supported by the various departments and groups that comprise BNY Mellon Technology. Table 1 on the following page lists the Pershing applications that are utilized in providing the services described in this report. The table lists the applications and corresponding infrastructure information, as well as the specific organization and/or SOC 1® report that provides coverage for information technology controls for each of the areas listed (Information Security Governance, Logical Access, Change Management, Job Scheduling, Backup and Recovery, Incident and Problem Management, Data Transmissions, and Physical Access). The specific subservice organizations and vendors that are responsible for these general information technology controls are not included within the scope of this report.

BNY Mellon's primary data center is the Tennessee Processing Center (TPC) and its secondary data center is the Central New Jersey Process Center (CNJ).

TABLE 1: Pershing Systems – Scope for Information Technology Controls

#	Application Name	Platform/ Operating System	Platform/ Database	Data Center Location	Logical Access	Physical Access	Network Access	Security
1	Advanced Trade Order Management System (ATOMS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
2	Archer	Windows/BXP	SQL	TPC/CNJ	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
3	Asset Movement Processing System (AMPS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
4	Automated Cash Management System (ACAM)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
5	Automated Subscription Products System (ASPS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
6	Balancing DTC vs Pershing SYS DTCBAL	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
7	Broker Dealer Clearing (BDC)	Linux	SQL	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
8	Bookkeeping System (BKPG)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
9	Client Information Delivery (CID)	Mainframe zOS	DB2	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology

#	Application Name	Platform/ Operating System	Platform/ Database	Data Center Location	Logical Access	Physical Access	Physical Access	Physical Access
10	Commission and Payout System (CAPS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
11	Confirms (CFM)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
12	Consolidated Audit Trail System (CATS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
13	Correspondent Relationship Manager (KORR)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
14	Credit Compliance Services (CCO)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
15	Document Management (ADM)	Windows	Oracle	TPC/CNJ	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
16	eAnalytics (EAN)	Linux	Oracle	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
17	e-Delivery	Linux	Oracle	AWS	AWS/BNY Mellon Technology	AWS/BNY Mellon Technology	AWS	AWS
18	eDocuments (eDoc)	Linux (Unix)	Oracle	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
19	Endevor	z/OS V2.01 Mainframe	VSAM Mainframe	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology



#	Application Name	Platform/ Operating System	Platform/ Database	Data Center Location	Legal Access	Cloud Managed	Cloud Managed	Cloud Managed	Cloud Managed
20	Enterprise Allocation System (EAS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
21	Enterprise Billing System (EBS)	Mainframe (RACF)	DB2	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
22	Enterprise Message Exchange (EMX)	App Engine	Oracle	TPC/CNJ	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
23	Enterprise Recon Utility (TLM)	Linux	Oracle	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
24	Elastic Cloud Storage (ECS)	Linux	Oracle	TPC/CNJ	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
25	Entitlement Management Service (EMS)	Linux	Oracle	TPC/CNJ	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
26	Financial Information eXchange Engine (FIX)	UNIX (iPass)	Oracle	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
27	Firm Trading Portfolio System (FIRM)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
28	Foreign Exchange Front-end System (DENE)	Windows (Pershing Domains)	SQL	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
29	Funds Utilization (FundsU/FUND)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology

<i>#</i>	<i>Application Name</i>	<i>Platform/Operating System</i>	<i>Platform/Database</i>	<i>Data Center Location</i>	<i>Logical Access</i>				
30	Global Billing System (GBLS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
31	Global Clearance (GCLR)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
32	Global Disclosed Margin Services (Credit View)	Mainframe (Top Secret)/UNIX (iPass)	DB2/Oracle	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
33	Global One	Windows (Pershing Domains)/Linux	Sybase	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
34	Global Margin Systems (GMAR)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
35	Global Transaction Management System (GTMS)	Solaris	Oracle	CNJ	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
36	iNautilus	Unix (ipass)	Oracle	TPC/CNJ	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
37	Individual Retirement Account System (IRAS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
38	Infogix Batch Reconciliation & Control ("UACR")	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
39	Institutional Trade Exception Matching System (ITEMS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology

#	Application Name	Platform/ Operating System	Platform/ Database	Data Center Location	Logical Access				
40	Journal System (JR10)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
41	Kofax Total Agility (KTA) and Batch Manager	Windows	MS SQL	TPC/CNJ	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
42	MERVA (MRVA)	Windows	Oracle/Solaris	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
43	Monitoring Architecture (MONA)	Windows (Pershing Domains)	SQL	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
44	Mutual Fund Networking (PNET)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
45	Mutual Fund No-Load Trading System (MFNL)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
46	Mutual Fund Payout FUPO	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
47	N-TIER	Windows (Pershing Domains)	SQL	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
48	NetX suite of products	Mainframe (Top Secret)/ Windows (Pershing Domains)/ UNIX (iPass)/BXP	DB2/Oracle	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology

#	Application Name	Platform/Operating System	Platform/Database	Data Center Location	Logical Access			
49	No Transaction Fee System (NTFS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
50	Online Balancing (OLB)	Mainframe (Top Secret)	DB2/Oracle	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
51	Online Cashiering System (OLCA)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
52	OpenLDAP	UNIX	N/A	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
53	Oracle HR	Linux	Oracle	Oracle Cloud	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
54	Pershing Accounting Records (PAR)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
55	Pershing Automated Cash Exchange (PACE)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
56	Pershing Auto Locator (PAL)/Book Optimizer and Locator tool (BOLT)	Windows/Linux/Mainframe (Top Secret)	Oracle/DB2	TPC/CNJ	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
57	Pershing Correspondent Information System (PCIS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology

#	Application Name	Platform/Operating System	Platform/Database	Data Center Location	Logical Access	Physical Access	Access Control	Access Review
58	Pershing Custody Administrative System (PCAS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
59	Pershing Dividend Announcement System (PDVA)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
60	Pershing Interface Infrastructure (PII)	UNIX (iPass)	DB2	TPC/CNJ	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
61	Pershing Internal Forms	Linux	Oracle	TPC/CNJ	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
62	Pershing Online Name and Address (PONA)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
63	Pershing Systematic Reinvestment System (PSRS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
64	Portfolio Evaluation System (PORT)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
65	Positions and Balances Account Services (PBAS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
66	Prevail (PRVL)	Mainframe (Top Secret)	Proprietary	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
67	Product Master (PROM)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology

#	Application Name	Platform/ Operating System	Platform/ Database	Data Center Location	Location	Location	Location	Location
68	Real-Time Positions & Balances (PNBR)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
69	Real Time Trade Monitor (RTTM)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
70	Reorganization Mail Application (RMAL)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
71	Reorganization System (REOR)	Mainframe (Top Secret)	DB2/Oracle	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
72	Report Center (RCE)	Unix (iPass)	Oracle	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
73	Revenue Adjustment System	Linux	Oracle	TPC/CNJ	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
74	Rules Engine (RUL)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
75	Segregation Sys (SSEG)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
76	Service Center (SVC)	Windows (Pershing Domains)	SQL	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
77	Short Book Management (Syncova)	Windows/	SQL	TPC	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology

	Application Name	Platform/Operating System	Platform/Database	Data Center Location	Logical Access	Physical Access	Network Access	Remote Access
78	Standard File Delivery Information (SFDI)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
79	Statement System (STMT)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
80	The Security Access Review (TSAR)	Linux	Oracle	TPC/CNJ	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
81	Trade Change Management System (TCMS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
82	Trade Figuration System (TFS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
83	Trade Processing Systems (TPS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
84	Transfer Online System (TOLS)	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology
85	WebFOCUS	Mainframe (Top Secret)	DB2	TPC	Pershing/BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology	BNY Mellon Technology

\* Logical Access coverage is specific to application and database levels managed by Pershing. Infrastructure level access (including operating system, network devices and remote access to the Pershing IT environment) is managed by BNY Mellon Technology and is covered in the CMITS SOC 1® Report.

## DESCRIPTION OF PERSHING COMPUTERIZED INFORMATION SYSTEMS

- 1 **Advanced Trade Order Management System (ATOMS):** The ATOMS system is an order and trade processing engine for fixed income, equity, exchange traded funds (ETFs) and options trades.
- 2 **Archer:** Archer is a governance, risk and compliance tool. Archer is a vendor product hosted within the bank's infrastructure.
- 3 **Asset Movement Processing System (AMPS):** AMPS is an asset movement system that provides IFs and Pershing personnel with the ability to process and monitor outgoing Fed Fund wire transactions, checks and journals. AMPS enables users to stop and void check disbursements. Requests are vetted by the rules engine and if necessary, routed for approvals, as defined by the rule configuration.
- 4 **Automated Cash Management System (ACAM):** ACAM is a money management system for linking clients' brokerage accounts to money market fund accounts and banks for bank link accounts.
- 5 **Automated Subscription Products System (ASPS):** ASPS is the source system for Pershing's annuity program "Subscribe" that transmits information processed between insurance carriers and Pershing.
- 6 **Balancing DTC vs Pershing SYS DTCBAL:** The DTCBAL systems compares Depository Trust Company (DTC) activity to Pershing's internal Bookkeeping system activity. Any activity that is not in balance is reported.
- 7 **Broker Dealer Clearing (BDC):** BDC system is the U.S. Government Securities Clearing System for BNY Mellon.
- 8 **Bookkeeping System (BKPG):** The Bookkeeping system runs a nightly batch process used to consolidate, edit and format customer and non-customer transactions for input into Pershing's books and records. Its main function is to consolidate and balance all transactions prior to updating the positions and balance files in the Global Margin (GMAR) system.
- 9 **Client Information Delivery (CID):** CID is used for onboarding new customers and maintains customer information.
- 10 **Commission and Payout System (CAPS):** CAPS captures revenue data resulting from broker trades, calculates the resulting payout and provides online and hard-copy data regarding commissions, sales credits and other free revenue.
- 11 **Confirms (CFM):** Confirms application fulfills the regulatory requirements established in SEC Rule 10b-10 and MSRB Rule G-15. The Confirms application creates trade confirmations in print and e-Delivery formats confirmations for recipients and their interested parties.
- 12 **Consolidated Audit Trail System (CATS):** CATS is used to record information regarding orders, quotes and other trade information reportable to NASDAQ.
- 13 **Correspondent Relationship Manager (KORR):** The KORR application is used for confirmation and statement profile change requests.
- 14 **Credit Compliance Service (CCO):** CCO creates data for Credit Risk Management users to monitor intraday risk. CCO interfaces with the external Risk Metrics application by sending files to Risk Metrics which creates stress reports that management uses to monitor intraday risk.



- 15 **Document Management (DM):** DM is the front-end system, accessed through NetX suite, utilized by DM clients and IFs to access images which have been processed through on-site scanning, fax, online upload, email, and FTP upload and then load data and documents to and from the databases. DM is synonymous to Enterprise Imaging System (EIS).
- 16 **eAnalytics (EAN):** eAnalytics is a suite of reporting tools used in NetX suite of applications. eAnalytics comprises of structured parameterized reports and provides several management Dashboards such as Dashboard Insights, GCR Dashboards, ACATs Dashboard, Opportunity View, Flow of Assets Dashboard and others.
- 17 **e-Delivery System:** e-Delivery system enables the electronic delivery of investor communications and the suppression of physically printing and mailing documents.
- 18 **eDocuments (eDOC):** eDocuments application is used to view electronic versions of customer statements online. eDocuments is used for reporting purposes only and has no financial transaction processing capabilities.
- 19 **Endevor:** Endevor is a source code and release management tool for mainframe computers running z/OS. It is part of a family of administration tools by CA Technologies™ that are used to maintain software applications and track their versions.
- 20 **Enterprise Allocation System (EAS):** EAS allows a user to aggregate executed trades for a specific IF's call letter for a given day, and allocate the total among multiple accounts at the average price.
- 21 **Enterprise Billing System (EBS):** EBS stores and applies fees related to non-trade related transactions per Schedule A agreement with IFs. Schedules implemented in this application are reviewed and documented through the Firm's Workflow Approval application.
- 22 **Enterprise Message Exchange (EMX):** EMX is a strategic messaging platform that supports SWIFT, FedWire, and CHIPS messages. EMX replaced MERVA as of July 23, 2022.
- 23 **Enterprise Recon Utility (TLM):** TLM is a centralized, automated reconciliation platform used to identify open firm suspense accounts. The TLM system facilitates the balancing of bookkeeping accounts by providing automated tools for identifying, reconciling and reporting on account activity.
- 24 **Elastic Cloud Storage (ECS):** Content-addressable storage (CAS) platform for data archiving. ECS provides content authenticity, governance and compliance, long-term retention, and high availability.
- 25 **Entitlement Management Service (EMS):** EMS is used by Pershing and Introducing Broker-Dealer (IBD) administrators to provision user access to Pershing applications.
- 26 **Financial Information eXchange Engine (FIX):** The FIX engine uses the FIX protocol to process electronic international real-time exchange of information regarding the securities transactions.
- 27 **Firm Trading Portfolio Reporting System (FIRM):** FIRM provides comprehensive reporting on principal and firm trading activity.
- 28 **Foreign Exchange Front-end System (DENE):** DENE is the Foreign Exchange (FX) electronic deal list that serves as an order ticket repository.
- 29 **Funds Utilization (FundsU/FUND):** The FundsU system contains the Pershing base rates and the sliding schedules fee for credit and debit interest processing. FundsU calculates interest income, interest

- participation and short sale rebates for the Interest Control group (ICG). FundsU also calculates the income and expense for Pershing and its IFs for cash in the cash, margin and short sale accounts.
- 30 **Global Billing System (GBLS):** GBLS contains additional re-billable fees that Pershing assesses to IFs per Schedule A, as well as the mark-up and distribution schedule.
  - 31 **Global Clearance (GCLR):** GCLR is the back-end system for OLCA. GCLR provides a listing of trades open after settlement, similar to the OLCA system. The system tracks deliveries and provides an automated means of clearing street-side and institutional trades.
  - 32 **Global Disclosed Margin Services (Credit View or GDMS):** Credit View is a credit and risk exception system for the Margin department. The Margin department uses Credit View to monitor and recommend action on open items.
  - 33 **Global One:** Global One is a software product from FIS (formerly SunGard Corporation) that automates the securities lending billing process. Foreign security transactions are transmitted via Global One to Securities Lending Sales (SLS) borrow and loan bookkeeping.
  - 34 **Global Margin System (GMAR):** The GMAR system stores domestic and international transactions. The PACE and AMPS systems feed disbursement/deposit transaction details into GMAR.
  - 35 **Global Transaction Management System (GTMS):** GTMS is used to bulk upload the details of executed security, mutual fund orders and foreign exchange transactions into the platform. Trade details are then passed to downstream applications to be updated in books and records and depository settlement.
  - 36 **iNautilus:** iNautilus is a Java platform in Pershing. It includes a Java application server that is used in development, test, and production and a browser-based administrative console for managing the runtime environment in each region.
  - 37 **Individual Retirement Account System (IRAS):** IRAS takes in new and revised account information from Pershing's Online Name and Address System (PONA) and maintains a master file of accounts. Additionally, IRAS holds information from the bookkeeping files, including transactions such as distributions, contributions, and billing fees.
  - 38 **Infogix Batch Reconciliation & Control (UACR):** Infogix Batch Reconciliation & Control is a mainframe utility that provides standardized and automated balancing of record counts, date checks and error reporting through job streams.
  - 39 **Institutional Trade Exception Matching System (ITEMS):** ITEMS provides an institutional allocation function that receives allocation data from OASYS and the DTC. ITEMS also communicates with the DTC interactive ID system and processes step-out transactions.
  - 40 **Journal System JR10:** The JR10 system allows Pershing users to enter journal requests that cannot be entered on AMPS Asset Movement (e.g., other source codes, non-standard trailers). This system is utilized to process PAR entries to client and firm accounts.
  - 41 **Kofax Total Agility (KTA) and Batch Manager:** Kofax is a third party system utilized by Document Management for processing (indexing) of all incoming faxes, including those received from clients' dedicated fax lines as well as Pershing IFs. Kofax also has a scan component for the capturing of physical paperwork received via mail from customers. Batch Manager is a real time dashboard used by

the management team to monitor, assign, and prioritize work to the Indexing staff. Kofax Validation (Indexing) is used to commit client documents to the system.

- 42 **MERVA (MRVA):** The MRVA system translates Fed fund wires from AMPS/PACE into SWIFT messages that are used in wire transmissions to/from the Fed. EMX replaced MRVA on July 23, 2022.
- 43 **Monitoring Architecture (MONA):** MONA is a rules-based monitoring tool that uses distributed software agents. MONA is responsible for scheduling and running monitoring tools, and for collecting and forwarding data to the NetCool® server.
- 44 **Mutual Fund Networking (PNET):** PNET handles the non-trade information flow of data, which include dividends, positions and registrations, between the funds and Pershing through the NSCC networking interface.
- 45 **Mutual Fund No-Load Trading System (MFNL):** MFNL processes purchases, redemptions and exchanges, and is used primarily by the Pershing order desk to enter orders. MFNL is also used for browsing, updating and deleting orders after they have been entered through one of the previously referenced order entry portals. Formatted records are created, sent and received via communication with the NSCC and mutual funds. Common Order Edit (COE) is an edit engine that is used only by the distributed platform system and by end-of-day batch order submission jobs. COE performs common edits for mutual fund orders. MFNL comprises of **Mutual Fund Information Processing System (MIPS)** which is used to browse trade history and research basic information about funds, such as whether they are networked and whether dividends are eligible for reinvestment. Corrections after the trade date are processed on this system. MIPS also maintains an updated list of eligible mutual funds that can be traded.
- 46 **Mutual Fund Payout (FUPO):** FUPO receives one check for the 12b-1 payments and then breaks the payment up and creates bookkeeping records to distribute the monies for distribution. FUPO is used mainly for funds with an omnibus relationship.
- 47 **N-TIER:** N-TIER is the non-dollar corporate action processing system that facilitates international currency payments to shareholders of foreign securities. The application creates payment files from Pershing's Stock Record used in the PAR USD payment file.
- 48 **NetX suite of products:** The NetX suite is a platform by which IFs and their clients input orders for execution and view intraday activity, positions, balances, and account profile information. NetX360 Mobile enables the user to access the same service provided by NetX360 via mobile devices (i.e., iPhone, iPad, devices running on Windows Mobile). NetX360 includes a ticketing module known as Service Center (SVC) that allows IFs to communicate within their own offices and with Pershing.
- 49 **No Transaction Fee System (NTFS):** NTFS is used to allow clients to purchase participating funds with no transaction fees (FundVest trading) that are, subject to program restrictions such as minimum purchase amounts and holding periods for the fund.
- 50 **Online Balancing (OLB):** OLB is used to perform real-time comparisons between client trades in TPS to street-side trades in exchanges' comparison systems and comparisons from the NSCC. Unmatched trades are updated in OLB for resolution prior to settlement date.
- 51 **Online Cashiering System (OLCA):** OLCA is used for communication with the DTC for security settlement and provides an automated means of clearing street-side and institutional trades. The system builds an internal Stock Record to process receive and deliver activity to the appropriate box location and provides automated real-time interface to the DTC's clearance settlement system for DTC-eligible

- securities. OLCA also provides a listing of trades open after settlement, tracks and processes deliveries, and provides an automated means of clearing street-side and institutional trades.
- 52 **OpenLDAP:** User directory store is an internal system which contains a copy of internal LDAP data from the BNY Mellon LDAP (YLD) service. YLD is the centralized LDAP Repository that is used as the Identity Repository for Access Control and Web Applications.
- 53 **Oracle HR:** Oracle HR is a corporate payroll/human resource system that processes and tracks human resource and payroll data for employees. Oracle HR also tracks applicants and processes new hires. This system is used to send the Enterprise Technology Access Management (ETAM) files for access provisioning and removal. Oracle HR replaced PeopleSoft.
- 54 **Pershing Accounting Records (PAR):** The PAR system stores domestic and international disbursement/deposit transaction and domestic and international transaction details received from GMAR. A nightly batch job is run to upload disbursement/deposits.
- 55 **Pershing Automated Cash Exchange (PACE):** The PACE asset movement system is used to enter, stop or void check disbursements request for journals, checks, and Fed Fund wires. This check request functionality will eventually be replaced by AMPS Asset Movement.
- 56 **Pershing Auto Locator (PAL)/Book Optimizer and Locator Tool (BOLT):** BOLT is a security locator application used for locating stock for short orders entered by Pershing IBDs. This application also services locates sent to it by customers directly through NetX Services, NetX360 and Rules Engine as well as entered through the BOLT screen by traders. PAL was renamed as BOLT. No functionality change was made.
- 57 **Pershing Correspondent Information System (PCIS):** PCIS is used for the calculation and bookkeeping of Pershing trade-related clearing charges (trade commissions). PCIS also contains execution and clearance rates that Pershing assesses to IBDs per Schedule A and automatically applies these rates to transactions. PCIS comprises of IF Sundry Charges Repository (SUNN) which stores fees for the trade-related ancillary fees such as mutual fund surcharge fees, foreign settlement fees, and the mutual fund exchange fees.
- 58 **Pershing Custody Administrative System (PCAS):** PCAS is used to enter securities. Securities can be entered in PCAS by IFs. If the IF does not have access to PCAS, the physical securities will be redirected to the Physical Custody Processing group where they will be manually entered in PCAS. The majority of physical securities are logged using PCAS.
- 59 **Pershing Dividend Announcement System (PDVA):** PDVA is the main announcement system used by the Corporate Actions department. PDVA is used to receive new dividend and bond interest announcements and for reconciliations of existing announcements.
- 60 **Pershing Interface Infrastructure (PII):** Pershing Interface Infrastructure Framework contains a set of components, services, and application programming interfaces (APIs) that facilitate MQ message brokering, retrieval and delivery. It includes monitoring software as well as logging.
- 61 **Pershing Internal Forms:** Pershing Internal Forms allows users to submit access requests and track approvals.
- 62 **Pershing Online Name and Address (PONA):** PONA is used to add, delete, change and browse client and firm accounts. PONA provides the ability to inquire about and correct any accounts on the master file. PONA is also used to set up direct statement mailing to user entities.

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- 63 **Pershing Systematic Reinvestment System (PSRS):** PSRS allows users to define events such as periodic purchases and redemptions.
- 64 **Portfolio Evaluation System (PORT):** PORT supports the functions of the Portfolio Evaluation Services (PES) and Cost Basis Reporting (CBR) groups in performing tax-lot accounting, including the maintenance of securities, cost basis reporting, and gains and losses, as well as performance measurement for client accounts.
- 65 **Positions and Balances Account Services (PBAS):** PBAS allows intra-day booking of specific fee and non-USD wire transactions to accounts (subset of PNBR).
- 66 **Prevail (PRVL):** PRVL enables Pershing to generate, view and print online reports regarding the processing systems.
- 67 **Product Master (PROM):** PROM is a repository of securities currently or recently held by one or more Pershing or correspondent accounts. The system features both an online and batch component. Rumba (3270) online screens, which must be available throughout the trading day, are used by Pershing employees to add new instruments to the database and to maintain data for existing instruments. Batch processes are responsible for updating the PROM database with pricing and descriptive data provided by various vendors, such as Interactive Data Corporation (IDC) and JJ Kenny S&P.
- 68 **Real-Time Positions & Balances (PNBR):** PNBR collects intra-day activity including both trades and non-trades transactions and does the shadow posting to the Positions and Balances database.
- 69 **Real Time Trade Monitor (RTTM):** RTTM is used to monitor trades in real time and trade errors that require resolution, and to populate the TRACE Summary and TRACE Detail screens.
- 70 **Reorganization Mail Application (RMAL):** RMAL is used for mailings to clients regarding voluntary corporate actions performed by Pershing.
- 71 **Reorganization System (REOR):** REOR processes voluntary and mandatory corporate actions for Pershing's clients. Voluntary corporate actions include tender offers, odd lot offers, subscriptions and optional puts. Mandatory corporate actions include mergers, name and CUSIP changes and redemptions. The system obtains corporate action announcements from a variety of sources, tracks pending client positions, accepts instructions online for voluntary offers, produces warning wires and credits clients on payable date with the terms of the offer. In addition, the system debits the clients' positions for the shares included in the offer.
- 72 **Report Center (RCE):** Report Center is a reporting application that allows both internal employees and external clients to access pre-built reports and build new ad-hoc reports for various processes and financial transactions.
- 73 **Revenue Adjustment System (RAS):** Revenue Adjustment System facilitates online revenue adjustment requests for client rebates. The Revenue Adjustment System ensures approvals of revenue adjustment requests and contains supporting documents.
- 74 **Rules Engine (RUL):** The Pershing Enterprise Rules Engine is a patented transaction evaluation system that is used for managing risk in processes such as order management, trade corrections, asset movements, account transfer and account opening.

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- 75 **Segregation Sys (SSEG):** Segregation Sys SSEG (“SmartSeg”) provides initial daily segregation requirements and optimization for deliveries and deficits and is used to ensure Pershing’s compliance with the customer segregation rules.
- 76 **Service Center (SVC):** Service Center application is used by clients to input their requests which are routed to appropriate departments for action using a workflow. Service Center workflow captures audit trails for the requests submitted.
- 77 **Short Book Management (Syncova):** Syncova automatically calculates and applies interest fees to Pershing’s client accounts per short position based on security lending rates downloaded from the rate engine. Additionally, the Syncova system calculates and applies security-level rebate rates to the short market values for a subset of Pershing client.
- 78 **Standard File Delivery Information (SFDI):** The SFDI application manages the configuration, extraction and delivery of Standard File data.
- 79 **Statement System (STMT):** The Statement system runs and creates monthly brokerage statements and customer letters. It also feeds the brokerage statements and customer letters to an OnDemand application where customer statements and letters can be viewed. The Statement system also sends files to the print vendor Broadridge for printing and mailing and to Fiserv for CD creation.
- 80 **The Security Access Review (TSAR):** TSAR is a platform within BNY Mellon’s Identify and Access Management (IdAM) service that provides the organization with a simplified and centralized solution to manage access certifications for Pershing’s environment.
- 81 **Trade Change Management System (TCMS):** TCMS is used to view and adjust trade information via NetX360 in a graphical user interface (GUI) with integrated business rules.
- 82 **Trade Figuration System (TFS):** TFS calculates commissions and other charges that Pershing IFs charge to their clients. TFS contains IF commission schedules.
- 83 **Trade Processing Systems (TPS):** TPS is used for browsing and processing trades as well as to capture Pershing's front-end transactions.
- 84 **Transfer Online System (TOLS):** Transfer agents manually enter the physical securities using TOLS. GMAR captures the incoming securities from TOLS along with PCAS, OLCA and JR10.
- 85 **WebFOCUS:** WebFOCUS is an enterprise business intelligence platform that supports the statements reconciliation process.

## DESCRIPTION OF GENERAL COMPUTER CONTROLS

### *Information Security Governance*

To protect Pershing's assets, information security is implemented via the establishment and enforcement of comprehensive information security policies and standards. These policies and standards apply to individuals who use Pershing computing or networking resources, including employees, consultants, and contractors. The Information Security Governance ("Information Security") department is part of Pershing Technology.

### Policies and Procedures

The Information Security department sets information security policies and standards, helps assess compliance, and responds to client queries about Pershing's security policies.

Pershing complies with BNY Mellon Information Security Policies and Procedures. The BNY Mellon policy details the purpose, scope and code of conduct for Pershing employees with regard to information security. It also covers specific organizational roles and responsibilities for the security of information and systems. This policy is made available to employees through the intranet.

### Vulnerability Assessments

Information Security conducts and/or contracts with third parties to perform security reviews, evaluations and tests of the security of Pershing's NetX suite of applications. Information Security also performs due-diligence information security reviews of Pershing's third-party subservice organizations. Assessment findings are documented according to the Pershing Risk Assessment Report Tracking policy. Medium- and high-risk vulnerabilities are documented and tracked until remediation. Changes to applications to remediate such vulnerabilities follow Pershing's change management process.

The Information Security Work group (ISWG) reviews proposed system architecture, significant system changes or new service with security implications. Review decisions are communicated back to the requestor via the applicable workflow.

### *Logical Access*

Logical access controls for employees, consultants and contractors provide reasonable assurance that Pershing's data and computing resources are secured and are accessed only by authorized personnel. These controls are implemented by the Access Management Operations group, which is responsible for managing user identification and authentication credentials, as well as access profiles to data and other resources. The Access Management Operations group is part of Information Security within Pershing Technology.

### Access Management

Pershing's logical access controls rely on a range of data security facilities that encompass the firm's computing environments. The Access Management Operations group is responsible for providing users with access. The Database Administration group is responsible for the administration of mainframe databases. Access to manage security for the production databases is restricted to the database administrators.

Access authorization forms and email are used to document compliance with Pershing's access approval requirements. Procedures are established for the timely identification of terminated and transferred users and the subsequent removal of any inappropriate access privileges. Violations and security activity are logged, reviewed and appropriately escalated to identify and resolve unauthorized activity.

When an employee, consultant or contractor is terminated, HR personnel update the HR system, Oracle HR, with the associated termination date. On a daily basis, the Enterprise Technology Access Management (ETAM) file containing the list of terminated and transferred personnel is generated and uploaded from Oracle HR and transmitted to the mainframe Access Management system (CA-Top Secret®). Top Secret is configured to automatically revoke these terminated employees' IDs.

Managers of individuals are responsible for notifying the Access Management Operations group regarding terminated employees. The Access Management Operations group verifies whether the employee has an active user profile. If the terminated employee has access, the user profile is disabled and subsequently removed from the systems after a defined period of inactivity. Mainframe user profiles are automatically suspended after 30 days of inactivity.

#### Semiannual User Review

Procedures are established for the periodic review of employee access to information systems. Semiannually, access profiles of users are generated and sent to the employee's manager. Inappropriate access and access conflicts identified by business management are communicated to the respective Access Management Operations group for remediation.

The Information Security team reviews reports to monitor the completion of the semiannual access reviews. A Remedy help desk ticket is created for technical issues that may delay the completion of the semiannual access review and other outstanding reviews are escalated to senior management to remediate.

#### Segregation of Duties

Procedures are in place that segregate the roles of System and Security Administrators from ordinary users. Separation of access rights is based on job function and responsibilities. System Administration and Security Administration privileges are restricted to personnel dedicated to performing these functions. Administrator accounts are issued only to Mainframe Administration and SCM personnel.

Database administration capabilities are restricted by organization reporting structure. System access permissions are dedicated to personnel performing database administration activities within the Database Administration group and technology support personnel who require such capabilities within the database to perform their job responsibilities, including Production Support and Security Administration.

#### Account Configuration

Information Security policies require the use of specific controls and standards across computing platforms and environments, including standards for password parameters such as minimum length and change frequencies for privileged and non-privileged accounts. Passwords must meet established complexity requirements, expire on a regular basis, cannot be used for multiple iterations and will lock out users after a predefined number of invalid attempts, in accordance with BNY Mellon policy. For applications or system software that do not meet BNY Mellon standards due to system limitations, the deviation from policy is approved by management.

The ability to reset and provide new passwords in the mainframe environment is restricted to personnel dedicated to performing these functions in accordance with their job responsibilities. Users requesting password resets are authenticated before they receive the new password.

On a monthly basis, management reviews the listing of users with access to the password reset functionality for the appropriateness of access and access is updated as necessary.



### ***Managed Accounts Fiserv APL Logical Access***

The Money Manager Services department provides employee setup of employees' access IDs on Fiserv's APL system. This includes assigning entitlements, maintaining or changing access entitlements and terminating access IDs and entitlements. Administrative privileges for Fiserv APL to change passwords and maintain the access entitlements are restricted to personnel dedicated to performing these functions in accordance with their job responsibilities.

On a monthly basis, employee access to Fiserv APL is recertified to determine whether Fiserv APL entitlements are commensurate with job responsibilities. A Money Manager Services department employee generates the Fiserv APL user list with user entitlements and sends the list to respective managers to review. The user list is then reviewed by respective managers for all entitlements. Any requests for modifications to employee access during the monthly recertification are completed. Once all responses have been received and actions have been taken, another member of the Money Manager Services department reviews and signs off on the changes made to verify completion.

### ***NetX Suite of Products***

The NetX suite of products is used by Pershing's IFs, clients of Pershing's IFs and Pershing employees to access and manage their accounts. NetX suite provides access to trading and settlement, compliance, account-management, institutional, operations, asset movement, enterprise-level and documentation services by leveraging the core Pershing mainframe system functionality and applications. NetX suite is a technology platform that acts as a portal for Pershing's IFs, clients of Pershing's IFs and Pershing employees. It receives and responds to client requests and interfaces with the core mainframe systems and content providers to process the requests.

Pershing's NetX suite of products includes:

- NetX360+/NetX360 (hereafter referred to as NetX360) is Pershing's consolidated technology portal for BD investment professionals and Registered Investment Advisors (RIAs) that provides tools to manage clients' accounts and access their brokerage functions. NetX360 is implemented as a thick client installed on the local machine or it can be accessed via the website. NetX360 Mobile app leverages NetX360's infrastructure and is available on a variety of mobile technology, including iPhone®, iPad®, and Android® devices.
- NetXInvestor is a website offered to retail investors with a limited number of customizable pages, functionality and displayable content that can be selected. It enables IFs to offer end investors the ability to access account information, trading, quotes, news and research. NetXInvestor Mobile app is available via the App Store on iPad and iPhone devices.

### ***NetX suite Connectivity to Pershing Systems***

On initial registration to activate NetX suite user IDs, users are required to provide personal information to verify their identity. A user ID and secure password are then created and the account is activated. After providing the initial ID and password, the user is prompted to begin "strong authentication" enrollment, which includes password minimum length, complexity requirements, multiple iterations restricted, and maximum attempts to enter correct passwords. As a part of the strong authentication enrollment, a user is required to either provide a One Time Passcode (OTP), which is sent to the user via text message, or the answers to three security questions, which will be used during the authentication process when a user logs in from an unregistered computer. OTP and strong authentication questions are also used by the password reset application.

Users are authenticated when logging onto the NetX suite of products. Pershing also allows a user to access NetXInvestor via single sign-on. Single sign-on implementations use industry-standard technology to connect to NetX suite and third-party content vendors. These implementations are tested by QA during setup.

Once the user has been authenticated, the session between the local machine thick client or web browser is encrypted by a SSL/TLS tunnel to the NetX suite servers within the data centers. Cookies or tokens sent from the local machine store state and user information. The user is prompted to re-authenticate if this encrypted session is broken or reset. To determine the identity of Pershing NetX suite servers within the data center, the public-key certificates are renewed through a third party annually. They are maintained, managed and stored by the Certificate Management group. This process is applicable for NetX suite Mobile connectivity to Pershing systems.

#### NetX suite Access Management

Production data and functions are accessed via NetX suite of products via a layered approach implemented by the NetX360 Entitlements Application (NPNX), Application Services/Directory Services (ASDS) and Top Secret Solutions (TSS).

NPNX entitlements allow access to navigate to NetX suite screens and control which menu options are displayed. NPNX is also used to authenticate retail investors in NetXInvestor.

ASDS secures functionality for NetX suite of products and application functionality for mainframe applications. It provides security administration and enforcement services to control user level access to Pershing software applications and underlying data. IFs request access to ASDS roles using Service Center requests. Pershing employees are assigned ASDS user profiles according to business needs and assigned job responsibilities, with the approval of designated business owners as per Pershing's access approval requirements.

Authentication for NetX suite of products' user IDs is enforced by Top Secret password composition rules. The hierarchical structure implemented by Top Secret restricts each client's access to their own accounts and data on the mainframe.

Pershing sets up and provisions IF Security Administrative accounts on NetX suite in accordance with IF instructions. Approved security administrators at each IF use Pershing's Entitlement Management System (EMS) for the self-administration of access entitlements. EMS allows IFs to create user IDs and grant functional, content and reporting entitlements, by using defined Business Functional Entitlements (BFEs) set up as per Pershing business requirements. EMS leverages NPNX, ASDS and Top Secret to enforce security and access entitlements. The ability to request, access, and generate certificate authority public keys for NetX suite websites on certificate authority servers is restricted to authorized Certificate Management personnel based on job responsibilities.

#### NetX suite Communications

Proprietary predefined application layer message and framed web browser messages are used to communicate requests and responses between the local user terminal and Pershing's NetX suite servers within the data center. NetX suite establishes a session with the local customer's computer and uses state information to validate that the NetX suite request is from authenticated users. Users are required to be re-authenticated if the session is broken. Business and/or common service requests from the NetX suite of products are routed through a firewall to a load balancer, which directs them to one of the two active identical data centers. Based on the type of incoming request into the data center, an embedded resource locator directs it to the responsible NetX suite application server to be processed. The receiving application server performs automated completeness and integrity checks based on expected message formats.

As a part of processing the request and generating a response, the assigned NetX suite server accesses data and functions from the mainframe system, other application servers or data cached on NetX suite databases. Illogical or incomplete data is not processed by NetX suite to prevent the loss of underlying data integrity. An error message is generated for operations that fail before they are committed, and records are restored using the rollback principle. An integrity check and acknowledgement are enforced on packets transmitted within the BNY Mellon Technology data center via the network and transport layer protocol.

Communication to the mainframe is managed by a message queue, which is monitored by Pershing Technology. A gateway converts messages between NetX suite servers and the message queue to the mainframe, based on destination requirements.

## DESCRIPTION OF TRANSACTION PROCESSING CONTROLS

### *Enterprise Rules Engine*

Orders and trades entered via NetX suite are subject to the Enterprise Rules Engine edit and validation checks to stop orders and trades with erroneous details. Orders and trades that trigger the Enterprise Rules Engine edit and validation checks as a result of input errors need to be re-entered correctly by IFs (clients) to be processed in the Pershing systems. The Enterprise Rules Engine consists of the Order Management Rules Engine (OMRE) for orders and TCMS for trades entered through NetX suite. OMRE is a series of order management rules that automate the order management process and tracks order problems. The TCMS functionality allows IFs to view, browse and adjust trade information, with trade entry and correction capabilities. TCMS includes trade cancellation and correction rules. OMRE and TCMS rules vary across regulatory, credit, and business issues. Mandatory rules have been configured by the Pershing Credit Risk Rules group and implemented by the SCM team, along with a series of optional rules assigned based on the preference of the IF and their specific business needs. The Enterprise Rules Engine for order management is currently available through NetX suite. Equity, option, mutual fund and fixed income orders are eligible for processing through the Enterprise Rules Engine.

Certain mandatory rules are deemed by Pershing management to be relevant to the financial reporting of the IFs. IFs are responsible for determining which optional rules they want to utilize. IFs are responsible for determining whether the mandatory and optional rules are relevant to their financial reporting and if so, for testing them and following up on any exceptions.

The Conversion Manager assigns mandatory rules at the IF level during the new client setup process. Mandatory rules are defined by the marker “P” within the rules code table once it has been moved to the production environment for the Enterprise Rules Engine and is live for current trading activities. Modifications to the Pershing Enterprise Rules Engine mandatory rules at the IF level are tracked within the Enterprise Rules Engine change log. Each order processed through the Enterprise Rules Engine for order management has four possible outcomes:

- Stop (mandatory as assigned by Pershing): The order is not processed until the rule is satisfied and will not proceed past the point of entry (e.g., NetX360).
- Approval: The order is sent to the order approval with a message citing the reason the order was sent for review along with the respective rule number.
- Warning: When an order is entered through NetX360, a message is displayed on the screen listing of the rules triggered, the rule numbers, and their respective messages. The end user is notified via online message, and the application provides the user with an option to proceed with the order.
- “D” (Process only): Rules are applied to an order to perform a processing function only, but a message is not attributed or displayed for the end user.

### *New Account Setup and Terminations*

Every new relationship with an IF is assigned an IF number (control record) to identify the relationship. An account manager, relationship manager, or a Conversions employee begins the process by completing and signing a new IF/Office Range Request Form to establish a new IF record on the Correspondent Relationship Master (KORR) system. Once the form has been completed, it is submitted to the director, Credit Risk, and the Tax Form Review team, if applicable, for their approval and signature. The Tax Form Review team’s approval is only required when the request for account setup is for a new IBD or for a request where a Clear-Through relationship exists.

Each IF in KORR has one “control account,” which contains one or more office ranges for the IF. Control accounts records are also referred to as “zero” records. No client accounts can be established for an IF unless the control account or zero record is created in KORR. Systematic edit checks within KORR reject the creation of a new zero account that contains illogical or insufficient data. If an automated edit check rejects the creation of a new zero account, the illogical or insufficient data is researched and account information is resubmitted by an Account Services employee in KORR.

When IFs have separate branches or operations in different locations, or departments engaging in different kinds of business activities, the IF may choose to establish separate office ranges for each branch or activity in order to monitor and segregate related activities. Each office range record is linked to the IF control record.

Account Services employees also use KORR to maintain “firm accounts” for IFs. Firm accounts are IF-proprietary accounts and can be used for various purposes such as commissions, sundry charges and errors. The IF Conversion department, account managers, or IF can request a new firm account via email or a Service Center request when the IF control record is first established or any time after.

Account managers or Conversions employees deliver a copy of the new IF/Office Range Request Form, via interoffice mail, fax, email, or hand delivery, to an Account Services employee in order to create a new firm record or zero record. The employee reviews the form for completeness and notes whether the following information is provided on the form:

- Tax I.D. number for domestic IF records
- Name and address
- Clear-through information, if applicable
- Contact information, if applicable
- Applicable new IF information in the NEW IFS ONLY section of the form
- Required approvals and signatures

Upon setup of the new control record or office range in KORR, an Account Services employee sends notification via email of successful completion to the requestor. Upon setup of the new firm account in KORR, an Account Services employee sends notification via Service Center or email of successful completion to the requestor.

To change an IF control record or an office record, an account manager, relationship manager or an employee from the Conversions department, Compliance department or the Legal department submits a request via email to the Account Services department. Additions and changes to control record or office range information are completed via KORR and systematically transmitted to NetX360.

To close an IF control record or office record, the Account Manager sends an email to the Pershing Compliance department requesting their review and approval. The Compliance department then replies to the email to advise the Account Services department whether they can proceed with the request. Upon receipt of the request to close an IF record or office record, an Account Services employee changes the status to “Closed” in KORR and provides the request to the Account Services Manager for review and retention in document imaging. Modifications to accounts are processed and old accounts are subsequently terminated.

The Account Services department performs a monthly review of a selection of firm account additions, changes and deletions and customer account registration updates per Service Center requests. The Account Services department selects 30 items per employee to review the accuracy of the handling of the Service Center requests. Identified discrepancies are communicated to the Account Services employees for research and resolution.

#### *For Managed Accounts Clients*

New investor accounts are established via NetX360. Information is entered using the new account opening functionality.

Pershing Managed Accounts maintains the responsibility for releasing the accounts to the manager for transacting activity on their platform. If this is a function performed by Account Services, Account Services monitors the account for funding in accordance with the manager's and/or programs' established funding rules. Once an account has been fully and properly funded and has met the applicable requirements, Account Services is authorized to release the account on Pershing Managed Accounts' trading platform.

Accounts are set up in the portfolio accounting system in a timely manner upon receipt of notification, in accordance with internally developed standards and updated automatically through the existing workflow system (ADM). A second review is performed by an Account Services individual independent of entry to determine that accounts were established timely and in accordance with client instructions.

Account Services is notified of an account closing through workflow, email, fax or identification that the account's assets have been transferred out of the respective custodian account. If required per client agreement, documentation supporting approval for an account closing is obtained prior to Account Services closing the account on the portfolio accounting system and other internal Managed Accounts systems.

If required per client agreement, Account Services informs the respective trading party when notification for an account closing is received. For accounts where Managed Accounts is the designated trading party, Account Services informs the Managed Accounts Investment Support Services (ISS) team and provides liquidation instructions, where applicable. For externally traded accounts, Account Services informs the respective external money manager and provides liquidation instructions, where applicable. Account Services also closes the account on the portfolio accounting system and the Managed Accounts website. This is done either through the workflow or manually, dependent upon the client, program and product.

Accounts are closed in a timely manner upon receipt of notification, in accordance with internally developed standards.

#### ***Equities and Options Order Execution***

Order processing controls are designed so that orders and trades are received and processed appropriately and in accordance with IF's or client's instructions. Equity and Option order processing is a subset of the Pershing Trading Services (PTS) group, one of Pershing's principal business units. Fixed income trade processing, option expiration processing, and mutual fund order processing are subsets of the OTIS, also one of Pershing's principal business units.

Equity and option orders can be placed either directly through Pershing or traded independently, with Pershing providing related back office services (e.g., recordkeeping, clearing and reconciliation).

Pershing equity and option orders are entered in ATOMS, which facilitates the submission of orders to the various securities market centers, as well as the viewing of orders (both executed and open orders) by Pershing personnel. ATOMS is linked to market centers and routes equity and option orders to the appropriate market centers for execution. Its functions include the ability to enter listed equity, options and over-the-counter orders directly to the market for automatic execution. Additionally, it provides for the entry of executed trades for processing and the ability to monitor order status and view exception reports.

Equity and option orders initiated by Pershing IFs, their representatives, clients of Pershing's IFs and Pershing personnel are entered through one of the following facilities:

- Web-based products (e.g., NetX360, NetXInvestor, NetXMobile and an interactive voice recognition [IVR] system).
- Windows client-based products (e.g., NetX360 for Windows).
- Mainframe connections (3270 terminals and terminal emulators) into ATOMS.
- Middleware messaging feeds from third-party order management systems via NetX suite Services.

The ATOMS online (interactive) component provides the ability to execute orders from interfacing systems. The interface between NetX suite and the ATOMS real-time interface is monitored systematically by NetCool through the use of MONA. MONA publishes system alerts, which are monitored by the NetX suite Dedicated Programming group.

Orders are delivered to market centers by sending messages in FIX. The FIX protocol is a series of specifications for the electronic communication of trade-related messages. If a sequencing gap is reported by an exchange or venue, alerts are generated for review by the FIX group and Execution Support Desk (ESD) for manual intervention.

With the exception of orders entered directly in ATOMS (Web or 3270), orders are subjected to the OMRE prior to execution. The OMRE automatically flags transactions that are considered to be exceptions. IFs cannot reduce the severity alert threshold settings on rules (e.g., make a rule violation less severe than as set by Pershing); however, they can increase the severity alert thresholds for rules as deemed necessary. Each exception noted by the OMRE is logged for follow-up.

Securities that are unmatched within the ATOMS system appear in the Browse Unmatched (BUM) file queue. ESD is responsible for monitoring the BUM file queue throughout the day. If a line item appears in the BUM file, the ESD personnel investigate the unmatched items and take corrective action. Discrepancies within the BUM file are brought to resolution by the end of the day.

ESD employees review the Good Till Cancel (GTC) Limit Order Run Reports generated for each market center daily to identify, research and resolve unmatched items that have not been matched with a counterparty (i.e., unmatched). Each report is given a cover sheet that is used to evidence the date that it was prepared and reviewed by the manager.

For orders executed independently of Pershing, the exchange or third-party vendor can submit drop copies of trade files into Pershing for clearance, settlement, billing and statement issuance. The third-party vendor can elect not to submit real-time drop copies into ATOMS or TPS and instead elect to send an end-of-day file, which is directly input to the TPS for trade billing. IFs can also manually input executions into TCMS.

Pending (e.g., prior to trade settlement) trades can be modified as needed using TCMS. TCMS enables Pershing's IFs to input, cancel or correct pending trades in TCMS online. Additionally, TCMS provides the ability for trade entry and facilitates the online cancellation of when-issued trades (i.e., securities that are about to be issued whose settlement date is not set) and rebooking as regular-way trades.

All eligible items are systematically routed to the appropriate regulatory venue for order reporting. Equity orders rejected by CATS are promptly investigated, corrected and, if necessary, resubmitted to CATS by a Surveillance Analyst.

Customer Trade Processing & Services (CTP&S) and IFs review OLB, which lists real-time T-1 uncomparated or unmatched trades among TPS, exchanges' comparison systems, and/or comparisons from the NSCC. Uncomparated or unmatched trades are routinely reviewed by the CTP&S and investigated and resolved.

IF institutional block trades are matched with specific investment manager block allocations using Pershing's EAS and ITEM system. ITEM is a message-based matching engine for block trade activities with functionality to customize allocations and edit transactions. ITEM sends the summarized block trade information to TPS for subsequent reconciliation and creation of client trade confirmations. Unmatched trades remain as trade exceptions and remain in the IF's respective average price account or Pershing's internal offset account for research and reconciliation. Either the IF or the respective business areas research and resolve exceptions. ITEM provides the ability to send STEP IN and STEP OUT trades (e.g., the allocation of trade settlement between Pershing and other firms) to the appropriate exchanges. Pershing's EAS provides similar functionality as ITEM.

The Pershing Best Execution Steering group performs a quarterly review of trade data to assess whether the aggregate execution quality of equity and options trades received by Pershing are in line with or better than the industry. Any deficiencies in execution quality are investigated and resolved.

Pershing transmits trade files to a third-party vendor for analysis. Trades are compared against industry quotes and built-in thresholds to identify potential anomalies. The third-party vendor provides daily exception reports to Pershing Best Execution for review. Exceptions are investigated and reviewed by a Pershing Best Execution employee and resolved by CTP&S employees, if necessary. IFs should have controls to review Best Execution Reports to monitor the quality of equity and options trades executed by Pershing.

The Pershing Best Execution Steering group leads Best Execution's operations. This committee is comprised of senior officers from Pershing's Trading Services team.

### ***Fixed Income Order and Trade Processing***

Fixed income orders can be placed at Pershing using the Bond Central feature of NetX suite of Products or Pershing's Sales Desk via verbal or written instruction. Orders placed directly with Pershing through NetX suite are subject to Pershing's OMRE, which verifies that these orders comply with regulatory and business objectives prior to the acceptance of the order. The OMRE automatically flags transactions that are considered to be exceptions. IFs cannot reduce the severity alert threshold settings on rules (i.e., adjust the severity of a rule violation to a lower level than the Pershing standard); however, they can increase the severity alert thresholds for rules as deemed necessary. IFs can also place their orders externally (e.g., with other IBDs) and subsequently provide Pershing with the trade detail information for back office processing. This is performed either by: (1) entering the details directly through their mainframe connection or TCMS; or (2) inputting details into Bloomberg Links, which can be set up to automatically transmit trade details to TPS. TCMS has edit and validation checks to flag trades with erroneous details (e.g., invalid Committee on Uniform Security Identification Procedures [CUSIP] numbers) and place them in the Repair Queue,



where they must be corrected to be cleared. Throughout each day the Global Trade Processing associates monitor the TCMS repair queue to ensure that all items are addressed in a timely manner. An end of day screenshot verifying that all items were addressed is stored within the day's work. IFs are responsible for correcting errors. IFs can also send Service Center requests to Pershing's Global Trade Processing to correct trade information in specified IF's accounts. Global Trade Processing is responsible for addressing Service Center request types labeled as "corrections." The corrections requests encompass categories of the Pershing Fixed Income Trade Desk, including Government Bonds, Municipal Bonds, Corporate Bonds, Treasury Actions and UITs/Auction Rate Preferred.

Executed trades are sent to TPS. TPS automates trade reconciliation (for both trades initiated from Pershing and those that are traded independently of Pershing) between Pershing's records and the records provided by the securities clearing firms (e.g., National Securities Clearing Corporation [NSCC] or Fixed Income Clearing Corporation [FICC]). TPS feeds processed trades to Online Balancing which feeds RTTM which submits the trades to the appropriate clearing corp. The comparison status is returned via the same flow and displayed in OLB for the IFs and internal users to monitor daily. If the trade is an ex-clearing trade the application will send an email to the appropriate street side broker. The OTIS employees then review and attempt to resolve unmatched trades until settlement date. Trade reporting connections are monitored throughout the day to ensure there are no interruptions of the services between Pershing, FINRA and the MSRB.

### ***Mutual Fund Order Processing***

IFs place Mutual Fund orders via the OpsCenter module of NetX360, NetX360 products, RJE/FTP/Connect:Direct file transmissions, and Periodic Order Instructions; all orders coming through these portals, other than FundSettle eligible orders, flow into the MFNL Trading system. Order processing cut-off times are established to provide adequate time to transmit orders for same day execution to the funds.

The following systems are used to process mutual fund orders:

- The MFNL Trading system processes purchases, redemptions and exchanges and is used primarily by the order desk to enter orders (e.g., where the IFs cannot process it themselves). MFNL is also used for browsing, updating and deleting orders after they have been entered through one of the previously referenced order entry portals. Orders in MFNL are executed and either transmitted via the NSCC FundSERV system or executed manually and communicated directly with the fund management firms.
- Periodic Order Instructions within AMPS allows for the creation of standing orders in client brokerage accounts to buy and sell mutual funds, or to exchange shares between funds belonging to the same family and share class. All funds are eligible, except for non-FundSERV funds that have a cut-off time of 3:30 p.m. EST. Within Periodic Order Instructions, users can leverage proportional distribution which allows them to set up periodic instructions to redeem across all funds or select up to 10 funds within the account. In addition, a periodic required minimum distribution (RMD) payment can be set up and each year Pershing calculates the new RMD amount and automatically updates the payment amount. If the RMD periodic payment is associated with a mutual fund liquidation, that amount automatically changes and remains in sync with the payments.

- MIPS provides for the browsing of trade history by Fund Family, CUSIP, Account and Trade Date levels and for researching basic information about funds by CUSIP or Symbol, such as whether they are networked or omnibus and whether funds are open or closed for trading and the purchase level minimum the funds can be purchased at. Corrections after the trade date are processed in this system as initiated by either the IFs (non-market corrections) or Pershing employees (market corrections). MIPS maintains a complete listing of all funds established on the Pershing system. MIPS is part of the MFNL application.
- GTMS receives and books trade confirmations for FundSettle eligible funds.
- NTFS is a system used to control participation in Pershing's no-transaction fee platform, FundVest, at the fund and IF levels. Participating IFs are set up in NTFS based on the receipt of a completed client FundVest agreement. Once a Pershing employee has reviewed the agreement for accuracy, the IF's information (start date, program type, minimum purchase amount, short-term period) is entered in NTFS and the IF accounts are activated for FundVest trading. NTFS holds information pertaining to participants and parameters, as well as existing shares in the FundVest program obtained from GMAR. On a semiannual basis, Mutual Funds management reviews a sample of participating IFs set up within NTFS to confirm the accuracy of the setup.

As with equity and fixed income orders, the Enterprise Rules Engine is designed so that mutual fund orders comply with regulatory rules as well as Pershing's and IFs' business objectives. The Enterprise Rules Engine automatically notifies the IFs of potential problems with orders based on the relevant rules set. Items that are flagged by the Enterprise Rules Engine are reviewed, corrected and re-submitted by the initiator of the order. IFs cannot reduce the severity alert threshold settings on rules (e.g., make a rule violation less severe than as set by Pershing); however, they can increase the severity alert thresholds for rules as deemed necessary.

The Pershing Order Desk manually enters Mutual Fund orders from written instruction provided by IFs (e.g., when the IFs cannot process orders) into MFNL. COE rules are applied to each order within MFNL and the orders are rejected or the user is provided with a warning if the order data contains illogical or insufficient information. MFNL interfaces with NTFS to determine if a particular trade qualifies for the FundVest program and applies a spread or straddle code that is fed into EBS where the appropriate ticket charge or no charge, if applicable, is processed.

Mutual funds orders in Periodic Order Instructions within AMPS are executed according to the client's standing instructions. On a daily basis, a Mutual Funds employee reviews the list of rejected systematic orders and either updates or deletes the instructions that resulted in trade rejects that day. The IF is notified of deleted redemption instructions if the parameters of the instruction meet specific thresholds. IFs are responsible for monitoring rejected periodic orders and taking appropriate action based on the rejection.

FundSettle-eligible orders can only be entered through NetX360 by the IF and are executed via submission to Euroclear's FundSettle system. If an IF experiences an issue on NetX360 and is unable to enter an order, the IF is required to open a Service Center request and only then can Pershing enter orders on the IF's behalf on the FundSettle site. The trading desk monitors any problems with submissions and sends an email summarizing rejected orders to Mutual Funds management at 4:00 p.m. each day. Rejected orders are logged and timely communicated to IFs for resolution.

Orders captured by NetX360 throughout the day are stored in MFNL until the end of each day. At the close of each day, MIPS creates a unique control number to verify the trade has been captured and creates a daily trade file containing the daily activity. All orders entered in funds not participating in the networked omnibus platform are transmitted via FundSERV, which receives the MIPS trade file and sends it to the various funds for execution. The transmission occurs at approximately 4:15 p.m. EST, with the cut-off time for order entry set at 4:00 p.m. EST. All orders entered in funds that are participating in the networked omnibus platform are initially transmitted to BNY Mellon's SuRPAS system, where the orders are aggregated based upon the rules set for aggregation. The bulk orders are returned to Pershing and subsequently transmitted via FundSERV at approximately 4:50 p.m. EST. The trade files are monitored via the Pershing Dashboard to confirm they are transmitted to the NSCC. Any order that is unable to confirm back through FundSERV but is still determined to be a good order is processed manually by the Reject employee by booking the transaction in SuRPAS or reentering the new order on the next business day in MIPS.

Loss Letters are received from Fund Families for market-related losses on trade corrections and as-of trades. Mutual Fund Loss Letters provided by the fund manager are reviewed by a Pershing Product Support employee and logged in the Loss Letter Database. The Loss Letter Database is used to approve and track the processing of Loss Letters. Loss Letters are assigned to a designated Trade employee, based on the fund, and tracked to resolution. The Trade employee investigates the losses claimed by the mutual funds to verify the accuracy of losses. Unresolved items are aged and maintained on an open item report. The validated Loss Letters are ultimately processed to the IF's error account or to a Pershing error account, depending upon who is responsible for the loss.

The execution and settlement of orders placed outside of FundSERV for domestically traded funds are referred to as non-networked mutual funds and consist of less than 1% of Pershing's overall business. After Pershing gathers the orders and consolidates them into one buy or sell order per CUSIP, the non-networked employee manually executes the order by contacting the fund directly via telephone or fax rather than sending a transmission through the NSCC's FundSERV system. Transactions placed outside of FundSERV are verified manually the next business day and trade details are logged in MIPS. On settlement date, networked and non-networked money movements with the fund companies are booked to and from an internal settlement suspense account in order to facilitate receipt and delivery of payment.

NetX360 Service Center requests for trades and corrections (T+1) are monitored by the Pershing Mutual Funds Order Processing team for timely resolution. Orders that are received after the order cut-off time or with errors are rejected back to the respective IFs as a response to the original Service Center request.

The Balancing group uses NET16 jobs to reconcile the fully disclosed funds. A daily reconciliation is performed by the networked group and a monthly reconciliation is performed by the non-networked groups. NET16 jobs automatically reconcile Pershing's Stock Record to the mutual fund company's custody report each day. The system produces a report that lists breaks. The Balancing group is responsible for researching breaks and referring the resolutions to the appropriate department for correction.

Any open Mutual Fund fails equal to or greater than one share, and fractional share fails representing orders whose purchase amount has not been paid or whose redemption amount has not been received by Pershing, are researched and resolved by a Mutual Fund Settlement employee.

12b-1 fees are paid by mutual funds to IFs where clients maintain positions in the mutual fund. The 12b-1 fee payments are disbursed to Pershing for payment to IFs/sales representatives automatically via the NSCC. 12b-1 payments that cannot be processed automatically are manually processed by the Pershing Product Support group and disbursed via the FUPO system or journals, depending on the fund type. For non-NSCC payments, a hard copy breakdown of payment information is provided to the Product Support group and the appropriate method is employed.

### ***Foreign Exchange (Equity Trading)***

The Pershing New Jersey (PNJ) FX Desk is a part of the Equity Trading unit of PTS. The Pershing FX Desk offers non-U.S. dollar execution capabilities in more than 50 currencies with settlement in local or U.S. currency.

#### **Daily and Overnight Foreign Exchange Order Processing**

Pershing clients may request and execute FX trades in three ways: by phone, email or through the Pershing NetX suite of applications. The FX employees verify phone and email orders for completeness, complete the employee's blotter for phone orders, execute the orders and book the transactions to the required accounts. FX orders received through Pershing's NetX suite are systematically screened for completeness. The trade is priced automatically based on contracted arrangements and market rate. The client has the opportunity to accept or reject the price once the initial order has been placed. Trades are executed upon the acceptance of the proposed price. Trades initiated on NetX suite are processed and maintained on an electronic deal list in Pershing's FX front-end system (DENE) that serves as the order ticket repository.

Trades in restricted currencies cannot be executed automatically. FX employees must un-suspend a specific currency in DENE and manually enter the trade for processing. The restricted currency is then manually suspended in the system after trade processing. The trade is manually reviewed by the FX Desk Manager or designated individual on a real-time basis for accuracy.

FX employees monitor trade execution from the DENE front-end to NetX. Any differences between DENE and NetX that cannot be resolved intra-day are logged on the FX Daily Log, researched and resolved within the following day. The reconciliation breaks may be caused by trade entry errors, accounts not opened on NetX, or accounts set up incorrectly on NetX.

PNJ FX and the Pershing Securities Limited FX Desk in London (PSL FX) work together and have the ability to process trades on each other's behalf to provide 24-hour support for clients. Information on trades executed overnight is forwarded to the appropriate desk for processing to the clients' accounts.

On a daily basis, the FX Desk Manager or designated individual reviews and initials the Daily System Trade Break and the FX Trades Covered sections on the FX Daily Log. The FX Desk Manager or designated individual also inspects a selection of manual trade tickets for completeness and accuracy and initials the tickets as evidence of management review. The FX Desk Manager or designated individual also reviews the list of restricted currencies within DENE each week and, on a semiannual basis, verifies that the approved IF FX limits by the Global Credit and Market Risk Committee were set up correctly. Each review is evidenced within the FX Daily Log. On a daily basis, management signs off on an FX daily log to evidence that manually submitted orders were selectively reviewed and approved by the FX Desk Manager or designated individual.

On a weekly basis, management reviews and signs off on a selection of the Daily FX Logs to validate that discrepancies related to street-side counterparty limit breaches, intraday trade cancels, trade corrections and error account reviews have been resolved and that the log has been initialed and reviewed by the FX Desk Manager or designated individual.

#### **Foreign Exchange Forward Trades**

Pershing allows clients to extend the settlement of an FX trade by creating an FX Forward. FX Forward trade requests must be placed over the telephone or emailed into the FX Desk due to collateral requirements. Once verified for accuracy, trades are entered manually in the DENE system. Trades are processed using the standard process outlined above but are settled at the pre-denoted date.

*Open Good till Cancelled Orders*

The FX Desk accepts a limited number of GTC orders from clients. The FX employees place a mirroring GTC order in the appropriate marketplace on behalf of the client until such order is fully executed or cancelled by the client. On a monthly basis, the FX Desk Manager or designated individual confirms the standing GTC orders with the FX employees and initials the FX Daily Log to indicate review.

*Foreign Exchange Trade Cancellations and Corrections*

FX Desk employees are not permitted to cancel or correct a trade after the Trade Date (TD). The Non-Dollar Trade Support (NDTS) group handles cancellation and correction requests after the trade date. The NDTS group validates the trade details and processes the request. A list of trade cancellations and corrections processed by the NDTS group is provided daily to the FX Desk Manager or designated individual for review. Each entry, as well as a selection of cancelled and corrected trades, is reviewed and initialed by the FX Desk Manager or designated individual. Logs within DENE allow the FX Desk Manager or designated individual to monitor if any cancellation or change orders have been placed by FX employees during the trading day. The FX employees must provide justification for their actions and the justification is reconciled to the system records by the FX Desk Manager or designated individual. The FX Desk Manager or designated individual reviews and signs off on the FX Daily Log as evidence of management review.

*Foreign Exchange Price Participation Agreements and Sales Credits*

The FX Desk negotiates FX price agreements, including modifications and cancellations of existing agreements. For IFs whose sales credits are to be manually calculated, the FX Desk Manager or designated individual forwards the agreement to NDTS for their records. NDTS calculates IF sales credits based on the agreements received and trade information received from TPS. NDTS produces a Sales Credit Payment Report, which includes each IF with sales credits due. The FX Desk Manager or designated individual reviews and signs off on the sales credit value monthly.

*Alternative Investments*

The Alternative Investments (AI) department is responsible for operational aspects of client investments in non-publicly traded entities such as Limited Partnerships (LPs), Limited Liability Companies (LLCs) and Real Estate Investment Trusts (REITs). These operations include the subscription, redemption, distribution, verification, maintenance and coordination of these processes with the general partner or equivalent authorized manager of the investment entity, known as the “sponsor.”

Once an asset has been set up, the AI department notifies the Security Information (SI) department to set up the asset (CUSIP) in PROM in a timely manner. Subsequent prices are obtained from trusted pricing sources used by the SI department and approved by Pershing senior management. For the controls regarding security additions, modifications and pricing, please refer to the “Security Information” subsection.

Annually, the SI department receives an updated pricing file for all alternative investments and private placements from a third-party pricing vendor that contains any updates/changes as of the prior year end. Fair Market Value (FMV) prices received by the SI department from the third-party vendor are compared to the prior year’s value. The price updates/changes are updated in the Security Master in IRAS by the SI department. Price variances 10 percent or greater from the previous price are communicated to AI or back to the vendor for confirmation.

When a purchase, subscription, redemption or in-kind distribution request comes into the AI department, specific documentation is completed in order to credit the account and distribute and/or liquidate the assets, as per instructions. The required paperwork, applicable payments, fees and journal entries are completed by an AI employee, reviewed by a supervisor and then entered in Pershing's books and records. For alternative investments, payments and fees are approved and reviewed by the supervisor before they are booked in the brokerage account and the paperwork is delivered to the investment company. At the same time, a transfer memo is created in TOLS reconciling to the client positions. Based on confirmation from the investment company, the transfer memo is subsequently cleared and moved to the appropriate box account. If the investment company indicates that the transfer cannot be processed as requested, the employee will update the transfer to "rejected" status. The transfer will be monitored until it closes with either a "booked" or "rejected" status. The daily work is reviewed by the manager of the process and then imaged for archive purposes.

Alternative Investment products are primarily held in book entry form and maintained on the books and records of the sponsors. The AI Balancing and Reconciliation unit is responsible for validating client investment positions, which are confirmed to Pershing Stock Record positions against the sponsors' books and records for a quarter-end position. The validations of the positions are received via electronic format or hard copy confirmations. AI is also responsible for ensuring that any out-of-balance positions with the General Partnership (GP) records are properly researched and the appropriate adjustments are made accurately and in a timely manner.

If a sponsor does not respond to a quarterly reconciliation request, Pershing will deliver the position from the account and notify the IF of the delivery. Once the first reconciliation has been completed, for any unresponsive sponsors, a Service Center ticket is sent to the IF informing them that the GP/Administrator was delinquent in responding to the confirmation request.

AI employees track notifications sent to general partners for unbalanced/unreceived funds using an AI Balancing Recon Report, which is reviewed by AI management.

### ***Options Expiration Processing***

Options expiration processing and reconciliation are the responsibility of the Option Clearance group.

Positions and current trades are recorded and maintained in the Margin, Bookkeeping and Reporting System (GMAR) from feeds received from the core execution systems (for example, TPS and ATOMS). The Option Clearance group completes the reconciliation, balancing and processing of options expiring within a given month by utilizing the OCC Compare Report, which is created by the options processing system (OPT) and the Options Clearing Corporation's (OCC) ENCORE processing system. The OCC Compare Report details Pershing and OCC out-of-balance items, which are reviewed and resolved. The resolution of these items may involve adjustments to client's and/or Pershing's positions at the OCC. The ENCORE system is a password-protected, web-based application owned and operated by the OCC.

Exercise instructions received on the option from IFs through Pershing's Service Center module of the NetX suite or via email are reviewed and priced to determine whether they are within the auto threshold. Any long in-the-money option, for which an exercise instruction has not been received, is exercised automatically.

After market close, an online OCC Compare Report (Expiring Stock Record) is created and accessed through the Trading Services module on NetX360. The "In the Money" option positions are reviewed for position breaks and out-of-balance positions are reconciled to balance the OCC and stock record positions.

The OCC delivers a file to Pershing of exercised and assigned options; the file lists the activity of client accounts via the OCC Compare Report. An Assigned Stock Record Report is generated that details the allocated positions. Any discrepancies are resolved, adjustments are recorded to the assigned Stock Record and the appropriate notifications are made.

On a monthly basis, NetX360 generates a summary report of options expiring within the current standard monthly expiration. The report is made available to the IFs through NetX suite and NetX suite Services.

On a weekly basis, NetX360 generates a summary report of options expiring within the current week (weekly options). The report is made available to the IFs through NetX suite and NetX suite Services. Service Center exercise instructions received for the expiration process from IFs are documented on Pershing's books and the OCC. The Service Center exercise instructions are verified for accuracy and completeness by the department supervisor and manager.

Equity trades related to option exercises and assignments are also the responsibility of the Option Clearance group. These trades are reconciled with the NSCC on a daily basis and any breaks are resolved and corrective entries are processed. The OLB system automatically reconciles option exercises or assignments at the NSCC throughout the day. If necessary, appropriate notifications are made.

### ***Security Information***

The SI department is part of the OTIS group. The SI department is responsible for maintaining an inventory of securities and periodically updating the pricing data for each.

### ***Security Master***

The Security Master group within the SI department is responsible for managing the master list of securities located in PROM. The SI department employees have the ability to add, update and remove securities from the security master file based on order information received and instructions from internal users and clients.

Each employee is required to sign a certification indicating their review of the SI policies and procedures on a semiannual basis. A copy of the completed certification is filed in the folder maintained by the SI department.

Vendor systems feed security data into PROM. PROM performs validation checks and rejects items with incomplete data, coding conflicts or errors. When an item is rejected, PROM automatically creates request notifications, which are required to be processed manually. An employee sends an email to SI management indicating any outstanding items on the NetX suite Service Center queue at the conclusion of the business day.

Requests for additions, modifications or deletions within the security master file in the PROM system must be validated from an independent source prior to fulfillment. Certain events require a manual addition or update to the master file, including PROM coding conflicts, missing vendor documentation, restricted securities, money market updates, and internal CUSIP and position swing requests.

If a security update requires extensive changes (e.g., multiple properties require updates such as coupon rate, CUSIP, and/or description) or when a CUSIP is identified for a security assigned with a user CUSIP, the SI department employee adds the new CUSIP, notates on the old CUSIP the new CUSIP number, and notes "Do Not Purge" in the description. The deleted security is systematically removed from Pershing systems. The activity is tracked on the audit log and documented in the same manner as updates to the security master file. Manual additions, modifications and purges to the security master file are performed within required service level agreements (SLAs) by a SI department employee.

When PROM indicates there is a security without a holder on Pershing's records for a pre-defined period of time, the security is automatically purged from the security master file, including PROM. Only Security Master management, or those they designate, have the ability to manually purge securities from the security master file in the PROM system.

The RDQA team performs a monthly Quality Control (QC) review for a sample of manual updates within the security master file in the PROM system. The RDQA team verifies that the updates are accurate and comply with the policies and procedures for Security Information. An RDQA employee assigns a pass/fail to each item. The SI group corrects any errors identified by the RDQA team. An OTIS manager reviews the QC to determine it was performed correctly.

### Security Pricing

The Security Pricing group within the SI department is responsible for maintaining current and accurate pricing levels for securities listed in PROM.

The majority of securities are systematically priced based upon information received from third-party vendors that specialize in providing pricing information. The incoming pricing transmission files are verified for the correct version and are subjected to variance testing between current and prior data. If there is an excessive level of variances (e.g., greater than 15%), the transmission is rejected and the discrepancy is escalated to senior management. Any outstanding rejects are resolved by the end of the business day. The remaining securities (e.g., thinly traded securities and less common asset types) are either manually priced or updated using other pricing feeds. Pershing also utilizes a third-party subservice organization to assist with the manual pricing process.

Each night, an automated pricing checkout routine is performed to confirm that the pricing from the automatic pricing feeds were processed in PROM. An automated pricing checkout status email is sent to monitor the status.

Additionally, a daily NYSE Manual Price Input Report listing individuals who manually processed or modified pricing changes is reviewed and signed off by the department managers for appropriateness. An overall supervisory checklist is completed and signed off by SI management to evidence review of the NYSE Manual Input Report for manually updated pricing changes, the automated email confirmation of the pricing checkout routine, and the price fluctuation report.

The SI department reviews a stale price report weekly. SI employees attempt to find pricing from the approved sources. A holder report is generated weekly, which lists securities held in client accounts that have stale prices. SI employees review stale items, and if no pricing is found, the employees note their results. A stale priced securities file containing security information for CUSIPs held by the user entity, including the price (zero or otherwise), is made available to user entities for review.

The SI department routinely generates exception reports to identify securities that have not been priced or have stale prices, and attempts to obtain pricing via other approved sources. Approved sources include third-party subservice organizations that specialize in providing pricing information or authorized correspondents. Most securities that require manual pricing are updated at month end. Securities are priced by either a third-party subservice organization pricing feed or manually from authorized websites (i.e., TRACE, MSRB) and Bloomberg. Pershing makes every effort with pricing sources to procure prices that are indicative of current market prices as the information is used by various processes and applications. These processes include creating client statements, monitoring client balances for meeting margin requirements, determining monthly management fees for managed accounts and valuing portfolios.



The SI department utilizes the PROM application for indicative data and pricing of securities. If a pricing request comes into the SI department from an IF, an SI department employee will research the security's price and manually update PROM. Once the security's price has been entered in PROM, an independent employee verifies that the information obtained from the pricing source was correctly entered in PROM. Manual price updates with a differential greater than 25% are automatically routed to Security Information management for a secondary review.

Pricing requests to the SI department from IFs are researched for the security prices and the SI department employee manually updates the security prices in PROM. The daily NYSE Manual Price Input Report includes manually updated security prices. On a daily basis, a daily email confirmation is sent to the SI department group notifying of security updates performed by an SI employee and the secondary review performed by a peer reviewer.

Access to add, modify, or purge prices from the Security Pricing File in PROM is restricted to authorized individuals based on job responsibilities. Management performs a semiannual review of users with access to the PROM update functionality.

### *Clearance and Settlement*

After trades have been captured, executed and compared, the Global Clearance and Settlement department verifies the timely and accurate exchange of assets. Pershing's Clearance and Settlement departments are part of the OTIS group, except where noted.

Settlement controls for trades (excluding options, mutual funds and limited partnerships) are the responsibility of the Delivery Management, Government Settlement, DTC Settlement and International Settlement departments. The Global Settlement departments are responsible for the delivery and settlement of open items with the DTC, Fed, Euroclear and other local markets utilizing the online cashiering (OLCA) system.

IFs utilize the OLCA/GCLR applications, accessed via NetX360 OpsCenter, to view their open instructions on open item reports. All securities, with the exception of options and mutual funds, can be viewed within two open item functions. One is for U.S. dollar open items and the other for non-U.S. dollar open items.

The open item database is updated during the day for: (1) receive and delivery confirmations received from the DTC, BNY Mellon for Fed Settlement, Euroclear and other local markets; (2) users adding, changing and deleting open items; and (3) the allocation process performed by the segregation system to determine the deliveries required to meet possession or control requirements.

The actual settlement information received from depositories is compared to the expected settlements. Differences are allocated and assigned to the appropriate departments to investigate and resolve.

The Delivery Management department monitors deliveries from settlement date through completion to verify timely settlement of transactions. This is performed by reviewing the Stock Record, then closing out the short positions to create the available excess within the security to allow the delivery to be completed.

Open item reports are reviewed periodically to monitor the status of aged items over 5 and 10 days old or Stock Record amounts valued over one million dollars. The open items reports were replaced by the settlement status reports generated from GCLR and accessed via NetX. Action is taken to resolve the unsettled open items in a timely manner. On a daily basis, a supervisory checklist is prepared and a supervisor signs off as evidence of management review.

Government and DTC Settlements

The Government Settlement department is responsible for the receipt and delivery of open items with the Fed, via BNY Mellon. It is responsible for all government processing, daily balancing and settlement for treasuries, government agency securities and mortgage-backed securities.

Government Settlement utilizes the GCLR, the back end system for OLCA and BNY Mellon's clearance system (BDC). The GCLR system gathers information from various systems at Pershing and directs it to the appropriate clearing entity; it also provides data to the bookkeeping system. Additionally, OLCA generates reports to assist in the reconciliation of open positions between depositories and the clearance system. BDC receives messages from Pershing and forwards the data to the Fed.

Cash received or disbursed is reconciled on a daily basis between Pershing and the depositories for the settlement of transactions. The Government Settlement department follows up on open items and takes action as necessary. Fully paid client securities are segregated in a custody account at BNY Mellon. Pershing performs a daily swap of positions from the Pershing clearing account to the Pershing segregated account. At the end of each day, Government Settlement verifies that the clearance account at BNY Mellon has a zero balance, indicating items were appropriately transferred to the segregated account. On a daily basis, a Government Settlement employee prepares a daily checklist to confirm the account balances and a supervisor signs off as evidence of management review.

The DTC Settlement department is responsible for the receipt and delivery of open items that have a settlement location of the DTC or are physical issue. The DTC Settlement department utilizes OLCA. Pershing's settlement system communicates with the DTC using a Message Queue (MQ) data communication line to manage the sending and receipt of data. The DTC line is monitored by Network Operations and Global Settlement. The type of information monitored includes record counts and expected transmission time for deliveries. In addition, statistics such as total records processed and received, rejected data and last time active are monitored. The checks are detailed in the OLCA Daily System Log and reported to management on hard copy for review and sign-off. The monitoring of the DTC line is performed by each department manager and detailed on the OLCA Daily System Log that is submitted for retention and retained by the Buy-in department. Additionally, OLCA generates reports to assist in reconciling open positions between depositories and the clearance system located on the DTC Match to Settle – RAD queue within NetX suite.

Cash received or disbursed is reconciled on a daily basis between Pershing and the depositories for settlement of transactions.

International Settlement

The International Settlement department is responsible for settling equities and fixed income instruments in more than 70 markets through local clearing agents and the Euroclear depository. The department communicates with the agent banks, street-side counterparties and internal and external clients when necessary. The department is responsible for resolving related breaks, unsecured transactions and suspense items that could impact the firm, IF or client if not resolved in a timely manner.

International Trade Support

Unmatched/uncompared International trades in the market are aged and reviewed by Introducing Firms, through NetX Settlement Status screen on a daily basis. Unmatched/uncompared International Trades open three business days past settlement date are posted to the IF's reject account for supervisor and management review. A supervisory checklist is prepared and signed off as evidence of management review.

International settlements made as free deliveries are monitored and aged on a daily basis on the Unsecured Money Reports. Any sale trade for ex-clearing and Cash on Delivery (COD) accounts with an uncollected receivable aged past the third business day is moved to the IF's sundry account for resolution. Uncollected monies on Balance Order and ACAT deliveries are not eligible for journal into IF sundry accounts. For any sale trade on Balance Order Deliveries (BODs) or ACAT deliveries with an uncollected receivable aged past the second business date following the delivery date will be followed up with the contra brokers by Pershing. Additionally, uncollected residual money only balances that result from transactions which are paired off are not held to the same 3-day window for movement into sundry. This is primarily due to the absence of an actual delivery of shares in the market. In such cases, movements to sundry will be performed at the manager's discretion on a case-by-case basis

#### Global Depot Network

The Global Depository Networking group is responsible for managing the network of agent banks for the more than 70 markets in which Pershing clears. This includes establishing and maintaining the relationship with the agent banks and assisting IFs with setting up accounts in passenger markets.

#### Options Trade Reconciliation

Trades that are not matched with the OCC are referred to as "trade breaks." On a daily basis, trade breaks are listed on the exception report generated from NetX360 and reviewed by an employee. An internal trade blotter report and the OCC Clearing Report are used to aid in the resolution of trade breaks. The nature of a specific trade break determines what course of action is taken for resolution. The resolution may involve having a trade processed by one of the option exchanges or adjusting a client's trade or both.

Internal systems such as ATOMS or TCMS are used to adjust a client trade. The OCC's ENCORE system or an Exchange's system may be used to process an adjusting entry on the street-side of a trade. Once the appropriate action has been determined, the resolution is noted on the break report along with any other pertinent information. In instances involving an adjustment to a client trade, the IF is notified through Service Center or by email. Trade reconciliation exception reports are reviewed and signed off by the OPD Derivatives Clearance Supervisor or Manager.

#### Option Clearance and Settlement

Clearance and settlement controls for option trades settling in the United States are the responsibility of the Derivatives Clearance department of the CTP&S group.

The Derivatives Clearance department is responsible for the daily trade settlement and position balancing with the OCC. The OCC is the only clearing entity available for the clearance and settlement of U.S. listed options and is the counter-party to all cleared trades.

The TPS and GMAR systems each produce exception reports that are utilized for trade and position reconciliation. The reports are based upon trade and position files that are received daily from the OCC and compared to internally created trade and position files. Trade discrepancies are separated by trade date, product type, class and by the exchange where traded. Position discrepancies are separated by product type and class only.

#### Options Position Reconciliation

Position reconciliation is performed on a daily basis. Internal exception reports identify out-of-balance option series. Out-of-balance situations occur when client option positions are not equal to Pershing's OCC offset accounts on the Option Stock Record. The offset account positions are compared to the position balances received on the daily OCC file. Any positions that do not balance are written to a position exception report for review and resolution.

The nature of a specific out-of-balance position determines what course of action is taken for resolution. The resolution may involve an offsetting adjustment with a trade break, adjusting client positions, or an adjustment to Pershing's position at the OCC. Adjustments to client positions at Pershing are processed through TCMS and JR10, while positions at the OCC are adjusted using the OCC's ENCORE system. IFs are notified of adjustments to client trades and positions through Service Center or email. Additionally, position reconciliation exception reports are reviewed and signed off by the Derivatives Clearance Supervisor or Manager.

#### Options Settlement Reconciliation

On a daily basis, Pershing receives a Settlement Summary Report generated by the OCC. The report details margin requirements and cash settlement money for trading activity processed on the prior day at the OCC. Copies of the report are faxed to the Pershing Treasury and House Balancing groups.

A Banking and Funds OCC settlement sheet is completed with the appropriate pay/collect dollar amounts, as designated by the Settlement Summary Report. The settlement sheet is reviewed and approved by the Derivatives Clearance Supervisor or Manager. Once approved, the settlement sheets are delivered to the Banking and Funds group for processing.

#### Stock Record

The Pershing Stock Record ("Stock Record") is a mainframe database that lists, by security identifier number (CUSIP), each client account at Pershing that holds the security, together with the number (quantity) of shares, bonds, notes, warrants or units held in each account. For recordkeeping purposes, those same quantities are also recorded in Stock Record accounts that represent where securities are physically held and maintained (e.g., DTC Depository, Registered Vault, etc.) and the processing status (e.g., transfer, Broker-Dealer fails, etc.). The Stock Record also lists, by CUSIP, the total of client shares, bonds, notes, warrants, or units booked to each location. The Stock Record can be viewed from either NetX360 or Rumba (3270) screens.

#### Institutional Control Regulatory Review (15C3-3/Reg T)

On a daily basis the Institutional Control team monitors RVP trades post-settlement to ensure that open trades are not in violation of applicable regulations. RVP transactions in COD accounts are governed by 15C3-3, and the Institutional Control team monitors reports to ensure that open RVP fails settle within a specific time frame, or that an extension of time has been granted by FINRA. If not settled within the available extensions, then Pershing will buy in the trade, if there is a market to do so.

On a daily basis the Institutional Control team monitors trades that have been DK'd "Don't know" to ensure that each applicable DVP transaction is in compliance with Regulation T, governing the extension of credit on these trades. If the transaction is not settled within the extension, Pershing will close out the trade. Daily reports are generated systematically that indicate positions requiring closeout for that day, and are reviewed to verify that appropriate action is taken by the Institutional Control associate.

#### Depository Balancing

The Depository Balancing (DB) department is part of Corporate Services. DB reconciles the Stock Record to the applicable custodian account for positions and cash balances. The reconciliations are performed daily for accounts with consistent activity and either weekly or monthly for accounts with sparse activity or for those where automated comparisons are not possible. A monthly depository recap report listing the reconciliation for each depository is reviewed and signed by management. A weekly compare of depository accounts on Pershing's Name and Address File (PONA) to the depository account database is performed via the exception report to verify that accounts are reconciled.

The DB department is responsible for identifying unreconciled items and directing them to the appropriate business areas to research and resolve. Any unresolved items are transferred to a suspense account. The DB department and other control departments monitor suspense accounts. In addition, the Operations Risk Advisory Group meets on a weekly basis and reviews suspense account items in accordance with firm policy. They also review suspense items with aging periods that exceed 30 days and take steps to remediate these exceptions.

The Pershing Stock Record short positions are reconciled to the long positions on a daily basis. Identified discrepancies are researched and communicated to the responsible operating group for resolution on the day and are moved to the appropriate departments' suspense accounts if not adjusted by the end of next business day.

Positions and cash balances information is obtained directly from the applicable depositories by Pershing via secured dedicated lines.

Pershing is subject to regulations (e.g., SEC Rule 17a-13 and FINRA rule 4522 reference 17a-13) that mandate the periodic depository reconciliations and validation of the balancing process.

### ***Physical Custody***

The Custody department is part of the Asset/Custody Services department within the OTIS group. The Vault unit of the Custody department is responsible for the receipt of securities to be held and maintained in the registered owner's name, in Pershing's name, or in unregistered form with the bearer as owner.

The vault is monitored by security cameras 24/7 and protected by an alarm system during non-business hours. The vault is secured by key card access and authorized personnel with access to the vault must be approved by the Custody Services department management. Additionally, key card access is reviewed by management on a monthly basis and visitors accessing the vault area must sign in and be accompanied by authorized personnel.

The Vault unit receives securities on a daily basis from departments within OTIS. Securities that are received by Pershing are subject to an OFAC (Office of Foreign Assets and Control) scan to identify any potential matches for sanctioned clients or countries. The Vault unit monitors receipt of physical securities executed through one of the following applications:

- PCAS: Securities can be entered in PCAS by the IF. If the IF does not have access to PCAS, the physical securities will be redirected to the Physical Custody Processing group and are manually entered in PCAS. The majority of physical securities are logged using PCAS.
- Journal System (JR10): The Physical Custody Processing group manually records physical securities adjustments using the JR10 system.
- TOLS: Physical securities submitted directly to the transfer agents are recorded in TOLS.
- OLCA: The securities that are processed between the Custody department and the Clearance Settlement team are stored in OLCA.

The Vault unit is responsible for receiving securities that are not eligible for deposit at the DTC, primarily securities that are registered in Pershing's name or the client name or certificates for which the bearer is considered as owner (bearer certificates). The securities are booked to certain accounts on the Stock Record and are held and maintained in specific files in Pershing's vault.

To maintain balanced positions, the Vault unit is primarily responsible for daily balancing of securities held in files within the vault. To balance the securities held in files on a daily basis, the Vault unit receives daily balancing reports for each box location. The balancing reports are printed after the nightly batch cycle has been completed. The reports are subject to the OTIS nightly checkout to confirm that the job has been completed successfully.

In addition to the daily balancing reports, the Vault unit reviews the following exception reports:

- Custody Aging Transit Report
- Physical Transfer Daily Report
- Custody (PCAS) vs. Pershing Stock Record Out of Balance Summary Report by CUSIP

Physical securities that are in an in-transit location are monitored on a daily basis, which includes a management review of aged items. In addition, physical securities that are at the DTC as a part of Pershing Branch Deposit Service are monitored on a daily basis. Aged items are researched and resolved in a timely manner.

The Custody department coordinates the firm's quarterly securities count (quarterly audit) of securities held in Pershing's vault. The count is conducted by Pershing employees that do not have daily balancing and reconciling responsibilities of the associated box and it is monitored by the DB department. The Pershing vault holds physical certificates for various box locations on the premises. A safe in a separate Pershing facility holds a limited number of physical certificates in a pending papers location as the majority of the physical certificates received to this site are either sent to DTCC or a transfer agent.

### *Margin*

The Margin department is part of the OTIS group. Margin controls are designed to monitor client activity for compliance with the applicable rules and regulations set forth by Pershing, the IFs and regulatory agencies. Margin management monitoring is performed by the Margin department at Pershing utilizing GMAR. The margin application performs calculations based on regulatory and margin rules established by regulatory agencies, Pershing and the IFs. Only approved individuals in the Margin department can make changes to the rules in GMAR.

GMAR's Credit View application (a front-end application to the margin system), also known as GDMS, handles cash dues, stock dues, restricted transactions, messages, and margin call exceptions. The exceptions produced by GMAR are viewed through the GDMS application. For valid exceptions, IFs are notified via an Items for Attention (IFAs) message through the NetX360 application and/or hard copy reports.

The Margin team performs a daily checkout of systems. The Margin team's daily checkout contains a sample account used to determine whether GMAR is updated completely and accurately, along with Journal Records, Checks, Deliveries and Fed Funds, which reconcile with bookkeeping's records. The employee sends an email each morning to the System Application and Data Integrity department notifying whether any system problems were detected for the applications they monitor.

GDMS exceptions identified on the due date are sent to the IF for them to contact the relevant clients. If Pershing receives no information from the IF, the clients may receive a mailgram notice directly from the Pershing Margin department. If an account has an exception item that is past the due date, the IF is requested to resolve the exception or take market action to resolve the deficiency in the client account. If the IF does not resolve the deficiency, the Pershing Margin department will take market action in the account to resolve the deficiency. On a daily basis, GDMS lists client account exceptions (e.g., cash dues, stock dues, restricted transactions, messages and margin calls) that need to be addressed, and maintains the history for items whether opened or resolved.

The Margin department's Firm Trading unit notifies IFs via Service Center, telephone or email of potential delinquencies in their firm trading accounts that may require attention. Since IFs may have multiple firm accounts, the calculation of firm account call or excess is done in the aggregate. The Margin department unit generates reports showing settled positions in the trade reject accounts, average price account, and error accounts. The employees communicate with IFs to reconcile the settled positions. If an IF has a margin call, Margin employees log each call on the Firm Exception Report and Credit View. Valid margin calls continue to appear on the Firm Exception Report until resolved.

The Margin department provides risk management reports to the Operations Risk Advisory Group on a weekly basis.

### ***Corporate Actions***

The Corporate Actions department is part of Pershing's OTIS group. The Corporate Actions department is comprised of the Dividend and Bond Interest group and the Reorganization group.

#### **Dividend and Bond Interest**

The Dividend and Bond Interest group is responsible for processing declared and scheduled dividend and interest payments and allocating funds or securities to holders on either the scheduled payment date or on the day the funds are received for non-U.S. securities. These actions include the operational aspects of the accurate and timely allocation of cash or stock dividends, bond interest and return of principal for equities, unit investment trusts, closed end mutual funds, municipal bonds and corporate bonds and mortgage-backed securities.

Dividend and interest payments are processed through PDVA. The announcement notification of declared or scheduled events is received from various external and internal sources. Scheduled interest payments are determined based on information contained in the security master file.

Announcements are received electronically and are automatically loaded to the PDVA system. If the announcement is already on the system, the Dividend and Bond Interest group compare the new announcement to the existing announcement to confirm that there are no discrepancies. Announcement discrepancies are adjusted in PDVA on the announcement update screen.

Pending allocation files are created based on the record date of each event. The pending allocation file is a listing of those accounts entitled to the allocation. The system also detects activity such as trades for those events that are subject to interim accounting (most income events and events that are declared with irregular ex dates) and updates the pending file accordingly.

Events that have passed the record date and are approaching the scheduled payment date are displayed on the On Hold Report for further review. Once on the report, the Dividend and Bond Interest group manually compares the event details to a secondary source to verify accuracy. Any discrepancies noted are adjusted in PDVA on the announcement update screen or on the pending dividend allocation file update screen. The On Hold Report indicates any discrepancy in position or dividend/interest rate.

On payable date, a reconciliation is conducted between the payments received from Pershing's depository and funds allocated to clients. An exception report is generated that denotes funds received but not allocated. A daily checklist is prepared and signed off by the employee to evidence the review. The Dividend and Bond Interest Announcement Manager is responsible for approving each employee's checklist as validation the review has been completed. Any unallocated funds are reported to the Global Credit and Market Risk Committee and aged on a weekly basis.

### International Dividend and Bond Interest

The International Dividend and Bond Interest group is responsible for expediting foreign dividends and foreign bond interest payments (allocations) for Pershing IFs and their clients. These actions include the operational aspects of the accurate and timely allocation of cash dividends, bond interest and return of principal for equities, unit investment trusts, municipal bonds and corporate bonds.

The unit is responsible for the processing of foreign dividend and bond interest announced by issuers, receiving securities and cash from those announced dividend and bond interest (receipt of proceeds), and allocating those proceeds to the affected client accounts on Pershing's records. The International Dividend and Bond Interest group receives dividend and bond interest information on foreign securities from overseas custodians such as Euroclear, Pershing Securities Limited (PSL), and several individual local banks (local market custodians) via incoming SWIFT messages and third-party SIX Financial Information feeds. In some cases, the unit receives information directly from IFs and their clients. Dividend and bond interest announcement information is captured in N-Tier to allocate payments. Foreign securities may be held in accounts on the Pershing US dollar Bookkeeping System (PAR) posted via NetX360. Foreign currency received for accounts on PAR are exchanged for US dollars (USD) and allocated to those PAR accounts in USD. Foreign currency and USD received are allocated to held on currency platform in NetX360 in the foreign currency except when the security is denominated in USD. If the security is denominated in USD, the International Dividend and Bond Interest group allocates USD if payment is received in USD.

Each day, an exception report is generated that identifies funds received but not allocated or funds allocated and not received. The International Processing unit checklist is used to evidence management's review and approval.

### Reorganization

Reorganization processing controls are the responsibility of the Reorganization group of the Corporate Actions department.

The Reorganization group is responsible for processing voluntary and mandatory corporate actions events timely and in accordance with the terms of the event or based on individual instructions received from Pershing's IFs for their clients.

The Reorganization section utilizes Pershing's reorganization system (REOR). The REOR system creates position files listing accounts that are entitled to participate in an offering or receive an allocation. For voluntary offers, the system updates the position file daily. Internal and external third-party subservice organizations transmit notifications of corporate action events to the REOR system. Mandatory events notifications load automatically in REOR and release automatically upon meeting minimum data requirements. Employees manually update events that do not load automatically either because the minimum requirements are not met or based on client choice (e.g., voluntary actions, mergers, name changes and reverse splits). Management releases voluntary action announcements. Corporate Actions/Reorganization management performs reviews for both mandatory and voluntary actions.

Events that are loaded on the REOR system may be viewed online by IFs through NetX suite's OpsCenter or through NetX suite's IFA function. For the majority of voluntary events, the IFs and their clients receive the offering material. In most cases, the offering material is mailed to the clients by a third-party subservice organization. To verify these mailings are completed, two controls are in place. The first control is the review of a status tracking report that Pershing creates using data that is supplied by the third-party subservice organization and the second is the receipt and review of a sample mailing sent to Pershing by the third-party subservice organization.



While not required, Pershing may choose to produce a mailing for the benefit of its IF and their clients to advise them of a specified voluntary corporate action. Pershing's RMAL system is utilized. Data and key dates are entered in the RMAL system by an employee and reviewed by the manager. On the following business day, letters are produced. Employees receive final approval to perform the mailing after a manager reviews the letters.

For events in which an IF or their clients' response is required, they can respond to the IFA and input their instructions into NetX suite OpsCenter or NetX suite's IFA function. Instructions entered in such a manner are routed through a Rules Engine to validate their completeness. Instructions that are received by alternative hard-copy means (e.g., NetX suite Service Center) are entered in the system by a processing employee. To verify the accuracy of the instructions entered, an independent processing employee performs a review and a Control group employee performs a second review.

Upon the event closing, accounts entitled to receive payment are paid in accordance with Pershing's payment policy. Securities and/or cash entitlements are paid upon receipt of proceeds. On payable date, a reconciliation is conducted between the payments received from Pershing's depository to funds allocated. An exception report is generated from NetX360 that denotes funds received but not allocated. To validate the timely allocation of funds received, management conducts a daily review of the exception report and follows up on items received but not allocated.

#### ***Money Market Fund and FDIC Bank Sweep***

Money market fund and FDIC-insured deposit sweep programs are managed by Pershing's Cash Management Services department, part of the OTIS group. Money market fund and FDIC-insured deposit sweep programs are an optional service offered by Pershing. Sweep options are account level instructions that, once updated, automatically sweep available free credit cash balances in a brokerage account to the assigned money market fund or FDIC-insured deposit product and also automatically redeem from the money market fund or FDIC-insured deposit product when there is activity in the brokerage account that requires a payment of cash.

Pershing's ACAM is the proprietary system that facilitates the automated sweeps of money market funds and FDIC-insured deposit products. Customer accounts on the ACAM system are administered by Pershing's Cash Management Services. IFs can access Cash Management in NetX360 to update the sweep instructions on their clients' accounts. Available cash balances are automatically calculated after trade activity has been captured and scheduled production jobs are complete. For accounts coded to sweep automatically, funds are either moved into or redeemed from the money market or FDIC-insured deposit products based on the calculated balance. Money market funds are processed in an omnibus environment, where Pershing manages the sub-accounting of individual client positions on Pershing's books and records and maintains one omnibus house account in each fund. The omnibus house accounts are in Pershing's name, daily sweep activity is aggregated by fund and information is exchanged with the fund company via daily file transmissions. For multi-bank FDIC-insured deposit products, the ACAM system generates and transmits a sweep activity file containing transactions at the client level to the processor. Upon receipt of the file, the processor updates the client positions, performs the bank allocations and then transmits a refresher file back to Pershing containing the transaction detail and updated positions in each client account, which Pershing uses to update client accounts.

Pershing uses the following four third-party bank data allocation providers to facilitate the multi-bank FDIC-insured deposit products on the sweep platform: Reich & Tang (R&T) Deposit Solutions LLC, Promontory Interfinancial Network (PIN), Total Bank Solutions (TBS), and StoneCastle.

Multi-bank FDIC-insured programs are facilitated by the exchange of data via file transmissions between Pershing and the provider. The process starts with Pershing's ACAM system generating client activity and transmitting a file containing that sweep activity to the corresponding provider, who in turn then applies that activity to the clients' positions accordingly and allocates funds amongst the banks within the program. All accounts at the program banks are omnibus accounts, in Pershing's name, and each provider also establishes an operating bank account in Pershing's name in order to facilitate money movements. Money movements can only occur between the omnibus accounts at each program bank and the operating account or between the operating account and Pershing and these money movements can only occur with approval by Pershing employees. For money movements coming from the program banks to Pershing, the program banks receive the confirmation from Pershing, which authorizes them to release the funds from the Pershing account (at each of the respective bank), but only to the operating account. In the R&T programs, Pershing provides that approval by email. In the PIN, StoneCastle, and TBS programs, an employee with approved online access to those providers' internet-based systems approves the allocation online, which authorizes them to facilitate drawdowns from the program banks into the Pershing operating account.

For money movements going to the program banks, the Pershing approval process differs depending upon the third-party bank allocation provider:

- For outgoing fed fund wires to the program banks within the R&T programs, an employee with authorized online access to initiate fed wires from the operating account at the settlement bank (JP Morgan Chase or JPM) initiates the wires and a second employee with authorized online access approves them. Fed fund wires are then released to the program banks from the operating account at the settlement bank (JPM).
- For outgoing fed fund wires to the program banks within the TBS programs, an employee with authorized online access via TBS' internet based system (TBS Link) approves the bank allocations online, which triggers a file to be sent by TBS to the settlement bank (FNBO) to release the fed fund wires to the program banks from the operating account at the settlement bank (FNBO).
- For outgoing money movements to the program banks within the PIN programs, an employee with authorized online access to Promontory's internet-based system (IND Dashboard) approves the bank allocations online, which triggers authorizations to the settlement bank (BNY Mellon, or BNYM) to release the transfers to the program banks from the operating account at the settlement bank (BNYM).
- For outgoing wires to the program banks within the StoneCastle programs, an employee with authorized online access to StoneCastle's internet-based system (InterLINK) approves the bank allocations online, which triggers a file to be sent by StoneCastle to the settlement bank (US Bank) to release the fed fund wires to the program banks from the operating account of the settlement bank (US Bank).

For multi-bank FDIC insured settlements, prior to initiating any fed fund wires or approving any transfers, Pershing's Cash Management Services department receives a breakdown of money movements between the Pershing omnibus house accounts at program banks and the operating account, one from each of the four processors (R&T, PIN, TBS and StoneCastle). An employee verifies that the net figure provided in the breakdown equals the ACAM system totals. Once confirmed, an employee approves/initiates any required money movement for a particular program and all money movements are subsequently reviewed/approved by a second authorized employee.

FDIC-insured bank deposit sweep activity is reconciled on a daily basis by comparing the balance in the Pershing omnibus account held at each bank to the total balances held in client accounts at that bank, as documented by the third-party bank data allocation provider and by Pershing systems. Cash Management Services independently confirms balances directly with each bank. ACAM executes these reconciliations using file transmissions sent via communication links that are established directly with each third-party bank data allocation provider. Interfaces also exist with other Pershing systems that maintain account profiles and settlement or balance activity information.

For omnibus money market funds and single bank proprietary FDIC-insured sweep accounts, rates are automatically fed into the ACAM system on a daily basis for those funds/bank products where Pershing performs sub-accounting. The ACAM system automatically rejects factors that do not meet certain basic criteria. In the event of a reject, the system will automatically default to the prior day's rate and, for significant rate differentials identified during the omnibus daily reconciliation, Cash Management Services personnel researches and resolves the issue. A Cash Management Services Manager reviews and approves the omnibus reconciliation and signs off on the Cash Management Services Daily Checklist to evidence review.

Each morning, Cash Management Services personnel confirm that the ACAM system is accessible, Pershing has received file transmissions, nightly batch updates occurred, information was updated correctly and the system is fully functional.

Pershing makes a report available to IFs through the Report Center function in NetX360 to assist them in monitoring their clients' balances in money market fund and FDIC-insured sweep products.

### ***Cash Disbursements and Journals***

Cash movements for disbursements and journals are managed by the Exception Processing unit within the OTIS group.

Cash movements from clients' brokerage accounts are initiated either by the IF or authorized Pershing personnel at the direction of the IF. Cash movements are primarily handled via AMPS. IFs access AMPS via NetX suite Office or NetX360 Service & Operations. AMPS provides IFs and Pershing personnel with the ability to enter, process, and monitor outgoing Fed Fund wires, ACH transactions, checks and journals (movements between account and movements within an account for both cash and securities). It provides users with a single point of data entry and enables exception-based processing through the Asset Movement Rules Engine. Systematic edit checks in AMPS reject requests with incomplete required fields, validate the availability of funds before disbursement and restrict users from entering and approving the same request. The systematic checks also validate that available funds are in an account before a disbursement is permitted (e.g., insufficient funds). Fed Fund wires, check disbursements, ACH transactions and journals that fail rules in the Asset Movement Enterprise Rules Engine are automatically routed to a work basket in NetX suite for Exception Processing department review and approval. NetX suite provides a facility to put a block on accounts at the IF, office or client account level, so that future disbursements cannot be requested. If a hold is placed on the IF, office, or account level, every disbursement request is routed for approval.

For any cash disbursement requests, with the exception of first-party check disbursement and journal requests, the IF must have client authorization documentation on file. The Asset Movement Enterprise Rules Engine has system-configured Letter of Authorization (LOA) approval parameters, which will cause Fed Fund wire, check disbursement and journal requests that exceed LOA indemnification limits to be routed to the Exception Processing department for approval.

Third-party wires that exceed the predefined limit cause systematic rules violations and are routed to the Exceptions Processing unit for approval. Evidence of approval from the senior managers at the IFs is

required via the attestation form or in a form of comments before the disbursement is approved. If the Exception Processing unit is unable to identify the beneficiary on third-party wires, the Exceptions Processing unit forwards the requests to the Margin department's Firm Trading unit. These third-party wires undergo further credit review by the Firm Trading unit, which includes an assessment of the IF's net worth prior to approval of a disbursement. If the IF does not have the net worth to support the request, the Credit Risk unit reviews the IF's net capital.

Both AMPS and PACE are updated online through electronic feeds from NetX suite. The client account is automatically updated intraday upon the initiation of the check requests in PACE and approval of Fed Fund wires, ACH transactions, checks, or journals in AMPS.

AMPS enables the IFs and Pershing employees to use standing instructions that may be applied to Fed Fund wires, checks, and journals and must be applied for ACH transactions. The setup of a standing instruction requires one-time client authorization documentation. The setup of a third-party wire standing instruction also requires a one-time attestation from the IF the Exception Processing unit is unable to identify the beneficiary on the third-party wire instruction. Once a standing instruction has been established, disbursements or journals processed using the standing instruction do not require additional documentation.

On a daily basis, a Money Desk employee monitors the status of outgoing wires via the MERVA/EMX queue to determine if they are acknowledged by SWIFT and accepted by the Federal Reserve. At the end of the day, the Money Desk employee signs off on the Money Desk checklist and includes screen prints of the MERVA/EMX queue to evidence acknowledgment of the outgoing wires. The check disbursement area of the Money Desk is secured with a locked entrance. Access to the restricted area is reviewed on a quarterly basis for the Jersey City and Lake Mary locations.

The check disbursement area of the Money Desk, located at One Pershing Plaza, prints checks from the Pershing print queue. The checks are separated and delivered based on the delivery instructions. Each night, the PACE/AMPS balancing process is completed to account for the quantity of check stock. Money Desk management reviews and signs off on the PACE/AMPS Balance Sheets on a daily basis.

Files for registered mail checks for IFs (scheduled payments and ad-hoc) are sent to the outsourcing vendors (BNY Mellon and Wells Fargo) for printing using Connect:Direct transmissions via a dedicated line to BNY Mellon and FTP transmissions with encryption to Wells Fargo. For each file, the totals are verified by Money Desk employees, and the rejects and check pulls are completed, if there are any. Void and pulled requests are communicated to the outsourced vendor via a check pull log. Confirmation of these checks pulled is returned to Pershing before the Money Desk voids the check and replaces the account's funds. Any checks that cannot be processed by the outsourced vendor are documented via the "Edit Log" and returned to Pershing for correction. These rejections are reviewed, researched and resolved. For each of the three daily transmissions, the outsourced vendor sends a confirmation that verifies the total number of checks printed, the total amount of those checks and the checks rejected and returned to Pershing. The Money Desk prepares a Check Disbursement File Summary Log containing the number of checks printed, rejected and pulled that day at the vendor. These confirmations are then verified against the totals in the NetX suite to verify the complete and accurate transmission of the checks to be printed and signed off by a Money Desk manager.

A daily reconciliation of the total amount of check disbursements and cash disbursement via wire at banks to the total amount on the Pershing books is performed to determine whether the book balance matches the bank balance. Any differences identified are researched and resolved on a daily basis. On a weekly basis, a package consisting of FX open items, unreconciled accounts, and unrecorded deposits for check disbursement bank accounts and outgoing FED fund wire bank accounts are reviewed by management and submitted to the Global Credit and Market Risk Committee for their review. On a monthly basis, unresolved USD differences above \$5,000 and aged over 10 days are added to the respective packages.

On a monthly basis, balances and related activity for cash accounts used to process client cash transactions and cash disbursements via wire (book balance) are reconciled to the hard copy bank statements (book balance) by a Financial Controllers member. Additionally, a monthly reconciliation is performed between the balances and related activity for cash accounts used to process client cash transactions check disbursements (book balance) and the hard copy bank statements (bank balance) for check disbursement accounts. Differences are researched and resolved in a timely manner by Financial Control employees. The reconciliation is reviewed and approved by the Financial Control employee and manager.

### ***Cash Receipts***

Cash receipt controls provide reasonable assurance that Fed Funds and check deposits into the clients' brokerage accounts are entered appropriately and confirmed by authorized Pershing personnel. These processes are handled via PACE and AMPS, which are accessed via NetX360 OpsCenter facility.

The receive functionality of the PACE system enables Pershing to accept incoming fund transfer wires from external sources and route them to the appropriate departments or client accounts. The Money Desk reviews each incoming wire transfer for an account name and number. This information is used to apply the funds to the appropriate Pershing account in PACE. A twice-weekly supervisory review for a selection of incoming fed fund wires is performed to verify that funds are booked to the correct brokerage account in PACE. Wires that do not reference a valid Pershing account number are routed to a suspense account for review by the Banking and Funds department. An end-of-day balancing is conducted between incoming wires and amounts deposited to the brokerage accounts, returned to the bank or booked to the suspense account for missing information. Banking and Funds department personnel research and resolve exceptions.

AMPS provide Pershing personnel with the ability to enter, process, and monitor incoming check deposits. Checks for deposit are received through the mail, overnight delivery carrier or directly from the clients. The Money Desk verifies that the name on the check matches the name on the Pershing account. This information is used to apply funds to the appropriate brokerage account. In addition, balancing is performed to confirm that the total check deposits entered in AMPS matches the end-of-day balance log.

A daily reconciliation of the total amount of check deposit at banks to the total amount on the Pershing books is performed to ensure the book balance matches the bank balance. Any differences identified are researched and resolved on a daily basis.

On a monthly basis, balances and related activity for cash accounts used to process check deposits (book balance) are reconciled to the hard copy bank statements (bank balance). Differences are researched and resolved in a timely manner. The reconciliation is reviewed and approved by the Financial Control employee and manager. On a monthly basis, a package consisting of unbalanced accounts is submitted to the Global Credit and Market Risk Committee.

The receive functionality of AMPS enables Pershing to accept incoming international fund transfer wires from external sources and route them to the appropriate departments or client accounts. The Money Desk employee reviews each incoming international wire transfer for an account name and account number which are used to apply the funds to the appropriate Pershing account in AMPS. A weekly supervisory review for a selection of incoming international fed fund wires is performed to verify that funds are booked to the correct brokerage account in AMPS. International wires that do not reference a valid Pershing account number are routed to a suspense account for review by the Banking and Funds department.

*Account Transfer Processing*

Transfers at Pershing are processed within the OTIS group.

*ACATS Receive Processing*

Account transfers are initiated by Pershing IFs or Pershing personnel through AMPS. Transfers are sent to the NSCC via the AMPS application.

Transfer requests that are entered directly in AMPS go through a quality check of transfer paperwork for accuracy and eligibility before they are released to the NSCC. Transfer requests that fail Pershing's quality review are moved to the IFs' Quality Rejects workbasket. IFAs are also updated to notify the IF and/or Pershing personnel of the transfer issue. The IF reviews the workbasket, makes the necessary changes and sends the transfer back to Pershing for processing. Any systematic rejects by the contra firm are referenced on AMPS. Soft rejects can be adjusted to allow the transfer to continue and prevent the transfer from showing a reject status. Transfer requests can be viewed on IFA.

Positions transferred through the ACATS that do not have a CUSIP or have a CUSIP that Pershing does not recognize are identified as CUSIP exceptions in the ACATS exception report. The exception report is monitored to verify that CUSIPs are received (that were not previously available on the Stock Record) and journal entries are made to correct the exception. A letter is automatically generated and mailed to the client to notify them of the exception.

*Non-ACATS Receive Processing*

Account transfers are initiated by Pershing IFs or Pershing personnel. These items are entered through web-based products (e.g., NetX360) or through the use of the AMPS.

Transfer requests that are entered directly in AMPS go through a quality check of required account transfer paperwork for accuracy and eligibility before they are released to the non-NSCC firms. Transfer requests that fail the quality review are rejected and the IF is notified via a delegation message on NetX360. The physical transfer form is sent back the IF branch office. Transfer requests can also be viewed through IFA.

The Non-ACATS Processing Area has an SLA stating transfer forms need to be processed within 48 hours of receipt.

*Non-ACATS Receive Resolution*

The Non-ACATS Resolution employees are responsible for providing the status on any transfers that have not been completed by the eighth business day. Once the transfer form has been sent to the delivering firms, AMPS automatically schedules a follow-up date for the eighth business day from the date the transfer form was sent. An employee contacts the delivering firm and updates the transfer request with the information obtained. The employees communicate additional requirements to the IFs by sending a delegation message on NetX360. Any follow-up activity is logged in NetX suite to track the resolution trail for each outstanding transfer. Once the assets have been received from the delivering firm, the employees mark the transfer as processed.

On a weekly basis, a Non-ACATS Supervisor signs off on the Receive Unit Checklist, noting that processing employees performed procedures accordingly.

*ACATS Delivery Processing*

This process begins when a client of an IF decides to complete a full or partial transfer of their account to another NSCC member firm. Pershing's Account Transfer department is notified of a transfer request via the NSCC transmission submitted by the receiving firm. Typically, paperwork is not required to be received

by the delivering firm to process this request unless special transfer authorization is required. When the NSCC transmission is received, it is uploaded to AMPS. The Pershing Enterprise Rules Engine, a parameter driven screening system, reviews these items and validates that the transfer records, tax identification and account titles match. If the transfer is validated, AMPS releases the request back to the NSCC.

The Enterprise Rules Engine is utilized to review outgoing transfers and to set status flags for outgoing transfer records that require verification. Rule violations are reviewed and resolved by an ACATS employee. If a transfer is rejected or validated, automatically or manually, the notebook function is utilized to update accounts in transfer status. An action must be taken on each outgoing account transfer by 11:00 a.m. on the second business day under the NSCC guidelines. Automatically generated letters are sent to the client to inform them of any assets not received during the account transfer process. The transfer requests are captured by the NSCC and sent to the stock exchange monthly for review. Transfer requests can also be viewed through IFA.

In addition, processing employees review transfer reports on the system (the Pershing system used to view and print the firm's electronically generated reports) daily. These reports document any problems that may have occurred during an ACATS transfer.

#### Non-ACATS Delivery Processing

A non-ACATS delivery transfer begins when Pershing receives instructions from a Pershing account or from a non-NSCC member firm requesting a full or partial transfer of assets from a Pershing account. Transfer paperwork received by Pershing is batched, sorted, scanned, indexed and released to the Non-ACATS delivery work basket within Pershing. The physical paperwork is then delivered to the Non-ACATS delivery employees to perform the quality checks on the transfer forms to verify the transfers are in good order. The negotiable paperwork must be processed within 10 business days of receipt by the Non-ACATS Processing department. A transfer will be rejected if conditions of Pershing's quality check review are not met. Transfers that fail the quality check are rejected and a notification with the reason for the rejection is updated in the audit trail. Once the reject has been entered in the database, the original documents are sent back to the contra firm. Transfer requests can also be viewed on IFA.

#### Mutual Fund Transfer Processing

The IF adds incoming mutual fund transfers from mutual fund companies onto AMPS. After the paperwork has been imaged, it is sent to the Mutual Fund Processing group for processing.

The Mutual Fund Processing group starts processing once the paperwork has been received. IFs also have the ability to submit transfer documents via Image Import directly to the Document Management System. Documents are indexed and submitted to the business unit through NetX360 workflow.

Transfer requests are reviewed by searching for the account number. Transfer requests go through a manual quality check of required account transfer paperwork before they are released to the fund. The system prompts the user as to whether paperwork needs to be forwarded to Pershing. When possible, the instructions are sent to the fund via networking. Otherwise, manual instructions are sent. Open incoming transfers past three business days are followed up with the fund company for resolution. Once the transfer has been completed by the fund company and confirmed by Pershing, the position is booked into the brokerage account and the status is updated in NetX360 either manually or automatically. If the fund indicates the transfer cannot be processed as requested, the employee will update the transfer to rejected status. The transfer will be monitored until it closes in a "Booked" or "Rejected" status.

Outgoing mutual fund transfers for domestic positions delivered to a fund company are submitted via AMPS by the IF. The transfer is routed to the respective Pershing department for approval through the AMPS workflow. To initiate a mutual fund delivery for an offshore position, the IF completes a pre-

formatted spreadsheet and emails it to the appropriate Pershing department. Once the appropriate Pershing department has approved the delivery, Pershing sends manual instructions to the fund. Outgoing transfers open for more than three business days are followed up with the fund for resolution. Once the delivery has been completed, the position is delivered from the brokerage account and the status is updated in NetX360 either manually or automatically. If the fund indicates the transfer cannot be processed as requested, the employee will update the transfer to rejected status. The transfer will be monitored until it closes in a "Booked" or "Rejected" status.

#### Customer Internal Transfers Processing

The customer internal transfers process begins when an IF's client completes the appropriate paperwork, usually a transfer form with signatures, and forwards it to the IF. The IF then enters the information on AMPS, and forwards the paperwork to Pershing for processing. Internal transfers are not transmitted to the NSCC.

The Enterprise Rules Engine is utilized to populate status flags for internal transfer records that must be reviewed by an employee. Internal transfers validate automatically if no rules are violated or reject if a severe rule is violated. All other internal transfers with rule violations are reviewed to verify that the account registrations, tax IDs, signature, names, transfer to account, and full or partial indicators are valid. Rule violations are reviewed by an ACATS employee. The internal transfers are processed within 48 hours of receipt. Transfers within the same IF do not require signed transfer paperwork unless there is a change of account type or title. Once a transfer has been validated, the notebook is updated accordingly to document transfer status for the account. The IF is notified of any internal transfer rejects via NetX suite. These transfer requests can also be viewed through IFA.

#### Alternative Investments Transfer Processing

The IF adds incoming non-ACATS alternative investment transfers onto AMPS. The Non-ACATS department reviews the request, and submits the requests to the contra firm once it has been reviewed. Upon receiving the transfer request, the contra firm generates alternative investment re-registration documentation and submits those documents to Pershing. After the paperwork has been imaged, it is sent to the AI group for processing. Transfer requests go through a manual quality check of required re-registration paperwork for accuracy before they are released to the fund. The registration instruction sheet and GP paperwork is completed by the AI employee. For outgoing non-ACATS requests, the AI group completes and approves the required re-registration paperwork prior to sending it to the receiving firm.

For ACATS transfer requests, the paperwork is delivered to the NSCC window. The open item in the fail account is subsequently settled in OLCA upon receiving re-registration documentation from the NSCC.

Alternative investment transfers, payments and fees are approved and reviewed by the supervisor before they are booked in the brokerage account and paperwork is delivered to the investment company. At the same time, a transfer memo is created in TOLS reconciling to the client position. On confirmation from the investment company, the transfer memo is cleared and moved to the appropriate box. If confirmation is not received from the investment company, the transfer memo is cleared in the periodic reconciliations. If the investment company indicates that the transfer cannot be processed as requested, the employee will update the transfer to rejected status. The transfer will be monitored until it closes in a "Booked" or "Rejected" status.

In the case of internal transfers, where there is no change in custodian, the general partner of the alternative investment fund is notified of the change. For re-registrations with a change in custodian, the paperwork is delivered to the custodian and general partner of the alternative investment fund, and a transfer memo is created until confirmation is received.



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***Cost Basis Reporting/Portfolio Evaluations***

The CBR department is part of the Asset/Custody Services of the OTIS group.

PES is a service provided by Pershing for complete tax-lot accounting (e.g., the maintenance of securities, cost basis, gains and losses, etc.) and performance measurement of client accounts. The application system that supports these functions is the PORT system.

Data files from internal systems, GMAR (Bookkeeping data) and PROM (pricing data), are transmitted to the PORT system completely and accurately. On a daily basis, daily breaks are displayed in the CBP cost basis system to be reconciled with the position files from GMAR. The identified position reconciliation breaks are investigated and tracked to resolution by the Recon team by making necessary updates to the CBP cost basis system data.

With PORT, tax-lot information is presented in a format that assists clients in identifying profit and loss situations. The performance measurement component provides analytical tools that quantify an account's market value changes over time. Performance information can be presented either at the account or asset category level. On a quarterly basis, portfolio evaluation data from PORT is automatically compared to industry benchmarks (S&P 500 index) and performance anomalies are addressed before the Quarterly Performance Reports (QPRs) are mailed.

***Credit and Debit Interest***

The ICG is part of the Treasurer's department within the FSQ group.

Credit and debit interest on margin and cash balances are subject to controls that verify appropriate interest rates and adjustments are applied to brokerage accounts as needed; changes to interest rates are processed accurately. These controls are managed and administered by the ICG. The Pershing base lending rate and the Pershing money market rate are reviewed by the Pershing Rate Committee when the rates need to be updated in the system. The monthly report summarizing rate changes during the month is also communicated to the Rate Committee monthly.

The interest rates offered at Pershing are set by the Rate Setting Committee. The ICG maintains the base rates for the monthly interest charges and credits that are applied to brokerage accounts. IFs may choose to use base rates offered by their firm or may use Pershing's default base rate. The ICG confirms the base rate and sliding interest schedule to be used from the IF's pricing agreement with Pershing. These base rates and sliding schedules are entered in the FundsU system by designated personnel in the ICG. ICG management reviews the manual setup and updates to rates/schedules and base interest rates by comparing what is coded in FundsU to source documentation.

FundsU produces exception reports highlighting IFs that are not set up with an interest profile. These exception reports are reviewed weekly by ICG. Pershing applies the monthly interest charges and credits to brokerage accounts based on the base rates and the daily average balance maintained by the FundsU system. Daily average balances are systematically fed into FundsU from the margin system. The interest amounts computed against the daily debit or credit balances are documented in monthly reports generated by the FundsU system. The ICG verifies the accuracy through recalculation of the margin interest, cash due interest, free credit interest and short rebate interest postings, and records interest schedules and monitors interest activity. Interest income and expense are posted to the PAR system (Pershing bookkeeping) on the same day following the verification calculation process. The entries are posted on the first business date following the 19th of each month. ICG reconciles the balance in each of the related PAR bookkeeping accounts to the FundsU bookkeeping file to verify that the interest amounts were recorded accurately and completely in the PAR bookkeeping system.

### *Client and Product Billing Operations*

The Client and Product Billing Operations (CPBO) department is a part of the FSQ group. CPBO is responsible for implementing and maintaining contractual agreements (i.e., new and re-negotiated contract fee schedules and addendums) between Pershing and introducing firms (IFs) as well as obligations between IFs and the end investors.

### Contract Implementation

Upon full execution of Fee Schedule, receipt of executed documents by the Business Unit Controllers (BUCs) and receipt of documentation by CPBO Billing, the CPBO Employee will log receipt by entering pertinent data in the CPBO Centralized Contract Log (CCL) as a control to date stamp receipt of documents awaiting implementation and to ensure all documents received were appropriately approved through the BAR process. CPBO Group Managers or designee(s) have responsibility for assigning all Fee Schedules for implementation across CPBO applications.

The following is a list of CPBO applications where the contractual rates for Fee Schedule related products and services by Pershing are maintained:

- Pershing Correspondent Information System (PCIS)
- Trade Figuration System Management (TFSM – for confirm fees)
- Global Trade Figuration System (GFSM for Foreign Execution fees)
- Global Billing System (GBLS)
- Enterprise Billing System (EBS)

Rates entered in PCIS, TFSM, GFSM, GBLS and EBS are systematically applied to trades, products and re-billable events based upon the variables in the contract and pre-defined logic to identify billable activities.

All full Schedule A and Amendments related to Global Client Relationship (GCR) and Direct Brokerage Services (DBS) that have impact to the billing systems are subject to a peer review process.

Once CPBO employees have completed implementation of the pricing parameters for tasks assigned to them through the CCL for a given Fee Schedule/amendment, CPBO Group Managers/designee will assign the Fee Schedule to the designated peer reviewers to review and ensure the CPBO Employees have entered parameters that match the pricing designated in the executed agreement(s). If differences are identified, the peer reviewer documents any discrepancies and directly notifies the employee responsible for the related rate implementation (or another designated employee) to investigate and remediate. CPBO Group Managers review the peer review documentation to determine whether identified issues from the peer review have been closed and initial the document as evidence of the review.

### Post-Implementation Review

A post-implementation review is required for all new and renegotiated client Fee Schedules with prior year's revenues in excess of \$1 million or any other contract implementation (including amendments and addendums) deemed by CPBO management that a post-implementation review is beneficial. The purpose of the post-implementation review is to provide an opportunity to identify errors or inconsistencies associated with the contract implementation process, with a focus on mitigating risk to Pershing and IFs.

CPBO Group Managers participate in the post-implementation review on a rotating basis. Minutes of each meeting are published and issues requiring an action are identified in meetings and are tracked until closure by the responsible Relationship Team member. The CPBO Group Managers act as a point of escalation for

review of potential exposure items. The CPBO Department manager participates in the post-implementation review process and consolidates review documents and notes, dates and initials the documents and files them in the CPBO Department Managers' secure file cabinet.

#### Revenue Adjustment Process

Occasionally, it is necessary to process an adjustment to an IF in the form of a credit or debit. These adjustments could be contractual adjustments, accommodations or simply ad-hoc requests to charge or credit the IF for unforeseen business expenses or revenues. These adjustments include processing of manual charges calculated by other business units or CPBO employees. Requests are processed within RAS upon submission. Once the revenue adjustment request has moved thru the pre-defined approval thresholds, the request will present in the RAS platform for journal processing. A CPBO employee enters the adjustment item in the JR10 application within Pershing's mainframe journal entry system (JRNL).

Daily, a summary of items processed is provided to the CPBO Group Managers for review. The review includes an extract of the dashboard of all rebates processed for the day, the excel PAJE upload with rebates and a screen print of the PAJE journal total processed. The summary is initialed to indicate review and stored in the CPBO Department Manager's secure file.

CPBO management reserves the ability to bypass the revenue adjustment request and approval process for contractual rebates such as volume discount rebates due to the fact that such rebates are binding from a contractual perspective and otherwise previously approved by senior management or other authorized representatives of the firm.

#### Suspense Process

Activity feeds for IFs and clients are sourced to the various billing applications resulting in systemic calculations and postings to the bookkeeping application. On a daily basis, any out-of-balance conditions resulting in a suspense item are addressed by the CPBO employee. On a monthly basis, a CPBO employee performs reconciliations of the suspense accounts which are then reviewed by the CPBO Group manager(s) and initialed as evidence of the review.

#### Automated Calculation Process

Fee Schedules and revenue sharing related calculations are performed automatically within the specified billing applications. Score data feeds are received timely for trade, cash and miscellaneous events into the specified applications: PCIS, GBLS, EBS, TFSM and GFSM. Calculation within the specified application is based on rates and roles associated with the specific IF.

#### For Managed Accounts Clients

CPBO facilitates calculation and assessment of advisory fees on a periodic basis based upon the program/product configurations within the EBS. CPBO employees perform a number of reviews on specific fee calculations or use cases to identify potential anomalies encountered during the fee cycle. Anomaly detection reviews include active accounts with no fees, frozen account checks and terminated accounts with periodic fees calculated. Evidence of such reviews is captured as a line item with the Advisory Billing Checklist and initialed by the CPBO Risk Supervisor and by the CPBO Group Manager as evidence of review.

EBS restricts users from processing a client or advisor fee that exceeds the audit threshold. Any fees entered that exceed the threshold are automatically placed on hold to determine if they are grandfathered; if so, fees are released for processing. Accounts not grandfathered are sent to the IF to review the fee schedule and provide a revised fee schedule for processing. Evidence of this review is captured on a monthly supervisory checklist.

On a quarterly basis, CPBO employee performs data verification to determine whether the fees calculated are justified. Any exceptions are investigated and resolved by the CPBO employee or escalated to the Group Manager for further review.

#### Money Market Fund Sweep Processing Fees and Waivers

Pershing has established agreements with certain Fund Companies and FDIC Bank Sweep Administrators (collectively, sweep providers) to receive fees for sweeping cash balances to specific Money Funds or such administrators. A negotiated agreement is established between Pershing and the sweep providers, detailing the basis point amount to be paid to Pershing. Pershing also negotiates the revenue share between Pershing and its clients through the Fee Schedule. In some instances, Pershing may also charge an IF when supporting a proprietary Money Fund or FDIC Sweep product or for supporting Custom FDIC sweep programs. Pricing for both fund managers and the revenue share or proprietary sweep fees between Pershing and clients is maintained in EBS. Remuneration rates for Money Fund and FDIC sweep program offerings are determined based upon aggregate balances within the Fund Company and the “group” maintained in the ACAM system. A fund’s “group” number is assigned based upon the distribution assistance rates paid by the fund company to Pershing.) IF money fund fee calculations are automatically performed by EBS in accordance with the IF profile. EBS also performs the calculation of fees expected to be paid by fund managers or FDIC administrators.

The Money Market Fund rates are contained in the client Fee Schedule. EBS calculates the fees expected from fund managers and FDIC sweep administrators based upon the average daily balance in each fund and the rates defined within EBS for the funds on a monthly basis. Upon completion of the billing cycle, invoices are created and published in the Vendor Payment Release Management section under the Vendor Fee Management Tab in EBS.

A monthly reconciliation is performed between the payments received from the money market funds and the fees expected per invoices systematically generated in EBS. CPBO Group Manager reviews and signs off the reconciliation. Differences exceeding a predefined threshold are reviewed and followed up to resolution.

CPBO processes fee waivers on behalf of the money market funds. In low interest rate environments, money market funds may opt to waive, or reduce a portion of the fees paid out to distributors of the fund. CPBO is responsible for applying the waiver to the IF proportionally as determined by the Fee Schedule with the IF.

#### ***Confirms***

##### Confirm Print and Mailing

On a daily basis, the Confirm DPG obtains data from the printing facility to create a summary of total envelopes, sheets received, and confirms processed. The Confirm DPG compares this summary to the mainframe application data for completeness.

Mailings are divided into three distinct types:

- Print and Mail – Client activity presented in a confirmation created by the Confirm DPG
- Print-Away – Client activity that includes mutual fund transactions
- Electronic – Email notification that confirmations are ready for viewing.

Mailings are performed daily. An automated reconciliation is performed on the print facility file and total confirms extracted from the mainframe logs by Confirm DPG. On a daily basis, the Print Management team

reviews the Confirm Reconciliation dashboard, summarizes the review and any actions taken in an email to the Director of Print Management for review.

### ***Statements***

Client statements, produced monthly, quarterly, or annually, are paper copies of a client's brokerage account activity for that time period, each with a unique client logo identifier. Pershing outsources the printing and mailing of the majority of client statements to a third-party print facility. In addition, there are two Pershing IFs that print and mail their client statements using Pershing approved third-party subservice vendors.

Introducing firms and their clients can enroll in electronic delivery of statements via NetXInvestor or at the IF level. Prior to enrolling in electronic delivery, clients are required to agree to terms and conditions. Enrolled clients are notified of the availability of electronic statements after month end statement processing via email. For e-Delivery notifications that are undelivered, the e-Delivery system automatically sends a hard copy notice of the availability of electronic statements. After three consecutive undelivered e-Delivery notifications, the e-Delivery system switches the account to hard copy delivery for statements. On a monthly basis the data is sent by a job scheduler via interface from the Pershing mainframe system to the e-Delivery system. Pershing uses Amazon Web Services to distribute electronic statements through the e-Delivery system.

To initiate the creation of a new logo or request a change to an existing logo, the account manager, conversion employee or compliance employee completes a Logo Request Form and uploads it to SharePoint with a sample of the logo to the Statements Control group (SCG). The SCG employee reviews and verifies the information on the Logo Request Form for proper spelling and formatting. The requestor then reviews the logo for accuracy. Upon receipt of these approvals, the logo is then uploaded to the mainframe for storage and KORR is updated with the necessary changes.

Inserts are informational documents that the IFs request to be mailed to their clients along with the clients' statements. The IF submits the inserts to the account manager, who then submits the request and the completed Insert Request Form to SCG on SharePoint. The insert is then forwarded to the Legal department for approval.

Estimates of the number of inserts required for a statement mailing are documented on the Statement Generation Report based on the volume of statements requested for a quarter or non-quarter month for that specific IF. SCG communicates this number to the requestor, which is responsible for checking that an adequate volume of inserts is delivered to the print facility.

Requests or updates to an IF's statement layout and Portfolio at a Glance (PAAG) are initiated through the use of the KORR Request Form, contained within the SCG SharePoint.

KORR Request Forms are submitted by the account manager within the Global Customers unit to the SCG via SharePoint. The SCG reviews the information on the KORR Request Form. The request or update is then entered in the KORR system, verified by SCG and subsequently reviewed by the requestor for accuracy.

SCG performs validation runs over statement accuracy monthly. The SCG communicates testing dates and lists specific changes or enhancements (logos, message or KORR changes) that are going into effect for monthly statements. When test runs are completed, the SCG informs business owners and the QA team that statements are available to test either online (E-Document Suite) or in printed form.

Business testers verify statements for appearance, format change, and the accuracy of line items. The tests vary depending on the department performing the tests. The test results are recorded in a test spreadsheet, which is returned to SCG along with a Statements Test Sign-off sheet that indicates the tests were performed, any defects or gaps were noted, and management approved of the test results.

A baseline test is performed at the beginning of every month. A comparison is made between the previous month-end hard copy account statements and the current statements to identify any new program changes that have affected the formats of the statement. In the following weeks, the validations are performed to verify that statements are being generated accurately. Business testers compare test statements to account information, account activity, portfolio holdings, etc. to determine whether line items are recorded accurately.

The Pershing QA team conducts validation of the monthly and quarterly statements to assess the accuracy and completeness of the data and format. QA utilizes automated scripts to perform regression testing with a sampling of accounts across eight brokerage sections (Annuities, Checking Activity, Exchange Rate Table, Global Cash, Pending Annuities, Purchasing Power Summary, Transactions by Type of Activity, and Your Account Information) per validation. Test results are logged in a test result sheet and a sign-off email is sent to SCG. If issues are identified, a Remedy ticket will be escalated and assigned through SCG to the responsible party and tracked until resolved. Once resolved, the change will be reviewed and closed by the QA team member that opened the ticket.

After each validation, SCG reviews the status of the test results and follows up on any issues reported. After month-end validation, SCG verifies statements contain the correct data prior to distribution to the print vendors.

SCG reviews the Statements Preliminary Reconciliation Report (STM809M0 aka 809) and Statements Reconciliation Report (STM810M0 aka 810) as part of the monthly statements reconciliation process. The 809 report is reviewed to confirm that the number of statements received balance to the number of statements expected and that there are no accounts for which a statement was expected but not received. After the statement production batch cycle, the 810 report is generated and compared to the 809 report to confirm that the numbers equal. The 810 report is a replica of the 809 report, except the 809 is populated by the audit log files and the 810 is populated by the audit log tables. Unexplained issues are escalated via Remedy tickets and resolved.

SCG reviews the Statement Reconciliation Report – Production Report on a quarterly basis; the report lists accounts eligible to receive a statement but for which a statement was not generated. The supervisor investigates each group of exceptions and confirms that there is a valid reason why the statement was not generated. If an exception does not have a valid reason, the supervisor creates a severity 1 incident ticket in Remedy and assigns it to the Statement Dedicated Programming group, which is part of Pershing Technology.

CD-ROMs are used as an alternative to hard copy statements. Pershing's CD-ROM vendor produces the CD-ROMs based on requests from an account manager within the Global Customers unit, a client service representative, the Legal department or the Compliance department to the SCG.

SCG verifies that data sent from the Pershing mainframe system to the CD-ROM and electronic document service providers is captured daily. A daily comparison is performed between the number of images sent and the number of images loaded.

On a monthly basis, the number of accounts eligible to receive statements are reconciled against the number of statements printed to identify any out-of-balance items that appear in WebFOCUS, the Statements reconciliation system. An incident ticket is automatically raised for any out-of-balance items and assigned

to Statements technology group for investigation and resolution. The Print Management Team (PMT) monitors the resolution of out-of-balance items. Once the out-of-balance item has been resolved by Statements technology group, PMT records resolution details, including the reason for the out-of-balance condition and the action taken, and updates the status of the out-of-balance item to “completed” to close the ticket.

### ***Prime Services***

Pershing's Prime Services offers margin financing, securities lending, trade clearance and custody to direct clients of Pershing. These clients include hedge funds, mutual funds, pensions, endowments and separately managed accounts. Prime Services is a department within the Prime Services/Collateral Funding & Trading unit, one of Pershing's principal business units. Prime Services coordinates with other business units across Pershing. These other business units have obligations and tasks that are not owned by Prime Services, but directly impact Prime Services.

### **New Accounts**

The following procedures are required to be completed prior to the implementation of a new account/relationship:

- Vetting Process
- New Business Acceptance Review
- Agreement for prime brokerage

When a new relationship is identified, a sales employee introduces the new client to a designated Integration Specialist (IS). An IS prepares the BAR Committee Transmittal, a checklist of required documentation, in order to present a new relationship for BAR approval. Upon compilation of required documents, a Prime Services Manager signs the BAR Transmittal for each new relationship. The Prime Services Integration department retains the transmittal in the client file.

After the client documentation is collected, the IS sends the following documents, as applicable, for pre-approval via the BAR electronic submittal system (eBAR):

- BAR Committee risk assessment profile
- Organization document for entity (Trust Agreement, Prospectus, Offering Memorandum [OM])
- Proof of entity existence (verify through third party or Certificate of Formation with state seal)
- SEC– Form ADV Part I and, II, or Customer Due Diligence (CDD) Certification.
- Executed Anti Money Laundering (AML) attestation letter
- Investment management agreement
- Tax forms (e.g., W-9, W-8BEN, or W-8IMY)
- Current financial information (e.g., audited financial statements, sample portfolio)

#### Business Acceptance Review

Prime Services presents new client relationships to the BAR Committee prior to new account opening. The BAR Committee reviews and approves or declines the client relationship. The BAR Committee decision is recorded within the BAR meeting minutes.

#### Agreement for Prime Brokerage

Upon receipt of the required client documentation and contractual agreements, a Prime Services Series 24 licensed manager authorizes and signs the agreement for prime brokerage. The following Pershing forms are required to set up a prime broker account:

- Agreement for prime brokerage
- New Account Form
- Authority document (LLC, LP, or Trust Authorization)

The following agreements are optional per fund type:

- Third Party Agent Authorization (if third party is trading on behalf of the entity)
- Option Agreement (if trading options)
- Portfolio Margin Agreement (if Portfolio Margin account)
- Special Custody and Pledge Agreement (if a custody bank is holding the assets)

#### New Account Setup

An IS submits the approved New Account Forms to Prime Support to open the account(s) on Pershing's books and records. The Prime Support employee notifies the IS of account number(s) via email and retains the original approved New Account Form(s).

Prime Services supports file transmissions to receive information, including end-of-day trade files from its clients. The IS and Prime Support will meet with the client to finalize requirements, discuss file layouts, introduce contacts and discuss next steps. Following the call, Prime Support sends an email of questions, layouts (if not sent prior) and sample files.



Once the formats have been finalized, Prime Support instructs the client to electronically submit test files. Prime Support tests end-of-day trade files in the test environment to ensure the file conforms to the agreed-upon format. Prime Support tests SFTP mailbox connectivity in the test environment to ensure successful receipt of end-of-day trade files. Prime Support meets on a weekly basis to discuss the end-of-day file integration with the Pershing Prime ISs and to discuss progress, dates and testing issues until the file is moved to production.

#### Prime Services Relationship Termination and Closing

A client's prime brokerage account with Pershing can be terminated at either Pershing's or the client's option. If a client notifies Pershing of the intent to close accounts, Pershing will initiate closing procedures, subject to management review. If Pershing terminates a relationship with a client, closing procedures will begin on the transfer date communicated to the client. Pershing provides notice of termination to the client in accordance with the agreement for prime brokerage.

Upon closing a Pershing prime brokerage relationship, the account manager for that client notifies the Integration Team via Email. The Integration Team, working through a checklist notifies the following of the termination via email: Prime Support, Trading Desks, Securities Lend Sales, Compliance, and Business Unit Controllers.

To complete closing the relationship, the prime brokerage account is closed in NetX suite and the remaining funds transferred.

#### Securities Lending

The SLS department is a part of the Prime Services/Collateral Funding & Trading unit. The primary focus of the SLS department is to borrow to cover for deliveries, shorts and deficits and to lend available excess.

The SLS department is also responsible for coordinating domestic security borrowing (borrows) with agent lending banks and IFs based on delivery requirements that result from trading activity on the Pershing TPS, OLCA, (FIS) SmartLoan System ("SmartLoan"), and FIS Global One.

In addition, SLS is responsible for coordinating domestic security lending (loans) with other IFs. After trades have been processed in Pershing's systems, SmartLoan calculates whether securities are in hypothecated inventory (inventory in the BOX), or if there is a need to borrow the securities to make deliveries. SLS is responsible for coordinating borrow and loan transactions for securities issued by companies domiciled outside of the United States (foreign securities). Borrow and loan transactions for foreign securities may be conducted with contra-brokers that are approved by the Pershing Credit and Market Risk Committee.

SLS borrow and loan bookkeeping is transmitted to Pershing's systems via activity data files received from SmartLoan (for domestic security transactions) and from Global One (for foreign security transactions). SmartLoan and Global One are software products from FIS that automate the securities lending billing process.

The SLS department assists Pershing's internal and external trading groups in obtaining traded securities without sufficient positions in those securities. The department's personnel attempt to locate the necessary securities at Pershing's authorized counterparties and borrow them in order to facilitate the settlement of an executed trade. Short Sale requests are approved in the PAL/BOLT application based on availability and automatically reduce the securities available for lending in PAL/BOLT.

SLS department monitors and reviews various reports regarding box loans, short sales, locates, borrows, system rates and changes, security allocation reports, and international borrows. On a daily basis, an employee indicates his/her review of the reports on the SLS Department Checklist and the SLS management signs off at the end of the day as evidence of their supervisory review.

The SLS department utilizes SmartLoan and Loanet, third-party applications provided by FIS, to process client requests. Trading counterparties are added to SmartLoan (domestic transactions) or Global One (foreign transactions) once an agreement is in place and authorized by the Securities Lending Operations. The counterparty parameters, such as credit limit and mark-to-market allowances, are input into SmartLoan/Global One and verified by Securities Lending Operations. Loanet is used to process finance lending and borrowing. The Syncova system calculates and applies security-level rebate rates to the short market values of a subset of Pershing client accounts. The logic used by Syncova incorporates third party market data and internal borrow data to derive the rates applied to the client's short market value. The FundsU system calculates a security-level accrual process similar to Syncova for all accounts not subject to the Syncova process. In addition, the FundsU system stores client level pricing information that is fed to Syncova.

A Prime Services Client Technology employee can manually override system-generated rates in Syncova based on instruction provided by a Securities Lending Sales trader. On a daily basis, the Syncova "Rate Override Report" is distributed to all Collateral Funding & Trading traders for review. On a weekly basis, a Securities Lending manager evidences his review of the Rates Override Report on a supervisory checklist.

Access to the PAL/BOLT, SmartLoan, Global One and Loanet applications is restricted to appropriate SLS employees via user and group profiles. Each group profile has access settings based on their role within the SLS department; this is controlled by Securities Lending Operations.

### ***Possession or Control***

Pershing promptly obtains and subsequently maintains physical possession or control of IFs' and clients' fully paid and excess margin securities. Consistent with Pershing's IBD and custodial services, Pershing complies with applicable local, state and federal laws. The description of procedures included below for properly maintaining possession or control over IFs' and clients' securities are to be considered in conjunction with applicable processes and controls in depository balancing, physical custody, clearance and settlement, and account transfers.

As a part of the nightly batch processing jobs, the Stock Record is automatically updated daily by SmartSeg/S3 with the calculated segregation memo for client accounts, using trade files from TPS, pending sales and bookkeeping files. Requirements for client accounts are calculated as per applicable rules and SmartSeg/S3 designates securities for segregation in IFs' and clients' accounts. On a daily basis, the Operational Efficiency department reviews the Under-segregated Report to ensure that there are no client accounts under-segregated. Under-segregated accounts are researched and resolved by the Operational Efficiency department. The final processed stock record, known as the Security Data file (SDF), is loaded onto OLCA, along with depository positions and projected settlements. A report containing client accounts with under-segregated securities is generated twice a day and reviewed by the Operational Efficiency department.

On a weekly and month-end basis, the Regulatory Reporting Manager and Regulatory Reporting department manager review the customer reserve calculation. A checklist is signed by the Regulatory Reporting Manager and department manager to document the review as complete. The Regulatory Reporting group maintains the review work papers and corresponding documentation.

OLCA provides a listing of trades open after settlement, tracks deliveries that are made, processes deliveries through the day and provides an automated means of clearing street-side and institutional trades. Good control location accounts in OLCA are set up or changed by the DB group and a supervisory checklist is completed and approved. A weekly Cumulative Deficit Report is generated and items greater than \$100,000 and selected items less than \$100,000 are communicated to Pershing senior management.

A monthly deficit report is generated to document the cumulative deficit report findings for the month. This report is reviewed and signed off by Operational Efficiency management.

#### Domestic Deliveries

OLCA automatically submits memo-segregation instructions to the DTC for applicable securities. The amount of the memo-segregation instruction calculated by OLCA has four scenarios. For excess securities, memo segregation is equal to the requirements, allowing excess shares to be free at DTC. For instances where the requirements are equal to possession or control, memo segregation is equal to DTC holdings. For deficit, if there is no stock loan, memo segregation is equal to DTC position; if there is a stock loan, memo segregation would be equal to possession plus the lesser of the deficit or stock loan position. The Stock Loan department attempts to borrow securities to complete a delivery. The system allocates and processes deliveries through the DTC which are settling, or are settled and sufficient excess exists, or will wait on deliveries were insufficient excess exists. These deliveries are determined from the SDF file.

The OLCA system provides online open receive and deliver files, which are updated on a real-time basis. Availability is updated on a real-time basis and allowable deliveries are satisfied. The system recommends deliveries on Institutional Delivery (ID) or Delivery vs. Payment (DVP) deliveries on the night of settlement date-1 for settlement on trade date+2 based upon anticipated receives. If an anticipated receive, including Continuous Net Settlement (CNS), does not come in, memo-segregation will block unallocated deliveries. The OLCA system allows for the turnaround of securities in compliance with SEC rules.

A Delivery Deficit Report is generated by SmartSeg at the end of seg maintenance and is monitored by the Operational Efficiency group on a daily basis. Delivery deficits identified within the suspense account are reviewed by the Operational Efficiency group subsequent to resolution to verify resolution is appropriate. Operational Efficiency management signs off on the Delivery Deficit Report evidencing review and approval.

#### Foreign Deliveries

Pershing complies with regulatory requirements when delivering, receiving and settling securities in foreign depositories in non-USD denominated currencies.

Non-DTC deliveries are allocated by the OLCA system based upon availability. Deliveries are not fulfilled based on anticipated receives. The system allocates and instructs on international deliveries which are settling, or are settled and sufficient excess exists, or will recycle deliveries where there is insufficient availability. International instructions on trades will settle in a clearance account (depository) that is not treated as a good possession or control location or will settle directly out of a custody account that is a good control location, if applicable to market convention. Customer's fully paid for and excess margin securities are kept in a custody depository account without any depository liens. The system recommends international deliveries on settlement date-1 or settlement date-2 based upon market and availability, in compliance with SEC rules. Account transfer deliveries of fully paid client securities are made directly out of Pershing's custody account so that a one-day deficit is not created by moving securities from custody to clearance.

Pershing uses GMAR as the books and records for foreign transactions processed by the International Clearance department. To protect non-USD denominated fully paid client securities, client securities (excluding RVP/DVP clients) are considered fully paid for and are treated as client requirements.

#### *Fed Deliveries*

The Government Clearance department transmits clearing instructions through the OLCA system. Deliveries are made by releasing the available securities through the Broker Dealer Clearing system. The OLCA system allows for the turnaround of securities where sufficient availability exists.

#### *Securities in Transit*

Reconciliation between transfers on TOLS and the street-side account is performed daily. Any breaks are reviewed and resolved by the Custody department (for custody and mandatory corporate action transfers) and, by the Corporate Actions department (for voluntary corporate action transfers).

Within the Corporate Actions department, requests for confirmation from the transfer agent are initiated (submitted) when open transfers reach between 20 and 39 days old. Within the Custody Services department, requests for confirmation from the transfer agent are initiated (submitted) before open transfers reach 40 calendar days old. Custody Services transfers that reach 40 calendar days old on a weekend or holiday are initiated for confirmation on the following business day. If confirmation is not received by the 40th day, the transfer is automatically flagged in TOLS as “unconfirmed” and items unconfirmed at week and month end are reported to the Regulatory Reporting group and the Credit Committee.

#### *Receives (Including Buy-ins)*

Fail to receive (including cases where market action has been initiated) balances are included as a credit in the cash reserve formula computation. This increases the cash balance required to be maintained by Pershing in a segregated reserve bank account for the exclusive benefit of IFs and clients. On a monthly basis, the Regulatory Reporting Manager reviews the reserve formula computation and approves the cash balance.

#### *Stock Loan Deficiencies*

The stock loan add screen in SmartLoan displays any excess available for stock loan and allows a SLS employee to process a loan. Once the loan has been processed in SmartLoan, an electronic message is sent to OLCA to reduce available excess. OLCA will ascertain that the transaction will not create or increase a deficiency.

On a daily basis the Stock Loan Recall Report (generated by OLCA) is reviewed by the Stock Loan department. If a security in which a stock loan exists becomes deficient, the following procedure are followed:

- Loan termination notices are issued to the contra broker by 11:30 a.m. on the second business day after the deficiency has been identified.
- The Stock Loan department continues to attempt to borrow the deficient securities.
- On the fourth business day after the issuance of the loan termination, the contract is closed out if the securities are not returned and the firm is still deficient the securities.

#### *Buy-ins of Short Security Differences*

The Banking and DB department advises the appropriate business unit to buy-in (cover) unresolved short security positions 45 calendar days following the verification or comparison of securities held in Pershing’s vault by the Custody department.

Completion of Customer Sell Orders

If a client sells a security but does not deliver the security within the prescribed timeframe, the Margin department will either file for an extension or institute buy-in instructions for the security.

Reorganization

Mandatory reorganizations, maturities, full and partial call announcements received from custodians, depositories or other sources are systemically or manually updated into the REOR application. On allocation date, the Corporate Actions department applies holds to client accounts to prevent automatic processing by the REOR application of securities which have been sold or transferred out but not settled.

Pershing automatically updates the stock record based on instructions from depositories' lottery results, where a random lottery determines which Pershing accounts are affected by the redemption.

On a daily basis, accounts affected by the call and that are listed as tech short on the Partial Call Lottery Technical Short Report are monitored and notified by the Corporate Actions department. If the redemption payment to the account results into a short position, a deficit is created and identified by the Operational Efficiency group.

In order to ensure that client securities involved in a voluntary reorganization, for which tender instructions have been received, are not used to meet delivery needs, the following procedures are followed:

- When a client instructs Pershing to tender shares for a voluntary reorganization, a REOR instruction memo for these shares is created by the REOR system on Pershing's Stock Record.
- If the quantity of the REOR instruction memo is greater than the quantity in the Stock Record's Seg memo, the REOR system will generate bookkeeping entries for the difference in the quantities and includes them in client requirements in the overtender suspense account. These entries increase the quantity required to be in Pershing's possession or control and reduce availability. Normal possession or control procedures ensure securities for which a deficit condition exists are not utilized and brought into possession or control.
- The fulfillment control form is utilized to indicate net client instructions which still need to be fulfilled by Pershing. If there are net instructions that need to be fulfilled, the form would indicate the total client instruction fulfilled received less tendered, which is the requirement to be fulfilled. The form also indicates the clients' and street side's shorts. Based on availability, a Pershing employee selects the quantity to tender.
- When DTC replaces the target security with a new contra CUSIP number, the recording mechanism on Pershing's books is to mirror DTC's movements to short the stock record account (fulfillment account) for the old CUSIP number and long the account the new contra CUSIP number. The fulfillment account is a good control location and the long position is included in client requirements.
- To protect client securities subject to a voluntary reorganization from delivery during the final liability process, when holding a client account or counterparty liable with a net short position, a segregation requirement is added to the Stock Record for the client account or counterparty liable with net short positions. The shares long are suspense positions and are included in client requirements. These entries increase the quantity required to be in Pershing's possession or control and do not increase availability. On a monthly basis, the Reorganization department reviews the accounts where net short positions are held liable. Normal possession or control procedures ensure any securities for which a deficit condition exists are brought into possession or control. Segregation requirement entries are reversed upon allocation of the offer terms and final settlement with all liable parties.

*Stock Dividend and Bond Deficiencies*

Stock dividend/bond receivables are reduced for possession or control through the following procedure:

- A system-generated listing of stock dividend and bond (pay in kind) receivables is received and reviewed by Operations and Dividend and Bond Interest management.
- Aged items are resolved by requesting an extension or issuing a buy-in instruction.
- Receivables aged 45 calendar days or older from payable date, and the supporting documentation, are reviewed by Operations management using a Short Market Value (SMV) Aging Report.
- If the documentation supports filing for an extension from the NYSE, an extension is requested. If the extension is granted, the receivable remains until closure or the extension period expires.
- Items that require market action are moved into the Stock Dividend account. Items in this account are given to the Buy-in department to initiate market action.

*Subscribe Annuity*

Annuity Operations provides automated processing of annuity applications to an IF, which can enter annuity product purchases through Annuity Order Entry (AOE) facility in NetX360. Annuity products are available through the Ebix Exchange's Annuity Net order entry platform, a third-party vendor tool branded by Pershing as "Subscribe." An insurance carrier receives a request from the IF to create annuity products to be available for purchase. After the insurance carrier adds the products to the platform, the products can be made available for purchase by the IF or Annuity Operations, through "Foundry," an Ebix Exchange tool. Pershing's access to Foundry is restricted to authorized Annuity Operations and Financial Solutions employees and is reviewed annually.

Annuity orders require carrier, IF and state forms to be completed upon processing of an order. These forms are automatically generated for printing upon completion of an order through AOE. Carrier forms and business rules regarding these forms are controlled by insurance carriers through Product Profile for Annuities (PPfA). IFs can request Pershing to add customized rules and customized forms. These requests are managed by Financial Solutions. Processed annuity orders are placed into the NetX360 Work Flow tool until IF principal approval is received.

Once requisite approvals have been received, orders are sent to the DTCC in a daily batch cycle and then sent to insurance carrier(s) by the DTCC.

Annuity orders fully approved by the IF prior to the daily cut-off are automatically transmitted to the respective insurance carriers through the DTCC. Orders settling funds through the brokerage account are settled through the DTCC Money Settlement process on the same day as purchases are transmitted to the insurance carriers. Customer accounts are debited on the same day that bookkeeping runs. Debit advices are sent to clients for brokerage settling orders. ASPS runs a bookkeeping entry to credit respective IF commission accounts for net settlement, if applicable.

Orders that do not receive necessary approvals within a specified timeframe expire automatically according to rules mandated by the FINRA Reg. 2330 or Pershing settings. Orders settling through brokerage accounts where funds are not available remain in the work flow, even if principal approval was received. Annuity orders are subject to the following expiration timeframes:

- FINRA: Seven business days from principal review for variable new purchases and variable 1035 exchanges.
- Pershing: 30 business days for sub-pays, fixed new purchases, and fixed 1035 exchanges.

Annuity Operations does not settle non-brokerage settling orders. Receiving carriers are responsible for collecting funds from financial institutions for annuity purchases not settling through the brokerage account. These orders are only subject to principal approval expiration timelines.

An Annuity Operations employee (Subscribe employee) reviews approved trades for a given day that are flagged by ASPS as having a registration mismatch to verify the owner registration information on the annuity matches the owner information on the Pershing brokerage account. If a mismatch exists, the order is passed to the Annuity Operations Supervisor (Subscribe Supervisor) to be deleted. A Service Center request is subsequently sent to the IF informing them of the issue and the action taken.

After annuity trades are sent to the DTCC, a Subscribe employee reviews a system-generated report evidencing acceptance of the annuity order file from the DTCC. This file contains a count of records sent, received and confirmed by the DTCC. If the report does not indicate acceptance or has not been run timely, a Subscribe employee notifies management. The Subscribe Supervisor works with the Pershing Technology group (PTG) to send the file and determine the root cause for failure.

A daily DTCC file with rejected orders is transmitted to Pershing from the DTCC. A Subscribe employee reviews the DTCC Order Reject Report for rejected orders. Rejected orders are communicated to management for research and same-day resolution. If the rejection was caused by Pershing or Ebix, the IF is contacted to discuss and process a manual work around, described below.

If an IF cannot process an order as a result of a system failure at Pershing or Ebix, annuity purchases may be processed manually. A Service Center ticket is created when the IF contacts Annuity Operations to process orders manually via paper application and manual movement of funds. Documentation is transmitted to the insurance carrier via secure electronic transmission. Funds are sent to the carrier using a Fed fund wire. Any manual entries are reviewed in JR10 by a Subscribe Supervisor. These entries are printed from JR10 and initialed by the Subscribe Supervisor to indicate review.

A daily status report is transmitted electronically to the Subscribe management team indicating:

- Whether the DTCC has accepted the order file
- Whether there were manual purchases processed for the day
- Whether there were any orders that were deleted due to registration mismatch
- Whether there were any orders rejected by the DTCC

This email is printed by a Subscribe Supervisor daily and initialed, indicating review.

On a weekly basis, the Annuity Operations Senior Manager (Subscribe Senior Manager) selects trades to review annuity owner information against Pershing account owner information to confirm that they match. Discrepancies are tracked and the IF is notified via Service Center to make certain that annuity owner information is either updated at the carrier or the account is updated at Pershing. Additionally, the Subscribe Senior Manager confirms all documents were transmitted to Pershing from Ebix for reviewed orders. The Subscribe Senior Manager signs off on an owner registration checklist to evidence the weekly review.

Pershing receives annuity policy position data from each carrier through the DTCC on a “positions file for orders” that are processed by the carrier and placed “in-force.” Positions are documented in client accounts as a “below the line” holding and receive daily valuations from the carrier. On a bi-weekly basis, if position files have not been received for orders sent through Subscribe, Annuity Operations will send an email notification to the insurance carrier requesting a status on pending orders.

Orders that are determined by the carrier as “Not In Good Order” (NIGO) are rejected. Funds are transferred back to the brokerage accounts for brokerage settling orders. The carrier works directly with the representative or IF to resolve issues and facilitate the movement of funds. Upon resolution, orders are re-submitted by the IF or representative, if required.

### ***CAPS and Firm Trade Reporting***

#### **Commission and Payout System**

Every IF is set up in CAPS. The IF completes a questionnaire that includes the parameters firm setup, hierarchy setup, account executive (AE) setup, payout setup and reports the IF wishes to activate and then emails the questionnaire to the CPBO and Reporting department. This questionnaire is kept on file along with a print screen of the IF’s setup. A supervisor reviews the accuracy of the setup.

For existing IFs, parameters (e.g., setup, reports, add or update AEs, state registrations, payouts, etc.) can be changed. Requests for these changes are made by the authorized IF representative in an email communication form that is kept on file. An online feature in CAPS allows information to be entered or changed. The appropriate personnel at the IFs have input capability for the aforementioned features and for adjustment maintenance; however, an IF may ask the CPBO and Reporting department to perform the maintenance (for example, when the person with the access to make the adjustment is out or the IF does not know how to add, update or make an adjustment). The user ID of the individual who entered the information is tracked on the screen where entered.

On a daily basis, CAPS collects all P&S trade activity, 12b-1 trail commissions and other optional fee entries from the bookkeeping file. These transactions and any online commission adjustment journals made to the system are captured and reported on a trade date basis. Scheduled jobs are in place to feed the principal and firm trading activity details from bookkeeping and TPS to CAPS. A UACR system configuration is implemented in CAPS that performs an automated reconciliation on the total number of records transferred. In case of batch job failures, the Application Production Support team DPG is contacted to investigate and resolve.

CAPS is systematically configured to split commissions for up to six participating Registered Representatives (RRs). CAPS also has an online adjustment facility that allows IFs to re-direct or split commissions with other RRs, or adjust a sales credit without having to cancel and re-book the trade through P&S, which would generate a confirm. CAPS also allows pseudo trade and fee revenues to be entered and processed through the system, which requires a supervisory review and approval from the IBD.

#### **Firm Trading Portfolio System**

Every IF is set up on the Firm Trading Portfolio System (FIRM). System capabilities allows the IF to customize profit/loss calculations and reports to meet their specific requirements. The IF completes a questionnaire listing these capabilities and emails it to the CPBO and Reporting department. This questionnaire is kept on file along with a print screen of the IF’s setup. A supervisor reviews the accuracy of the setup.

FIRM provides reporting on principal/firm trading activity. Scheduled jobs are used to feed principal and firm trading activities from GMAR to FIRM. Based on the data feed received from GMAR, Firm Trading Reports are generated from FIRM. The Firm Trading Reports are customized based on the IF’s selections indicated in the questionnaire and are sent to clients as requested.



Scheduled jobs are in place to feed the principal and firm trading activity details from bookkeeping and TPS to FIRM. A UACR system configuration is implemented in FIRM that performs automated reconciliation on the total records transferred. In case of batch job failures, the Application Production Support team DPG is contacted to investigate and resolve.

The FIRM vs. GMAR Out of Balance Report is generated on a daily basis to capture quantity and balance differences on a trade date and settlement date basis. Discrepancies are reviewed and adjusted in FIRM. Firm Trading management performs the monthly review of the discrepancies adjusted in FIRM.

### ***Position and Balancing***

#### **IF Access and Configuration**

Pershing offers a range of standard files to the IFs (clients). IFs choose which standard files they wish to receive based on their business, customer and data requirements. IFs are granted entitlements to the Standard File Delivery Information (SFDI) application to configure their extract criteria. SFDI is a front-end application that is available within NetX360.

Access to extract data is based on the entitlement granted. An entitled user, at the IF or internally at Pershing, cannot configure data outside of their own IF. Entitlements are managed by the EMS tool. To have access to SFDI, a user needs to be granted the BFE "Standard File Delivery." SFDI limits a destination to a single IF (or appropriate group of IFs when applicable). SFDI then checks that entries made for that destination are for that IF, based on the user entitlement configuration, even if the (internal) user has entitlements for other IFs.

SFDI allows the IF or authorized individuals to configure standard file delivery changes under a work flow. Edit checks exist to limit the IF or authorized individual to make changes to their appropriate destination. In addition, edit checks exist to prevent the entry of a configuration that would duplicate data on the standard file. Approvals are required for configuration changes. A peer review of SFDI configuration changes is performed.

#### **Standard File Data Integrity**

A Dedicated Batch Monitoring team monitors the batch cycle and escalates issues regarding batch processing. ESP schedules are used to check that required application files are created before the Standard File Creation/Delivery stream is triggered for specific file types. Datasets are secured to ensure that no data is manipulated prior to, during, or after processing. Input files are verified to confirm that data has been passed from the source application. Standard files contain header and trailer records. The header record displays the file type, description, and batch cycle date; the trailer records display the record count of the file.

Delivery jobs verify the cycle date in the header record against the batch cycle date to ensure that the current processing cycle data is being transmitted. Each standard file record is verified against the configuration database to ensure that the generated record is configured to be delivered to the destination for which it was created for. In case of any job failure, an email alert is automatically sent to Standard File Delivery Infrastructure team and Data Delivery department for research, investigation and resolution.

#### **Standard File Creation and Change Management**

A list of published standard files is accessible to view via the internet. The files include layouts, supporting appendices, glossaries of terms, helpful hints and notifications. Pershing occasionally updates its standard offerings to ensure customers continue to receive comprehensive, useful and accurate data available. Standard files may be created, updated or retired for reasons such as regulatory or industry mandates or Pershing systems changes.

New or updated standard files go through a series of approvals prior to development. Each standard file is assigned an application owner. A standard process checklist is followed by the application owner in order to complete the steps to create or modify a standard file. The Standard Files Committee (SFC), a team comprised of legal, business and technical SMEs, must approve creation of new standard files or updates to existing ones. After approval from the Standard File Project Manager (SFPMP), the SFPMP creates or updates layout, then the File Spec which was filled out by development team is set for approval by Data Delivery and SFDI via email.

The technical SMEs are responsible for configuring the mainframe applications according to the standard file releases (layout). Standard file releases follow the Change Management process, as covered in BNY Mellon's CMITS SOC 1® Report.

### ***NetX360 Report Center***

#### ***Setup of New Reports and Changes to Existing Reports Available via NetX360 Report Center***

Pershing's platforms process the generation of reports and reports are loaded into NetX360 Report Center to be retrieved by IFs. New reports are set up in NetX360 Report Center upon approval of a Report Governance Council on-line request form accessed through the Council SharePoint site. The Report Request Form filled out by the business owner through the Council SharePoint site. The business owner submits the completed form to the Report Governance Council for approval. Prior to the approval, the Report Governance Council invites the business owner to discuss and review the form. Once approved, the Report Request Form is sent back along with a DPG form to the business owner, who submits the request by email to Output Management team for setup.

Requests for modifications to existing reports in NetX360 Report Center require completion of the Report Request Form by the business owner. Upon completion of the form, the business owner submits the request to Output Management for the changes.

#### ***Report Testing***

Upon receipt of the approved request, a test report is created in NetX360 Report Center for the requestor to test. NetX360 Report Center does not have an edit mode. Once testing is completed successfully, the tester signs off on the report on the on-line request form which is sent to Output Management before the report is promoted to the production environment. The business DPG promotes the report and load jobs to production.

If the test is not successful, the report is sent back to Output Management and DPG to make the necessary adjustments. Reports are available to IFs via NetX360 Report Center based on the requests (e.g., frequency, criteria) indicated on the Report Request Form. Reports are in PDF and TXT format where the data is not alterable.

Note: Access to the NetX360 application for introducing firms is covered in the Logical Access and the NetX Suite of Products control objectives.

#### ***Report Center Incidents Monitoring***

Report Center is monitored systematically through the use of the MONA tool. MONA alerts reside on an internal dashboard, which will generate alerts and write logs in case of job failures. If a report is not generated completely, an automated alert is created, and the incident failure is monitored and tracked to resolution the same day by the NetX suite Dedicated Programming group. MONA is not configured by a particular report; it is set up to publish alerts for any report processing error in Report Center.

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***Managed Accounts Contributions and Withdrawals***

Contribution notification service orders are systematically generated daily for any account for which a contribution has been posted from the previous business day. Accounts, up to 150 in total, are aggregated to produce one service order per Money Manager. The service order contains the date of the contribution, account number, description of contribution, and amount of the contribution. Upon receipt of the service order ticket, an Account Maintenance Administrator reviews it to ensure it is in good order. Upon the completion of a successful review, the Account Maintenance Administrator approves the service order ticket. If the service order ticket is not found to be in good order, it is rejected and the account referenced in the service order is excluded from the Money Manager notifications.

After an Account Maintenance Administrator has approved a contribution notification service order ticket, it is classified with a “completed” status. The service order ticket is posted to the applicable Money Manager Workstation for review and/or possible action.

Withdrawal notification service orders are systematically generated daily for any account for which a disbursement has been posted from the previous business day. Accounts, up to 150 in total, are aggregated to produce one service order per Money Manager. The service order contains the date of withdrawal, account number, description of withdrawal, and amount of the withdrawal. Upon receipt of the service order ticket, an Account Maintenance Administrator reviews it to ensure it is in good order. Upon the completion of a successful review, the Account Maintenance Administrator approves the service order ticket. If the service order ticket is not found to be in good order, it is rejected and the account referenced in the service order is excluded from the Money Manager notifications.

After an Account Maintenance Administrator has approved the withdrawal notification service order ticket, it is classified with a “completed” status. The service order ticket is posted to the Money Manager Workstation for review and/or possible action.

A monthly review is performed by an Account Services individual independent of entry to determine that the contribution and withdrawal activities were completed accurately and timely in accordance with internally developed standards and were logged on the QC Review Form.

***Managed Accounts Reconciliation******Daily Reconciliation***

On a nightly basis, accounts, regardless of activity, are run through a reconciliation process that compares each account’s share and cash balance within Fiserv APL to the share and cash balance at the respective custodian or sponsor. DVP and manual accounts are reconciled on a periodic basis as agreed to with each client. This reconciliation process creates outage reports of share and cash differences. A Reconciliation Administrator investigates the outages daily and takes action where appropriate in Fiserv APL in order to match the respective custodian’s or sponsor’s records wherever possible. The Reconciliation Administrator evidences the research and resolution for each break on the reconciliation outage reports.

On a daily basis, the Reconciliation Administrator notifies designated trading contacts of applicable Managed Accounts traded accounts that are not considered fully reconciled prior to the commencement of trading.

Outage reports are reviewed and a sample of breaks are re-performed by a senior peer to determine appropriateness. The completed reports are reviewed by a Reconciliation Supervisor.

*Pricing and Security Master Maintenance*

Security prices are automatically priced according to predefined pricing application rules. New security information added or security information modified within the portfolio accounting system is agreed to industry data or other authorized sources by the Reconciliation team. New securities are added or existing securities are modified within the portfolio accounting systems by the Reconciliation team on a daily basis. At month end, the security pricing in Fiserv APL is agreed to industry data sources.

*Quality Assurance Reviews*

Periodically, data validation checks are performed on security attributes and the Reconciliation Administrator saves their completed outage reports to the designated document repository. Any exceptions are communicated to the appropriate Reconciliation Administrator for resolution. A sampling of outages is reviewed to validate that the conclusions reached by the Reconciliation Administrator are appropriate.

*Managed Accounts Investment Support Services**Investment Models*

Investment models define an account's investment allocation and are established in the portfolio accounting system as part of the new account setup process in accordance with properly authorized instructions. Cash inflows (i.e., initial contributions, reinvestments), cash outflows (i.e., withdrawals, account closures,) and fluctuations in the value of an account's holdings, lead Managed Accounts to process transactions in order to rebalance account holdings to match the selected investment model.

Investment models are changed upon request from the client, the respective money manager or through Managed Accounts personnel. Changes to investment models are implemented in accordance with properly authorized instructions.

*Trade Processing*

For Managed Accounts traded accounts, the ISS team utilizes Fiserv APL trading functionality ("trading tools") to determine which orders should be processed to rebalance an account. Trade blocks recommended by the trading tools are listed on the block reports. The ISS employees review these reports to determine that the orders are reasonable based upon the defined investment model and includes these reports in the daily trading package. If the orders are not reasonable based upon the model or other relevant factors, an ISS employee will correct the order in the trading tools and include evidence of the revised orders in the daily trading package.

Orders are created and committed in the portfolio accounting system and sent via file delivery to the respective custodian for execution throughout each day. Rejected trades are reviewed by an ISS employee and resolved in accordance with client instructions.

On the days (T + 1 or T + 2) after orders are executed at the custodian, an ISS employee compares the orders committed in the portfolio accounting system to the trades executed by the custodian to determine that each trade was executed accurately. Any exceptions are investigated and resolved. The results of this review are included in the daily trading package.

*Daily Trading Package*

The contents of each daily trading package are reviewed and approved by the ISS Manager or designee.

### ***Managed Accounts Performance Reporting***

Managed Accounts provides quarterly reports on account/household performance that include data from multiple internal and external sources. The Reporting team performs various reconciliations and variance analyses to verify the integrity of the data. Exceptions identified through these data verification procedures are researched and resolved before the related client report is issued.

### ***Automated Performance Calculations***

The performance reporting application automatically calculates the account level performance completely and accurately based on data in the portfolio accounting system.

### ***Variance Analysis***

The Reporting department performs variance analyses (market value analysis, return on investment analysis, etc.) to determine whether the data presented in the quarterly reports conforms with expected results. Anomalies are investigated and resolved before the respective quarterly report is issued.

### ***Quarterly Project Plan***

In order to plan for each quarterly reporting cycle, a project plan is developed that defines critical tasks, related timelines and the assigned owners and provides a means to track the Reporting team's progress against the client SLAs.

### ***Postmortem Session***

At the conclusion of each quarterly reporting cycle, a postmortem session is held to discuss the accomplishments and challenges of the previous quarter. Meetings are held with key participants to identify potential improvements in the process.

### ***Quarter-end Unreconciled Accounts***

On a quarterly basis, the Performance Reporting team performs the pricing validation checks on accounts that are not fully reconciled as of the reporting period end date. Quarterly reports are not issued until the respective accounts have been fully reconciled or assessed by the Performance Reporting team.

### ***Document Management (DM) Data Processing***

The Document Management system captures, indexes, stores, routes, and retrieves financial documents for introducing firms. Financial documents are converted to digital format, indexed according to user-defined fields, and archived onto secure and scalable media for the regulatory-compliant preservation of content. The Document Management system architecture, collectively referred to as DM, is comprised of internally and externally developed products hosted by BNY Mellon Technology including Extract, Transform, and Load (ETL) jobs for migrating and extracting Pershing Standard Files, TWAIN compliant scanners, Sterling SFTP Mailboxes, Kofax Document Capture Software (Kofax) and Elastic Cloud Storage (ECS). The DM system has the capability to accept documents through following methods:

**Document Scanning and Faxing** – Documents can be faxed or sent to Pershing via mail to be scanned using TWAIN compliant scanners. Upon completion of scanning or receipt of a fax, the documents are indexed using Kofax according to predefined metadata (i.e., client identifier, account number, and document type, user-defined fields, etc.).

**Sterling SFTP**– Document batches including images and metadata can be uploaded to a client-specific Sterling SFTP Mailbox and processed directly into ECS.

**Upload** – Documents can be uploaded via NetX360. These documents are processed directly into ECS.

After the documents have been indexed or uploaded, the images and metadata are processed into ECS on a real-time basis. The DM system manages users through the Pershing Mainframe NetX suite entitlements (NPNX) or Pershing EMS system and client access is provided through NetX360. Only NetX360 users with the NPNX assignment on the Mainframe can access a particular account and view the documents indexed to that account. Search and retrieval functions are provided through NetX suite of products and can locate documents based on account number, document type, and specified date range to retrieve the documents from ECS.

#### Document Scanning and Faxing

Physical access to the Scanning and Indexing workspaces is restricted to Document Imaging personnel via keycard readers. A list of personnel with access to the workspace is posted on the door.

Physical client documents received through the United States Postal Service (USPS) or various overnight couriers are scanned in a secure workspace located in Jersey City, NJ or Lake Mary, FL processing locations. Documents are scanned on dedicated mailroom scanners using Kofax software. Once the documents are scanned, they electronically move to the Kofax Validation queue for account number and document type assignment (indexing). If an issue is identified, the documents are placed in a Quality Control queue for Supervisory review. The scanning associate reviews and resolves each issue before forwarding the batch within Kofax. Access and entitlements to the Kofax application are assigned through specific user groups and employees are assigned based on job responsibilities. Managerial entitlements, including Kofax Batch Manager and the Quality Review queues, are restricted to management and supervisors within the Imaging group. Super user access to administer Kofax and its users is restricted to the Kofax Maintenance group.

Documents can be faxed to Pershing on a dedicated Pershing fax line or a client-segregated fax line, as agreed upon in the Business Requirements Document (BRD). Many documents are received with a barcode that includes an electronic description of the document and placed in the clients fax queue in Kofax for review. If the barcode is unreadable or missing, the document is flagged by the system and automatically moved to the Quality Control (QC) queue to be resolved by a Document Imaging supervisor.

When a batch is received from scanning or fax to Kofax, documents are allocated to a queue and assigned to an imaging associate, who reviews the documents and commits the batch to ECS. Using the Kofax Batch Manager, a real time “dashboard”, showing how many work items are in the various Validation (Indexing) queues (or “batch classes”), a Document Imaging supervisor monitors and manages the processing activity and workload. Items that are committed are removed from the queue.

Systemic edit checks are in place for Kofax to prevent imaging personnel from entering illogical or incorrect client data, such as non-Pershing account numbers or invalid characters within the account number, when committing batches. Unreadable documents and uncorrectable errors are forwarded to management for Quality Control (QC) review.

A document type and account number must be assigned to each document before it is committed to ECS. Edit checks are in place to prevent an associate from committing a document without this information. Documents cannot be committed with an invalid account number. If an account number is invalid the system will default to a client specific reject queue in real-time for review, if a client has contracted a specific Dedicated Fax Line. Rejected documents are placed in the client-specific ‘Unknown’ queue for client resolution.

In the event that a problem occurs in a document received, such as the account number does not match electronic properties detailed in metadata, the incident is resolved by a Document Imaging Supervisor or Manager and if necessary, manually documented in an incident ticket.

Daily Processing

Scanned or faxed documents which were indexed and reviewed via Kofax are processed into EIS. Documents and metadata being processed from Kofax into Document Imaging (DOI), recorded systemically in ECS and the information is accessible using the Summary Throughput by Batch Class report. The report indicates the number of documents committed to EIS/DM from Kofax.

Clients also upload document batches to be directly imported into the DM system. Upon receipt of an incoming SFTP notification, the image import job decompresses the images and metadata, loads the batch from the client Sterling SFTP mailbox, and processes the batch into DOI and stored in ECS. After the batch has been processed, a summary log is uploaded to the client Sterling SFTP mailbox indicating the processing failures and successes. If there is a failure, the client and Document Imaging group are notified via email for their review and resolution.

## COMPLEMENTARY USER ENTITY CONTROLS

Pershing's processing of transactions for IF and client accounts and for the clients of Managed Accounts and the related controls were designed with the assumption that certain controls would be placed in operation at user entities. It is not feasible for the control objectives relating to the processing of transactions of user entities to be solely achieved by Pershing; therefore, each user entity's internal controls must be evaluated in conjunction with Pershing's controls described in Section IV of this report.

This section describes some of the controls that should be in operation at the user entities to complement the controls at Pershing. Each user entity must evaluate its own internal controls to determine if the following procedures are in place. Furthermore, the following list of controls is intended to address only those controls surrounding the interface and communication between each user entity and Pershing. Accordingly, this list does not purport to be, and is not, a complete listing of the controls that provide a basis for the assertions underlying the financial statements of entities.

Controls should be in place to provide reasonable assurance that:

General Computer Control Objective	Complementary User Entity Controls
General Computer Control Objective A.2.1 and D.34.1 (Logical Access, Document Scanning and Faxing)	<ul style="list-style-type: none"> <li>IFs maintain policies governing employee practices for logical access to Pershing's applications, notify Pershing of authorized users with administrative access and periodically review employees' and clients' access to Pershing's applications.</li> <li>Physical and logical access to Pershing's systems via terminals at user entity locations is established, monitored and maintained by the user entity.</li> </ul>
General Computer Control Objective A.3.1 (NetX Suite)	<ul style="list-style-type: none"> <li>IFs exchange certificates and URL values with Pershing completely and accurately.</li> <li>IFs approve new SSO implementations.</li> <li>IFs set up and maintain test environment configurations during SSO implementation.</li> <li>IFs perform end-to-end testing of the changes and sign off on the testing results.</li> <li>IFs set up and maintain production environment configurations.</li> <li>IFs perform production testing and sign off on the testing results.</li> </ul>
General Computer Control Objective A.3.2 (NetX Suite)	<ul style="list-style-type: none"> <li>IF administrative accounts are limited to authorized individuals.</li> <li>Access granted by the IF administrative account is approved before access is provisioned.</li> <li>Access for terminated or transferred employees is removed in a timely manner by the IFs' administrative account.</li> <li>The IFs recertify users' access on a periodic basis.</li> <li>IFs notify Pershing of changes to the listing of authorized users with administrative access in a timely manner.</li> <li>IFs maintain policies governing employee practices for logical access to Pershing's applications, notify Pershing of authorized users with administrative access and periodically review employees' and clients' access to Pershing's applications.</li> </ul>



<i>Control Objective</i>	<i>Complementary User Entity Controls</i>
Transaction Processing Control Objective B.2.1 (New Account Setup and Terminations)	<ul style="list-style-type: none"> <li>Instructions and information provided to Pershing by the IFs and by the IFs' clients are in accordance with the provisions of the new account agreement and relevant clearance agreement.</li> <li>Pershing receives complete and accurate information timely from the IFs used to add, delete or change information as it relates to client and IF information.</li> </ul>
Transaction Processing Control Objective B.2.2 (New Account Setup and Terminations)	<ul style="list-style-type: none"> <li>Instructions, transactions and information provided to Pershing from the client for account setup and account closings are in accordance with regulatory guidelines and other applicable agreements or documents between Pershing and the client.</li> <li>Timely written notification of changes to individuals authorized to direct account setup and account closings on behalf of the client is communicated to Pershing.</li> </ul>
Transaction Processing Control Objectives B.3.1, B.3.2, B.4.1, B.5.1, B.6.1, B.7.1, B.8.1, B.8.2, B.9.1, B.10.1, B.10.2, B.10.3, B.14.2, B.16.1, and B.18.1 (Equities and Options Order Execution, Fixed Income Order and Trade Processing, Mutual Fund Order Processing, Foreign Exchange, Alternative Investments, Options Expiration Processing, Security Information, Clearance and Settlement, Corporate Actions, Cash Disbursement and Journal, and ACATS)	<ul style="list-style-type: none"> <li>Erroneous or incomplete instructions are identified, corrected and resubmitted by IFs or IFs' clients in a timely manner.</li> <li>Application controls are in place at IFs' locations to verify that transmissions received by Pershing reflect only authorized instructions.</li> <li>Users monitor intraday activity and order repair queues and take appropriate action for failing transactions or rejects.</li> <li>The IFs resolve open Service Center requests and resubmit corrected requests, if applicable.</li> </ul>
Transaction Processing Control Objectives B.3.1, B.4.1, B.5.1, B.16.1, and B.18.2 (Equities and Options Order Execution, Fixed Income Order and Trade Processing, Mutual Fund Order Processing, Account Transfer Processing)	<ul style="list-style-type: none"> <li>IFs review transactions that are flagged by the Enterprise Rules Engine and take appropriate, timely action to approve or reject transactions. In the case of transactions systematically rejected by the Enterprise Rules Engine, IFs amend the transaction details for further processing.</li> <li>IFs are responsible for determining which optional rules they want to utilize.</li> <li>IFs are responsible for determining whether the mandatory and optional rules are relevant to their financial reporting and if so, for testing them and following up on any exceptions.</li> </ul>
Transaction Processing Control Objective B.17.1 (Cash Receipts)	<ul style="list-style-type: none"> <li>Erroneous or incomplete instructions are identified, corrected and resubmitted by IFs or IFs' clients in a timely manner.</li> <li>Application controls are in place at IFs' locations to verify that transmissions received by Pershing reflect only authorized instructions.</li> </ul>

<i>Control Objective</i>	<i>Compliance User Entry Control</i>
Transaction Processing Control Objectives B.3.2, B.4.1, B.5.1, B.6.1, B.7.1, and B.14.1 (Equities and Options Order Execution, Fixed Income Order and Trade Processing, Mutual Fund Order Processing, Foreign Exchange, Alternative Investments and Corporate Actions)	<ul style="list-style-type: none"> <li>Transmission of all trading activity to Pershing from the IF or its agent is timely completed.</li> </ul>
Transaction Processing Control Objective B.3.1 (Equities and Options Order Execution)	<ul style="list-style-type: none"> <li>IFs review best execution reports for the quality of equity and options trades executed by Pershing.</li> </ul>
Transaction Processing Control Objective B.4.1 (Fixed Income Order and Trade Processing)	<ul style="list-style-type: none"> <li>IFs have controls for the completeness and accuracy of TRACE reporting.</li> <li>IFs review TPS trades and NSCC/FICC comparison status via OLB for breaks and resolve exceptions via OLB.</li> <li>IFs identify and resolve unmatched ex-clearing trades ineligible to clear through an electronic clearing house via OLB.</li> </ul>
Transaction Processing Control Objective B.5.1 (Mutual Fund Order Processing)	<ul style="list-style-type: none"> <li>IFs monitor rejected periodic orders and take appropriate action based on the reject.</li> </ul>
Transaction Processing Control Objective B.9.2 (Security Pricing)	<ul style="list-style-type: none"> <li>IFs review the Stale and Unpriced Securities Report available within NetX suite Report Center for appropriateness.</li> </ul>
Transaction Processing Control Objectives B.11.1, B.16.1, and B.22.1 (Depository Balancing, Cash Disbursement and Journal, and Confirms)	<ul style="list-style-type: none"> <li>IFs monitor activity performed by a third party where the IF has directed Pershing to send or transmit client data.</li> </ul>
Transaction Processing Control Objective B.15.1 (Money Market Fund and FDIC Bank Sweep)	<ul style="list-style-type: none"> <li>Where applicable, IFs review client balances in FDIC-insured bank deposit products daily via reports in Report Center and take prompt action as needed.</li> </ul>
Transaction Processing Control Objective B.16.1 (Cash Disbursement and Journal)	<ul style="list-style-type: none"> <li>IFs' clients' standing instructions for certain repetitive and non-repetitive transactions are consistent with the IFs' clients' instructions.</li> <li>Senior management at the IFs reviews and provides Pershing approvals via attestation forms, for third-party wires that exceed the predefined limit.</li> </ul>

<i>Control Objective</i>	<i>Complementary User Entity Controls</i>
Transaction Processing Control Objectives B.18.1, B.22.1, and B.23.1 (ACATS, Confirms, and Statements)	<ul style="list-style-type: none"> <li>Timely review of reports, files, notifications, statements and confirmations provided by Pershing to IFs of firm and client trade activity, account balances and positions and other related activities is performed by the user entity, and written notification of discrepancies is provided to Pershing in a timely manner.</li> </ul>
Transaction Processing Control Objective B.18.4 (ACATS)	<ul style="list-style-type: none"> <li>Erroneous or incomplete instructions are identified, corrected and resubmitted by IFs or IFs' clients in a timely manner.</li> <li>The IFs resolve open Service Center requests and resubmit corrected requests, if applicable.</li> </ul>
Transaction Processing Control Objective B.21.1 (Client and Product Billing Operations)	<ul style="list-style-type: none"> <li>IFs review associated fees applied by Pershing to end client accounts for appropriateness.</li> <li>IFs notify Pershing of any exceptions and remediation required for commissions and fees in client accounts.</li> <li>IFs review client and proprietary monthly activity via NetX suite to assess the appropriateness of activity and associated billings.</li> <li>IFs notify Pershing of any exemptions to be set up via Service Center.</li> <li>IFs review the setup of exemptions per account, Service Center requests and notifications.</li> </ul>
Transaction Processing Control Objective B.26.1 (Annuity Operations)	<ul style="list-style-type: none"> <li>IFs resubmit carrier-rejected annuity orders with carriers.</li> <li>IFs resubmit DTCC-rejected orders with carriers.</li> <li>IFs required approval documentation to be completed prior to final processing.</li> <li>IFs process non-brokerage settling orders and make payments to carriers.</li> <li>IFs process payment refunds for cancelled orders for non-brokerage settling orders.</li> </ul>
Transaction Processing Control Objectives B.27.1 and B.27.2 (CAPS and Firm Trade Reporting)	<ul style="list-style-type: none"> <li>IFs ensure that breaks on the CAPS and/or Firm Trading Reports are communicated to Pershing for resolution.</li> </ul>
Transaction Processing Control Objective B.27.1 (CAPS and Firm Trade Reporting)	<ul style="list-style-type: none"> <li>IFs changes are made directly by the IF when permitted to do so via NetX suite.</li> </ul>
Transaction Processing Control Objective B.28.1 (Position and Balancing)	<ul style="list-style-type: none"> <li>IFs ensure that individuals granted access to SFDI (through the BFE "Standard File Delivery" within NetX360) are appropriate and that changes are authorized and approved.</li> </ul>

<i>Control Objective</i>	<i>Compliance User Entry Controls</i>
Transaction Processing Control Objective B.29.1 (NetX360 Report Center)	<ul style="list-style-type: none"> <li>• IFs select criteria to be provided on the report and the frequency of the report when submitting a request to set up a report.</li> <li>• IFs review the content of prior and current reports available from the NetX360 suite of products.</li> </ul>
Transaction Processing Control Objective B.30.1 (Managed Accounts Contributions and Withdrawals)	<ul style="list-style-type: none"> <li>• Instructions, transactions and information provided to Pershing from the client for contributions and withdrawals are in accordance with regulatory guidelines and other applicable agreements or documents between Pershing and the client.</li> <li>• Timely written notification of changes to individuals authorized to direct Pershing Managed Accounts contribution and withdrawal activities on behalf of the client are communicated to Pershing.</li> </ul>
Transaction Processing Control Objective B.32.1 (Managed Accounts Investment Support Services)	<ul style="list-style-type: none"> <li>• Clients ensure that new investment models and changes to existing investment models are properly communicated to Pershing.</li> <li>• For clients where maintenance requests are provided to Pershing via electronic transmissions, the clients provide Pershing with accurate and valid instructions.</li> <li>• Clients are responsible for taking action on rejected trades in a timely manner.</li> </ul>
Transaction Processing Control Objective B.33.1 (Managed Accounts Performance Reporting)	<ul style="list-style-type: none"> <li>• Clients provide complete and accurate information (i.e., account holder demographics, client specific details) for use within the quarterly reports.</li> <li>• Clients review the quarterly reports made available to them by Pershing prior to report issuance and communicate any discrepancies to Pershing.</li> <li>• Timely written notice is provided to Pershing of discrepancies between the client's records and information reported by Pershing.</li> </ul>
Transaction Processing Control Objective B.34.1 (Document Scanning and Faxing)	<ul style="list-style-type: none"> <li>• IFs specify their request to establish fax lines between Pershing in the Business Requirement Document.</li> <li>• IFs transmit (mail, courier or fax) complete, accurate and timely instructions to Pershing.</li> <li>• IFs review and resolve documents rejected to the clients' suspense accounts.</li> </ul>
Transaction Processing Control Objective B.34.2 (Daily Processing)	<ul style="list-style-type: none"> <li>• Transmissions of document images to Pershing from IFs reflect only authorized information.</li> <li>• Transmission of document images to Pershing from IFs is complete, accurate, and timely.</li> </ul>

## COMPLEMENTARY SUBSERVICE ORGANIZATION CONTROLS

The processing of transactions by Pershing was designed with the assumption that certain controls would be implemented by the subservice organizations. The application of such controls by subservice organizations is necessary to achieve certain control objectives stated in management's description of the service organization's system.

This section describes the expected types of controls that are necessary for the achievement of control objectives identified in this report. The subservice organization controls presented below should not be regarded as a comprehensive list of all of the controls that should be employed by subservice organizations.

### *Subservice Organization – BNY Mellon Technology*

Pershing uses the services of BNY Mellon Technology to provide information technology infrastructure support and to administer centrally managed information technology processes and controls for the Pershing systems, as described in "TABLE 1: Pershing Systems – Scope for Information Technology Controls." This support includes providing the controls that address control objectives for Logical Access, Change Management/Program Development, Job Scheduling, Backup & Recovery, Incident & Problem Management, Data Transmission and Physical Access. For the control objectives listed below, Pershing relies on BNY Mellon Technology to support the achievement of control objectives identified in this report. The subservice organization controls presented below should not be regarded as a comprehensive list of all of the controls that should be employed by the subservice organization.

Control Objective	Control Objective
<p>BNY Mellon Technology should have controls in place to limit access to the production environment to authorized individuals who perform authorized functions.</p> <p>BNY Mellon Technology should have controls in place to authorize, test, approve, implement by authorized personnel, and document the implementation of new applications, database configurations, and infrastructure; and changes to existing applications, database configurations, and infrastructure.</p> <p>BNY Mellon Technology should have controls in place to authorize and process system jobs in accordance with a defined schedule and identify and resolve any deviations.</p> <p>BNY Mellon Technology should have controls in place to back up production data and applications according to an authorized schedule, to identify and resolve deviations, and authorize restores.</p> <p>BNY Mellon Technology should have controls in place to record, classify, and track to resolution incidents and problems.</p> <p>BNY Mellon Technology should have controls in place to schedule, authorize and authenticate, complete, and protect from unauthorized access host</p>	<ul style="list-style-type: none"> <li>• A.1.CO1</li> <li>• A.2.CO1; A.2.CO2</li> <li>• A.3.CO1; A.3.CO2; A.3.CO3</li> <li>• All COs under Transaction Processing Controls</li> </ul>

<i>Complementary Subordinate Organization Controls</i>	<i>Portfolio Relevant Control Objectives</i>
<p>to host data transmission between BNY Mellon and external parties.</p> <p>BNY Mellon Technology should have controls in place to limit physical access to the data centers to properly authorized individuals, and to monitor and maintain environmental controls to protect computer equipment within the data centers.</p>	

### Other Subservice Organizations

For the control objectives listed below, Pershing relies on subservice organizations to support the achievement of control objectives identified in this report. The subservice organization controls presented below should not be regarded as a comprehensive list of all of the controls that should be employed by the subservice organization. In addition to the complementary subservice organization transaction processing controls described below, the subservice organizations should have established control activities in the following control objective areas: Logical Access, Change Management, Job Scheduling, Backup and Recovery, Incident and Problem Management, Data Transmissions, and Physical Access.

<i>Subservice Organization</i>	<i>Service provided</i>	<i>Complementary Subservice Organization Controls</i>	<i>Control Objective Reference</i>
<b>Broadridge Output Solutions, Inc.</b>	Pershing uses the services of Broadridge to provide a nightly notification report that is reviewed daily by the Corporate Actions Reorganization group, and for the distribution of confirms and statements.	Broadridge should have controls in place to generate the nightly notification report completely and accurately.	• B.14.CO3
		Broadridge should have controls in place to distribute confirms completely, accurately and in a timely manner.	• B.22.CO1
		Broadridge should have controls in place to produce and distribute statements completely and in a timely manner.	• B.23.CO3
<b>FIS Securities Finance LLC</b>	FIS platforms are used by Pershing as part of the prime services securities lending process (short sales, locates, borrows, system rates and changes, security allocation reports, and international borrows). Pershing also uses the services of FIS for the optimization process ("substitution process") of segregated securities for the maintenance of possession or control of fully paid securities and excess margin securities.	FIS should have controls in place to monitor securities lending platforms to completely and accurately reflect prime securities lending transactions.	• B.24.CO2
		FIS should have controls in place to perform automated security billing process completely and accurately.	• B.24.CO2
		FIS should have controls in place to monitor platforms to completely and accurately reflect segregation of securities for maintenance of Possession or Control.	• B.25.CO1
<b>The Karn Group</b>	Pershing uses the services of The Karn Group to generate the Best Execution report.	The Karn Group should have controls in place to generate daily Best Execution reports completely and accurately.	• B.3.CO1

<i>Subservice Organization</i>	<i>Service provided</i>	<i>Complementary Subservice Organization Control</i>	<i>Control Objective Reference</i>
<b><i>Fiserv Solutions, Inc.</i></b>	Pershing's Managed Accounts platform uses Fiserv's portfolio accounting system, APL, as the system of record for reconciliation, trading, fee calculation and reporting processes for Managed Accounts clients.	Fiserv APL should have controls in place to ensure accounts are appropriately maintained in the portfolio accounting system.	• B.2.CO2
		Fiserv APL should have controls in place to reconcile trade data and to generate reconciliation reports completely and accurately.	• B.31.CO1 • B.31.CO2
		Fiserv APL should have controls in place to manage trade processes completely and accurately.	• B.32.CO1
		Fiserv APL should have controls in place to assist in complete and accurate performance calculations.	• B.33.CO1
<b><i>Pershing X, Inc</i></b>	Pershing uses the services of Pershing X for a quarterly performance reporting process.	Pershing X should have controls in place to generate and mail the quarterly performance reports completely and accurately.	• B.33.CO1 • B.19.CO1
<b><i>BNY Mellon</i></b>	Pershing uses the services of BNY Mellon Global Investor Solutions (GIS) for data management, transaction processing and reconciliation services.	BNY Mellon should have controls in place to process mutual fund order transactions and adjustments accurately and in a timely manner.	• B.5.CO1
<b><i>Amazon Web Services (AWS)</i></b>	Pershing uses AWS for cloud services to deliver electronic statements.	AWS should have general information technology controls in place for logical access, change management, program development, job scheduling, backup and recovery, incident and problem management, and data transmission to support the electronic statements distribution.	• A.2.CO1 • A.2.CO2



**OTHER INFORMATION ABOUT MANAGEMENT'S DESCRIPTION**

Pershing's control objectives and related controls are included in the Section IV of this report, "BNY Mellon | Pershing's Control Objectives, Related Controls, Testing Performed by KPMG LLP, and Results of Testing." Although Pershing's control objectives and related controls are included in Section IV, they are an integral part of Pershing's description of its system.

**SECTION IV: BNY MELLON | PERSHING'S CONTROL  
OBJECTIVES, RELATED CONTROLS, TESTING PERFORMED  
BY KPMG LLP, AND RESULTS OF TESTING**

## COMPLETENESS AND ACCURACY OF INFORMATION PRODUCED BY THE ENTITY

When using information produced by Pershing, KPMG evaluated whether the information was sufficiently reliable for our purposes, including, as necessary, obtaining evidence about the completeness and accuracy of the system generated information and evaluating whether the information was sufficiently precise and detailed for our purposes. While these procedures are not specifically presented along with the test procedures listed in this section, they were performed as a component of evaluating and testing the controls identified by Pershing.

### GENERAL COMPUTER CONTROLS

#### 1) INFORMATION SECURITY GOVERNANCE

**Control Objective A.1.1:** Controls provide reasonable assurance that corporate information security practices are implemented.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
A.1.1.1	Security reviews, evaluations and tests are performed quarterly for the NetX suite of applications. Assessment findings are documented according to the Pershing Risk Assessment Report Tracking policy. Medium- and high-risk vulnerabilities are documented and tracked until remediation. Changes to applications, network architecture and configurations follow Pershing/BNY Mellon's change management process.	For a selection of quarters, inspected the NetX suite of applications security assessments to determine whether security evaluations were performed.  For a selection of medium- and high-risk findings, inspected the associated remediation documentation to determine whether issues were documented and tracked until remediation.	No exceptions noted.
A.1.1.2	The ISWG reviews proposed system architecture, significant system changes or new service with security implications. Review decisions are captured within the applicable work flow form and communicated back to the requestor.	For a selection of changes, inspected the workflow form to determine whether the proposal was reviewed and approved by a member of the ISWG.	No exceptions noted.

## 2) LOGICAL ACCESS

**Control Objective A.2.1:** Controls provide reasonable assurance that logical access to systems, programs and data is limited to authorized individuals and logical access permissions are commensurate with job responsibilities.

*Unless otherwise specified, these controls are applicable to the following technology platforms: Top Secret mainframe, application and database level access.*

	Control Description	NPAC DLP, Top Secret	Results of Test
A.2.1.1	Access profiles are used to manage user access to data. The Access Management Operations group assigns user profiles according to business needs and assigned job responsibilities, with the approval of designated business owners on the access request.	For a selection of new and modified access granted, inspected access request approval forms to determine whether access was approved by the designated business owner.  For a selection of new and modified access granted, inspected the account setup to determine whether access was issued per approved user roles in the access request approval forms.	No exceptions noted.
A.2.1.2	Automated jobs are executed on a nightly basis to revoke access for terminated employees and contractors based on the information from the ETAM file generated from Oracle HR. Employee termination status is updated in ETAM with information from HR, and access is automatically revoked within Top Secret.	Inspected the Top Secret mainframe security setup to determine whether Top Secret was configured to revoke access automatically for terminated employees per information in the HR system.  For a selected terminated employee, inspected the Top Secret mainframe log to determine whether access was revoked per the information updated in ETAM from the HR system.	No exceptions noted.
A.2.1.3	In the mainframe environment, a user profile is automatically suspended after 30 days of inactivity.	Inspected the Top Secret security configuration to determine whether user profiles were automatically suspended after 30 days of inactivity in the mainframe environment.  For a selected user profile that was inactive for more than 30 days, inspected the Top Secret mainframe log to determine whether the user profile was automatically suspended after 30 days of inactivity.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
A.2.1.4	On a periodic basis, employee access is verified completely and accurately at the department and application levels via the entitlement review process. Access Management Operations group reviews reports to monitor completion of the reviews. Outstanding reviews are escalated to senior management to remediate. A help desk ticket is created for technical issues.	<p>For the managers performing the departmental and application reviews within a selected semiannual review, inspected entitlement reports to determine whether management reviews were performed and employee access was reviewed completely and accurately.</p> <p>For a selection of user access removal requests identified by managers in the departmental reviews selected above, inspected system access lists to determine whether user access was updated based on user access removal requests.</p> <p>For a selection of user access removal requests identified by managers in the application reviews selected above, inspected system access lists to determine whether access was updated based on entitlement access removal requests.</p>	<p>No exceptions, except where noted.</p> <p>Exception noted.</p>
<p>Exception noted:</p> <p>For one of forty user access removal requests selected, inspected system access lists and determined user access was not removed per the request.</p> <p>Management response:</p> <p>Refer to Section V for exception detail and management's response to the exception.</p>			
A.2.1.5	Security administration privileges are restricted to personnel dedicated to performing these functions in accordance with their job responsibilities.	<p>For users with security administration privileges as of a selected date, inspected the corresponding organizational chart to determine whether access was restricted to personnel dedicated to performing these functions in accordance with their job responsibilities.</p> <p>For new administrative user rights granted, inspected the access setup and request form to determine whether access granted was approved by management and set up as requested.</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
A.2.1.6	Database administration capabilities are restricted by organizational reporting structure and system access permissions to personnel dedicated to performing database administration activities within the Database Administration team and technology support personnel who require such access to the database to perform their job responsibilities, including Production Support and Security Administration.	For a selection of accounts from the database administration profiles, inspected the users' job responsibilities to determine whether the roles and responsibilities assigned to the users were in accordance with individuals' job responsibilities.  For the entire population of new database administrative user rights granted, inspected the access setup and request form to determine whether access granted was approved by management and set up as requested.	No exceptions noted.
A.2.1.7	On a quarterly basis, activity performed by employees with root access to the Global One application is verified for appropriateness. Any identified activities are researched, and appropriate corrective measures are taken.	For Global One application, inspected activity reviews to determine whether complete and accurate activity reviews of activity performed by users with root access were verified for appropriateness and corrective actions were taken as identified.	Exceptions noted.
<p>Exception noted:</p> <p>The quarterly review of activities performed using Global One root access was not verified for the period 1/1/2022 – 9/30/2022.</p> <p>Management response:</p> <p>Refer to Section V for exception detail and management's response to the exception.</p>			
A.2.1.8	On a quarterly basis, employee access to SmartLoan application is verified for appropriateness. Access updates identified during the review are processed in a timely manner.	For SmartLoan application, inspected access review reports to determine whether complete and accurate access reviews were performed and any user access removals identified by management were processed in a timely manner.	No exceptions noted.

**Control Objective A.2.2:** Controls provide reasonable assurance that users are authenticated when accessing Pershing's mainframe system.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
A.2.2.1	<p>Passwords must meet established complexity requirements, expire on a regular basis, cannot be used for multiple iterations and will lock out users after a predefined number of invalid attempts, in accordance with BNY Mellon policy.</p>	<p>Inspected the mainframe password configurations from Top Secret Security Control Options to determine whether mainframe security settings were used to enforce controls over password usage in accordance with the policy.</p>	<p>No exceptions noted.</p>
A.2.2.2	<p>The ability to reset existing passwords and provide new passwords in the mainframe environment is restricted to personnel dedicated to performing these functions in accordance with their job responsibilities. Users requesting password resets are authenticated before they are granted their new password.</p> <p>On a monthly basis, management reviews the listing of users with access to the password reset functionality.</p>	<p>For a selection of users with the ability to enable new passwords or reset existing passwords in the mainframe environment, inspected the corresponding organizational chart to determine whether access was restricted to personnel dedicated to performing these functions and was commensurate with their job responsibilities.</p> <p>For a selection of new and reset mainframe passwords, inspected the password reset logs for users processing the password change to determine whether password resets were processed by authorized employees.</p> <p>For a selection of months, inspected the supervisory review of the users with access to the password reset functionality to determine whether management reviewed and approved users with the ability to reset passwords for the mainframe.</p> <p>For a selection of user access removal requests identified in the monthly supervisory review selected above, inspected system access lists to determine whether user access to the password reset functionality was removed based on the supervisory review.</p>	<p>No exceptions noted.</p>

**Control Objective A.2.3:** Controls provide reasonable assurance that logical access to Fiserv's APL application for Managed Accounts users is restricted to authorized individuals.

*These controls are applicable to Managed Accounts client only.*

	<i>Ford's Description of Controls</i>	<i>NPMAC LLP's Tests of Controls</i>	<i>Results of Tests</i>
A.2.3.1	The Money Manager Services department provides employee setup of access IDs on the Fiserv APL application in accordance with the approved access request, including the provisioning of IDs and maintenance of entitlements.	For a selection of new employees with access to Fiserv APL, inspected the Fiserv APL access list, entitlement setup and access request form to determine whether the access request was approved by an appropriate individual and access was issued per approved user roles on the access request.	No exceptions noted.
A.2.3.2	Upon notification of termination, the Money Manager Services department administers the timely removal of any access privileges resulting from personnel changes.	For a selection of terminated employees, inspected the notifications from department managers and the Fiserv APL access list to determine whether access privileges were removed in a timely manner.	No exceptions noted.
A.2.3.3	Administrative privileges for Fiserv APL are restricted to personnel dedicated to performing these functions in accordance with their job responsibilities.	For the users with administrative privileges for Fiserv APL as of two selected dates, inspected the corresponding organizational chart to determine whether access was restricted to personnel dedicated to performing these functions in accordance with their job responsibilities.  For the entire population of users whose access was granted during the period, inspected confirmation email and organization chart to determine whether the users who set up the access were authorized personnel.  For a selection of users whose access was terminated during the period, inspected confirmation emails and the organization chart to determine whether the users who removed the access were authorized personnel.	No exceptions noted.



	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
A.2.3.4	A monthly recertification of employee access to Fiserv APL is performed by department managers to determine whether Fiserv APL access entitlements remain commensurate with job responsibilities. Any access entitlement identified as not commensurate with job responsibilities is identified during the monthly review for an update.	<p>For the department manager reviews from a selection of months, inspected the Fiserv APL entitlement review approvals, the confirmation of review completion and the updated user list to determine whether management reviews were performed in a timely manner.</p> <p>For a selection of user access change requests identified by department managers, inspected the Fiserv APL access lists to determine whether access was updated based on the requests.</p>	No exceptions noted.

3) **NETX SUITE OF PRODUCTS**

**Control Objective A.3.1:** Controls provide reasonable assurance that client access through NetX suite is authenticated and encrypted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
A.3.1.1	Strong authentication mechanisms, including minimum length, complexity requirements, multiple iterations restricted, and maximum attempts to enter correct password, along with the use of an OTP or three security questions, are in place to verify and register users accessing the relevant NetX suite of products.	For NetX suite of products, observed NetX suite procedures to register new/existing user IDs and noted that NetX suite used the strong authentication mechanisms, including minimum length, complexity requirements, multiple iterations restricted, and maximum attempts to enter correct password, along with the use of an OTP or three security questions, to verify and register users.	No exceptions noted.
A.3.1.2	New single sign-on implementations are tested and approved by the IF and Pershing management.	For a selection of new implementations of IFs, inspected test scripts and approvals to determine whether single sign-on implementations were tested and approved by the IF and Pershing management.	No exceptions noted.
A.3.1.3	The ability to request, access, and generate certificate authority public keys for NetX suite websites on certificate authority servers is restricted to authorized Certificate Management personnel.	For a selection of users with the ability to request, access, and generate certificate authority keys, inspected the access lists and the organization chart to determine whether access was restricted to authorized Certificate Management personnel.	No exceptions noted.
A.3.1.4	On an annual basis, certificate authority encryption certificates for NetX suite websites are renewed through a third party and maintained, managed, and stored by the Certificate Management group.	Observed the NetX suite Certificate and noted that it was renewed through a third party and was maintained, managed, and stored by the Certificate Management group.	No exceptions noted.
A.3.1.5	NetX suite establishes a session with the local client computer and uses state information to validate that the NetX suite request is from authenticated users. Users are required to be re-authenticated if the session is broken.	For a NetX suite request, observed NetX suite establish a session with the local client computer and noted that NetX suite used state information to validate that the NetX suite request was from authenticated users.  For a NetX suite request, observed the submission of the NetX suite request after the session was broken and noted that user re-authentication was required to re-establish the session.	No exceptions noted.

**Control Objective A.3.2:** Controls provide reasonable assurance that client functions and data access through NetX suite is granted according to approved business requirements.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
A.3.2.1	Pershing provisions/modifies IF's administrative accounts on the NetX suite in accordance with approved IF's instructions.	For a selection of new or modified external administrative accounts, inspected the IF's administrative account requests and account settings to determine whether the account was provisioned/modified in accordance with approved IF's instructions.	No exceptions noted.
A.3.2.2	BFEs set up in EMS are configured as per Pershing business requirements, which IFs use to provision entitlements.  A BFE is comprised of multiple ASDS, NPNX and TSS entitlements.	For a selection of BFE roles set up in EMS, inspected the underlying entitlements and compared the entitlements to business requirements to determine whether the roles were configured as per business requirements by Pershing.  For a selection of BFE roles associated with a test IF's user ID, observed a user ID access NetX suite accounts, data and functions and noted that access was restricted as per EMS configuration.	No exceptions noted.
A.3.2.3	NetX suite is configured to validate user entitlements through EMS against the data entitlements provisioned and the data requested by the user.	For a selection of EMS data entitlements, observed a user request privileged client information and noted that access was restricted based on entitlements provisioned within EMS.	No exceptions noted.
A.3.2.4	EMS is configured to prevent users from being set up in NetX suite without a designated data entitlement assigned to the user's profile.	Observed a NetX suite Application Support employee attempt to create a NetX suite ID without the required data entitlements and noted EMS denied the request.	No exceptions noted.

**Control Objective A.3.3:** Controls provide reasonable assurance that the data interface between the NetX suite portal and the mainframe processing system is complete and accurate.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
A.3.3.1	Local machines exchange NetX suite request messages with the NetX suite servers using structured protocols to communicate data completely and accurately.	For a selection of messages, inspected the NetX suite request messages to determine whether a structured protocol was used to communicate data completely and accurately.	No exceptions noted.
A.3.3.2	Automated integrity and completeness checks are performed on NetX suite requests and mainframe responses based on source specifications by the NetX suite app server.	Observed the entry of data into NetX suite from the mainframe and noted that the automated integrity and completeness checks were performed based on source specifications defined in the NetX suite app server.	No exceptions noted.
A.3.3.3	Illogical or incomplete data is not processed by NetX suite to prevent the loss of underlying data integrity. An error message is generated for operations that fail before data is committed, and records are restored using the rollback principle.	Observed the entry of illogical and incomplete data in NetX suite to invoke an erroneous transaction and noted that an error message was generated, data was not committed and underlying integrity was maintained in NetX suite software.	No exceptions noted.
A.3.3.4	An integrity check and acknowledgement are enforced on packets transmitted within the data center via the network and transport layer protocol.	For a selected NetX suite packet captured within the data center, inspected network and transport layer protocol structure and data to determine whether an integrity check and acknowledgement were enforced.	No exceptions noted.
A.3.3.5	Data translation is performed based on predefined destination requirements by the gateway between NetX suite servers and the message queue to the mainframe.	For a selection of NetX suite messages, inspected the data translation between NetX suite servers and the message queue to the mainframe to determine whether it was performed based on predefined destination requirements by the gateway.	No exceptions noted.
A.3.3.6	Pershing Technology monitors the message queue connection to the mainframe. Message queue errors are tracked, researched and resolved in a timely manner.	Inspected the message queue configuration and noted that alerts were configured to be created for message queue errors.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
		Inspected the message queue and inquired of management and determined that no message queue alerts were actionable during the period.	There were no message queue alerts that were actionable during the period; therefore, the operating effectiveness of this control attribute could not be tested.

## TRANSACTION PROCESSING CONTROLS

## 1) ENTERPRISE RULES ENGINE

**Control Objective B.1.1:** Controls provide reasonable assurance that additions and/or modifications to criteria within the trade and order management rules engine are authorized and implemented by authorized personnel.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.1.1.1	Orders and trades entered via NetX360 are subject to the Enterprise Rules Engine edit and validation checks to flag orders and trades with erroneous details. Orders and trades that trigger the Enterprise Rules Engine rules as a result of input errors are adjusted or re-entered correctly by the IF and processed in the Pershing systems.	For systematic edit checks determined by management to be relevant to the financial reporting of IFs, observed management execute orders and trades with incomplete, incorrect and false data on a test account and noted that NetX360 rejected the orders and trades containing illogical, insufficient or inaccurate data.	No exceptions noted.
B.1.1.2	Pershing mandatory rules are assigned at the IF level by the Conversion Manager during the new client setup process.	Inspected the system configuration and noted that Enterprise Rules Engine was configured to prevent trade and order processing for new clients with no mandatory rules assigned.  For a selection of new clients, inspected the rules change log to determine whether mandatory rules were assigned during the new client setup process.	No exceptions noted.
B.1.1.3	The enterprise rule engine change log tracks Pershing Enterprise Rules Engine mandatory rules added, deleted, or updated at the IF level. On a daily basis, the Credit Risk Officer or Trading Services Department, as applicable, reviews and approves the Mandatory rule change logs to verify that Rules are updated accurately by authorized personnel.  The supervisor reviews and approves the rule changes prior to processing, as applicable.	For a selection of days, inspected the Credit Surveillance logs to determine whether mandatory rule changes were reviewed and approved by the Credit Risk Officer or Trading Services Department, as applicable.  For a selection of mandatory rule changes, inspected the Mandatory rule change logs to determine whether mandatory rule changes were processed by authorized personnel and that rule changes were updated accurately.  For a selection of mandatory rule changes, inspected the email communication to determine whether mandatory rule changes were approved by the supervisor, as applicable.	No exceptions noted.

## 2) NEW ACCOUNT SETUP AND TERMINATIONS

**Control Objective B.2.1:** Controls provide reasonable assurance that requests for new zero and firm accounts and terminations are authorized and completed accurately and in a timely manner.

*These controls are applicable to introducing firms only.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.2.1.1	<p>The Accounts Services department is responsible for setting up new zero accounts in the Correspondent Relationship Master (KORR) system. Account Services personnel enter details of the new zero account in the KORR system in accordance with the client agreement, as evidenced in the New IF/Office Range Request Form approved by the requestor, director, Credit Risk and Tax Form Review teams. Account Services management reviews the account setup on the new IF/Office Range Request Form/Account Services SharePoint. Edit checks within KORR reject the creation of a new zero account that contains illogical or insufficient data. If an automated edit check rejects the creation of a new zero account, the illogical or insufficient data is researched and an Account Services employee resubmits the account information in KORR.</p>	<p>For a selection of new zero accounts, inspected the new IF/Office Range Request Form to determine whether the requestor, director, Credit Risk and Tax Form Review teams approved the new zero accounts prior to entry in KORR.</p> <p>For a selection of new zero accounts, inspected the new IF/Office Range Request Form/Account Services SharePoint and the setup on KORR to determine whether new zero accounts were set up in accordance with the client agreement and management signed off on the accuracy of account setup.</p> <p>For systematic edit checks determined by management to be relevant to the financial reporting of IFs, observed Account Services personnel create a new zero account with incomplete, incorrect and false data on a test account and noted that KORR rejected the setup of a new firm account containing incomplete, incorrect and false data.</p>	No exceptions noted.
B.2.1.2	<p>Upon setup of the new firm account, the Account Services employee sends notification of successful completion to the requestor to indicate that new firm accounts are setup within 3 business days.</p>	<p>For a selection of new firm accounts, inspected evidence of communication from the Account Services employee to determine whether the requestor was notified of successful setup within 3 business days.</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.2.1.3	To close a firm zero record (an account at the IF level), the current Account Manager sends an email to the Pershing Compliance department requesting their review and approval. The Compliance department then replies to the email to advise the Account Services department whether they can proceed with the request. Upon receipt of the request to close the zero record, an Account Services employee changes the status to "Closed" in KORR within a timely manner. Upon completion, the employee replies to the email and provides the request to the Account Services Manager for review and retention in document imaging.	For a selection of terminated zero records and firm accounts, inspected emails to determine whether the request was made by authorized personnel and that the accounts were closed in a timely manner.  For a selection of terminated zero records and firm accounts, inspected KORR settings to determine whether the status of the accounts was changed to "Closed."	No exceptions noted.
B.2.1.4	Monthly, the Account Services team reviews a selection of firm account additions, changes, and deletions and customer account registration updates per NetX360 Service Center requests. The Account Services employees review the firm account requests and compare them to the KORR system or NetX360 to assess the accuracy of the manually entered information. Identified discrepancies are researched and resolved.	For a selection of months, inspected Account Services audits to determine whether firm account additions, changes, and deletions and customer account registration updates were reviewed.  For a selection of firm account additions, changes, and deletions and customer account registration updates from the NetX360 Service Center, reperformed the comparison to the KORR system or NetX360 to determine whether the Service Center requests were accurately completed as requested.  For a selection of discrepancies identified by Account Services team from the selection of months, inspected evidence to determine whether the discrepancies, if any, were researched and resolved.	No exceptions noted.
B.2.1.5	Additions and changes to account information are set up in KORR and transmitted to NetX360 accurately.	Observed an Account Services department employee update a selection of zero and firm records and noted that the updated zero and firm records were automatically transmitted into the corresponding IF zero and firm record in NetX360.	No exceptions noted.



**Control Objective B.2.2:** Controls provide reasonable assurance that new accounts are established in Managed Accounts systems and requests to close an account are processed timely and in accordance with client instructions.

*These controls are applicable to only Managed Accounts clients.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.2.2.1	Documentation supporting the opening of new accounts such as tri-party agreement, client proposal or new account input checklist and approvals from the designated individuals with Series 24 license, if required per client agreement, is obtained by Account Services personnel prior to releasing the account on the system. The account is set up on the system in a timely manner according to the client instruction. When exceptions are identified, the account is not released until resolved. The client is notified by Account Services personnel regarding any exceptions, if required per agreement.	For a selection of new accounts opened or released by Account Services, inspected signed tri-party agreement, client proposal or new account input checklist, portfolio accounting system records and approvals from designated individuals with Series 24 license (if required per client agreement) to determine whether documentation supporting the opening of accounts was obtained before the account was released on the system and the account was set up in a timely manner according to client instructions.	No exceptions noted.
B.2.2.2	Account setup activities are performed in the portfolio accounting system in a timely manner by Account Services personnel upon receipt of authorized client instructions. Once an account has been fully set up and funded, Account Services releases the account on managed accounts' trading platform.	For a selection of new accounts opened or released by Account Services, inspected portfolio accounting system records for account release timestamps and client instructions to determine whether the accounts were set up as instructed in a timely manner upon receipt of authorization.  For a selection of new accounts, inspected portfolio accounting system records to determine whether accounts were released for trading once the account was fully set up and funded.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.2.2.3	On a monthly basis, Account Services personnel review, if required per client agreement, activities performed to open new accounts on a sample basis to determine whether accounts are established timely and in accordance with client instructions. When exceptions are identified, the account is not released by Account Services for trading until resolved. The client is notified by the Account Services regarding any exceptions, if required per agreement.	For a selection of months, inspected supervisory review checklists to determine whether a review was performed by the Account Services personnel, if required per client agreement, to validate that accounts were established timely in accordance with client instructions.  For the new accounts reviewed by management from the selected months above, inspected the documentation supporting approval for opening new accounts to determine whether accounts were established timely in accordance with client instructions.  For a selection of monthly reviews, inspected the notifications and determined that Account Services notified the client for any exceptions identified.	No exceptions noted.
B.2.2.4	Documentation supporting approval for account closing is obtained by Account Services personnel prior to closing the account on the portfolio accounting system.	For a selection of closed accounts, inspected account closing notification documentation and portfolio accounting system timestamps to determine whether approval for account closing was obtained by Account Services personnel prior to closing the account.	No exceptions noted.
B.2.2.5	Account Services informs the respective trading party, if required per client agreement, upon receipt of client notification to close an account.	For a selection of closed accounts, inspected correspondence to the respective trading party to determine whether they were informed of the account closing, if required per client agreement.	No exceptions noted.
B.2.2.6	Account closing activities are tracked in the workflow management system and performed in a timely manner, upon receipt of notification by the client.	For a selection of closed client accounts, inspected portfolio accounting system account close timestamps and workflow management system details to determine whether the closing activities were tracked and the account was closed in a timely manner upon receipt of notification.	No exceptions noted.

### 3) **EQUITIES AND OPTIONS ORDER EXECUTION CONTROLS**

**Control Objective B.3.1:** Controls provide reasonable assurance that equity and option orders and trades are captured, submitted for execution and recorded completely, accurately and in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.3.1.1	Equity and option orders entered via NetX suite and NetX suite Services are compared to criteria established by Pershing and the IF and housed in Pershing's OMRE. The Rules Engine automatically flags transactions that are considered to be exceptions. The system notifies the user when equities and option orders require additional approval or correction.	For systematic edit checks determined by management to be relevant to the financial reporting of IFs, observed management attempt to execute orders with exceptions in a test account and noted that the Rules Engine rejected the orders with an error message.	No exceptions noted.
B.3.1.2	Equity and option orders are passed through NetX suite, IVR and Pershing Link or they can be manually entered by Pershing's Order Processing department into ATOMS. Rules Engine edit checks within ATOMS reject orders that contain illogical or insufficient data.	For systematic edit checks determined by management to be relevant to the financial reporting of IFs, observed management execute orders with incomplete, incorrect and false data on a test account and noted that ATOMS rejected the orders.	No exceptions noted.
B.3.1.3	Delivery of orders to exchanges and other market venues are validated by FIX communication protocols. If an acknowledgement is not received within a specific timeframe, a sequencing gap is generated in the ATOMS Reject Report with the specific exchange or market venue. ESD personnel manually research and resolve rejects.	For a selection of trade orders from the ATOMS Reject Report, inspected the trade details within ATOMS to determine whether trades were reported, validated and resolved in a timely manner.	No exceptions noted.
B.3.1.4	Execution notices received from the exchanges are reconciled against open orders within ATOMS to identify any discrepancies that appear in the BUM file. The ESD investigates BUM items as well as rejection notices received from the exchanges to determine the reason for the noted discrepancies and to take corrective action by the end of the day.	For a selection of dates, inspected the end of day BUM queue review by management to determine whether the discrepancies were reviewed, researched and resolved in a timely manner within ATOMS by the ESD.	No exceptions noted.
B.3.1.5	On a nightly basis, Pershing receives files from the various executing venues for listed and OTC equities and listed options and produces the	For a selection of days, inspected GTC Limit Order Run Reports to determine whether there was management review and sign-off.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
	GTC Limit Order Run Reports that are reviewed by the ESD manager on a daily basis. Any discrepancies noted on these reports are researched and resolved by the ESD employees on a daily basis.	For a selection of data discrepancies from the GTC Limit Order Run Report, inspected corresponding trade details to determine whether the breaks were researched and resolved in a timely manner.	
B.3.1.6	Each morning, a member of the CAT Reporting Team reviews the CAT File Summary within the CAT Portal to verify that files were submitted and accepted. The CAT Reporting Team member captures a screen print evidencing if there were any file rejects for the day.  The CAT Reporting Team member reviews the summary of errors on the CAT Portal and investigates and repairs the repairable items within Pershing's control corresponding transactions.	For a selection of days, inspected the CAT Daily Checklist to determine that the CAT Reporting Team member initialed the checklist to indicate their review of files being submitted and accepted.  For a selection of days, inspected the CAT Daily Checklist and supporting review documentation to determine that the CAT Reporting Team repaired the repairable transactions that were listed on the Error Summary Report.	No exceptions noted.
B.3.1.7	The Pershing Best Execution Steering group performs a quarterly review of the trade data to assess whether the execution quality of equity and options trades received by Pershing are in line with or better than the industry. This information is ascertained through monthly Execution Quality Scorecards.	For a selection of quarters, inspected the Pershing Best Execution Steering group meeting minutes and corresponding monthly Execution Quality Scorecards to determine whether the execution quality of equity and options trades was reviewed.	No exceptions noted.
B.3.1.8	A Pershing Best Execution Steering employee performs a daily review of the Best Execution Exception Reports. Pershing transmits trade files to a third-party vendor for analysis. Trades are compared against industry quotes and built-in thresholds to identify potential anomalies. Exceptions are investigated and resolved by a CTP&S employee, if necessary, and reviewed by Pershing Best Execution management.	For a selection of days, inspected Best Execution Exception Reports to determine whether there was management review and sign-off.  For a selection of best execution anomalies identified by the third party from the daily exception reports, inspected corresponding resolution details to determine whether anomalies were researched and updated by a CTP&S employee, if necessary, and reviewed by Pershing Best Execution management.	No exceptions noted.

**Control Objective B.3.2:** Controls provide reasonable assurance that equity and option orders and trades submitted to Pershing are monitored, researched and processed timely and accurately.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.3.2.1	FIX manages real-time connectivity to market centers. The FIX engine is set up to automatically attempt to reconnect when connectivity is lost. Connectivity to market centers is displayed on a dashboard.	For a selection of connections, inspected the FIX engine setup to determine whether the connection was set up to automatically reconnect in case of lost connections.  Inspected the FIX engine settings to determine whether an attempt to reconnect was automatically triggered when the market center to client connection was lost.	No exceptions noted.
B.3.2.2	In EAS and ITEM systems, executed block trades are matched to investment managers' list of block allocations and the matched trades are sent to TPS. On a daily basis, items in the facilitation and hold-up accounts are researched and resolved by the Institutional Trade Support group in a timely manner and approved by management.	For a selection of days, inspected facilitation and hold-up accounts from a selection of daily reconciliation reports and compared them to the end-of-day balances to determine whether balances in the facilitation and hold-up accounts were researched and resolved in a timely manner and approved by management.	No exceptions noted.
B.3.2.3	CTP&S monitors OLB exceptions throughout the day to identify uncomparing or unmatched trades among TPS, exchanges' comparison systems or comparisons from the NSCC. Uncomparing or unmatched trades are reviewed by the CTP&S for investigation and resolution. A supervisor signs off on the OLB's summary of balanced items.	For a selected uncomparing or unmatched trade, inspected the trade details in the OLB to determine whether automated reconciliation among TPS, the exchanges and the NSCC was processed accurately and completely.  For a selection of uncomparing or unmatched trades, inspected the trade details to determine whether the trades were tracked to resolution.  For a selection of days, inspected the daily trade break reports for electronic management and Series 24 sign-off to determine whether management reviewed and approved the uncomparing or unmatched trades report in OLB.	No exceptions noted.

#### 4) **FIXED INCOME ORDER AND TRADE PROCESSING CONTROLS**

**Control Objective B.4.1:** Controls provide reasonable assurance that fixed income orders and trades submitted to Pershing are captured, recorded and processed timely and accurately.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.4.1.1	Fixed income orders can be entered manually by the IF through the Bond Central component of NetX suite. Orders entered via NetX suite are compared to criteria in Pershing's OMRE established by Pershing and the IFs. The OMRE automatically flags orders that require additional approval or correction by the IF.	For systematic rules determined by management to be relevant to the financial reporting of IFs, observed management attempt to execute orders with exceptions in a test account and noted that the OMRE rejected the orders with an error message.	No exceptions noted.
B.4.1.2	Fixed income trades entered manually by the IF through NetX suite are validated by TCMS and trades with invalid account numbers are captured within the TPS Trade Reject Report. Any trades in the TPS Trade Reject Report that are missing an IBD (i.e., an invalid account number) and not cleared within one day are reviewed and researched by the OTIS personnel and signed off by the OTIS manager.	For a selected date, observed management enter a trade with an invalid account number and noted that the trade error was captured in the TPS Trade Reject Report. For a selection of days, inspected the daily checklist to determine whether OTIS personnel reviewed and researched pending items in the TPS Trade Reject Report and OTIS manager signed off.	No exceptions noted.
B.4.1.3	TPS extracts eligible items required for trade regulatory reporting for MSRB and TRACE, as defined in the IF contract.	Inspected the system configuration for trades to be extracted from TPS for trade regulatory reporting to determine whether eligible items were systematically routed to MSRB and TRACE.  For a selected trade in Pershing systems, inspected the trade routed to MSRB to determine whether the eligible trade was extracted and submitted for regulatory reporting.  For a selected trade in Pershing systems, inspected the trade routed to TRACE web to determine whether the eligible trade was extracted and submitted for the FINRA regulatory reporting.	No exceptions noted.
B.4.1.4	The FIX engine manages real-time connectivity to market centers. The FIX engine is set up to automatically attempt to reconnect when connectivity is lost. Connectivity to market centers is displayed on a dashboard.	For a selection of connections, inspected the FIX engine setup to determine whether the connection was set up to automatically reconnect in case of lost connections.  Inspected the FIX engine settings to determine whether an attempt to reconnect automatically was triggered when market center to client connection was lost.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.4.1.5	<p>Trades that fail to clean up past their state settlement date are tracked via Settlement Status in NetX360. Employees are responsible for obtaining confirmation of trades open past settlement.</p> <p>The open items in Settlement Status are reviewed by OTIS personnel and signed off by the OTIS manager.</p>	<p>For a selection of failed trades from a selection of Settlement Status reports, inspected the open items logs and trade confirms to determine whether failed trades were identified, researched and resolved.</p> <p>For a selection of days, inspected the daily fail report and OTIS manager signoff to determine whether OTIS personnel reviewed and researched the open items on the Settlement Status.</p>	No exceptions noted.
B.4.1.6	<p>Customers have access to TCMS to execute their own corrections. OTIS accepts requests for corrections by clients on an exception basis only. Clients submit correction requests via Service Center, which are resolved by OTIS employees on a daily basis. Corrections are documented in the TCMS audit trail and all versions of the trade are available in the Trade History for further review, if required.</p>	<p>For a selection of incoming client Service Center requests, inspected the Trade History details for the associated trade within NetX suite to determine whether the corrections within the trade were resolved within a timely manner.</p>	No exceptions noted.
B.4.1.7	<p>NetX suite Service Center requests to update fixed income trades details are monitored by CTP&amp;S for timely resolution. An IF submits Service Center requests for invalid fixed income trade data to the CTP&amp;S employee for research and remediation in a timely manner.</p>	<p>For a selection of Service Center requests, inspected the trade details and corresponding audit trail to determine whether the trade correction was processed according to instructions and in a timely manner.</p>	No exceptions noted.

### 5) MUTUAL FUND ORDER PROCESSING CONTROLS

**Control Objective B.5.1:** Controls provide reasonable assurance that mutual fund orders and trades are recorded and processed accurately, completely and in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.5.1.1	Participating IFs are set up within NTFS in accordance with instructions received from the Financial Solutions group documented in the FundVest agreement. Mutual Fund management reviews and approves a sample of participating IFs within NTFS for the accuracy of the setup on a semiannual basis.	For a selection of participating IFs reviews performed by Mutual Fund management, inspected the FundVest agreements and NTFS details to determine whether participating IFs were set up in accordance with client instructions, and were reviewed and approved by management.	No exceptions noted.
B.5.1.2	The IF can enter mutual fund orders through NetX360. Orders are compared to criteria established by Pershing and the IF and housed in Pershing's Order Management Rules engine. The system notifies the user when orders require additional approval or correction.	For systematic rules determined by management to be relevant to the financial reporting of IFs, observed management attempt to execute orders with exceptions in a test account and noted that the Rules Engine rejected the orders with an error message.	No exceptions noted.
B.5.1.3	The Pershing Order Desk manually enters mutual fund orders from written instruction provided by IFs into the MFNL system. MFNL order edits are applied to each order within MFNL and the orders are either rejected or the user is provided with a warning if the order data contains illogical or insufficient information.	For systematic edit checks determined by management to be relevant to the financial reporting of IFs, observed management execute orders with incomplete, incorrect and false data on a test account and noted that MFNL rejected or provided warning for orders containing illogical or insufficient data.	No exceptions noted.
B.5.1.4	FundSettle eligible orders are executed via submission to Euroclear and problems with submissions are monitored by the trading desk for timely communication to the IFs. An email summarizing rejected orders as of 4:00 p.m. is sent to management on a daily basis for review.	For a selection of days, inspected the management email to determine whether rejected Euroclear orders were communicated to management. For the rejected Euroclear orders from a selection of days, inspected Service Center notifications to determine whether rejected orders were communicated to the IF as of 4:00pm by end of day.	No exceptions noted.
B.5.1.5	FundSERV eligible orders are executed via submission to the NSCC. The transmission and submission of trade files to the NSCC are monitored by the Pershing Technology group. Any discrepancies with submissions are monitored by Pershing Technology for timely resolution. An	For a selection of days, inspected the NSCC transmission reports and corresponding review documentation to determine whether files were successfully submitted to the NSCC and reviewed by management, and transmission issues, if	No exceptions noted.



	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
	automatic email is sent to management listing the details of each transmission for review and sign-off.	any, were logged, prioritized, and monitored for timely resolution.	
B.5.1.6	FundSERV orders that do not receive trade confirmation by the morning of the next business day are monitored for follow-up on the MIPS trade summary report. Unconfirmed orders are researched and resolved within MIPS in a timely manner by a Mutual Fund employee.	For a selection of unconfirmed orders from a selection of days, inspected the trade summary reports from MIPS to determine whether unconfirmed orders were researched and resolved in a timely manner.	No exceptions noted.
B.5.1.7	The fund company provides Mutual Fund Loss Letters for market-related losses on trades. A Pershing Product Support employee reviews Loss Letters for pertinent information and enters the details in the Loss Letter database. The letter is provided to a Pershing Trading employee for the review of loss information and returned to Product Support for processing against the applicable IF error account or against a Pershing error account, depending upon who is responsible for the loss.	For a selection of Mutual Fund Loss Letters, inspected trade and account details to determine whether the Mutual Fund employees accurately processed the loss against the IF error account or against the Pershing error account.  For a selection of Mutual Fund Loss Letters, inspected the notification sent to the IF to determine whether an IF was informed that the loss was processed.	No exceptions noted.
B.5.1.8	Transactions placed outside of FundSERV are verified manually the next business day. Any discrepancies are researched and resolved in a timely manner by a Mutual Fund employee.	For a selection of orders placed outside of FundSERV from a selection of days, inspected the comment log on the transaction confirmation and corresponding MIPS entries to determine whether they were reviewed manually the next business day by the Mutual Fund employee and discrepancies, if any, were researched and resolved in a timely manner.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.5.1.9	Service Center requests for trades and corrections are monitored on a daily basis to verify closure. Service Center requests that cannot be processed (e.g., received after the order cut-off time or with errors) are rejected back to the respective IFs as a response to the Service Center request. On a daily basis, a Mutual Fund supervisor confirms via email that all items received prior to 3:30 pm EST in the NetX360 workbasket have been actioned and a Mutual Fund manager reviews and signs off on the checklist.	For a selection of days, inspected a selection of open requests on the Service Center screen and the associated audit trail within Service Center to determine whether the requests were sent back to the respective IFs for resolution.  For a selection of days, inspected email confirmations from a Mutual Fund supervisor, NetX360 screens and daily checklists to determine whether the items received prior to 3:30 pm EST in the NetX360 workbasket were actioned upon and the Mutual Fund manager reviewed and signed off on the checklist.	No exceptions noted.
B.5.1.10	A daily reconciliation is performed between settled networked positions on the PAR Bookkeeping system and fund side balances as communicated via the networking system. Unbalanced items are aged, researched and resolved in a timely manner by a Mutual Fund Balancing employee.	Inspect Connect:Direct protocol setup in PNET to determine whether PNET system was configured to receive source files from third party unaltered, completely and accurately.  As of 2/7/2022, inspected the record from the NDM Stat Report and compared to the record in the file PNET received from third party and noted that the file was received completely and accurately.  For a selected transaction, traced transaction details including CUSIP, account number, quantity/amount, trade date and settlement date, from the source data to a file loaded in PNET and noted that the transaction detail was transferred completely and accurately.  Inspected internal data feeds to the reconciliation tool and the reconciliation performed to determine whether the internal data was transferred completely and accurately in the reconciliation.  For a selected automated reconciliation between settled networked positions on the PAR Bookkeeping system and fund side balances, inspected trade details to determine whether the reconciliation captured unbalanced items accurately and completely.  For a selection of unbalanced networked items from a selection of daily reconciliation reports, inspected the account activity history to determine whether differences were researched and resolved.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.5.1.11	A monthly reconciliation is performed between non-networked positions on the Bookkeeping system and fund side balances as communicated via physical statements of holdings. Unbalanced items are aged, researched and resolved in a timely manner by a Mutual Fund department employee.	<p>For a selection of non-networked reconciliations between settled non-networked positions on the Bookkeeping system and fund side balances as communicated via physical statements of holdings, inspected trade details to determine whether the reconciliation captured unbalanced items accurately and completely.</p> <p>For a selection of unbalanced non-networked items from a selection of monthly reconciliation reports, inspected the account activity history to determine whether differences were researched and resolved in a timely manner.</p> <p>As of 2/28/2022 and 7/31/2022, for a selection of accounts, received and inspected the source files from the funds used in the reconciliation of non-networked positions between Pershing records and the records of the funds to determine whether the data was unaltered and the data was captured accurately in the reconciliation.</p>	No exceptions noted.
B.5.1.12	Any open mutual fund fails equal to or greater than one share and fractional share fails, representing orders whose purchase amount has not been paid or whose redemption amount has not been received by Pershing, are researched and resolved by a Mutual Fund Settlement employee.	For a selection of open mutual fund fails greater than one share or fractional shares from daily exception reports, inspected the adjustment transactions from the NetX360 account history to determine whether the fail was researched and resolved.	No exceptions noted.
B.5.1.13	12b-1 trailer fee payments not processed via the NSCC are disbursed to the IFs upon receipt of payment to the Product Support group from the fund companies and are manually processed to the IF account.	For a selection of payments from a selection of days, inspected manually processed 12b-1 trailer fees, IF accounts, and 12b-1 trailer fee details to determine whether payment was processed to the IF account via the FUPU or journal systems.	No exceptions noted.

## 6) FOREIGN EXCHANGE CONTROLS

**Control Objective B.6.1:** Controls provide reasonable assurance that Foreign Exchange trades are captured, executed, recorded and reported accurately and in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>ICPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.6.1.1	FX orders are entered through the NetX suite platforms and are systematically checked against limits set in the Pershing FX front-end system (DENE). Any orders that exceed the IF's limit are automatically routed to the FX Desk for review and resolution, unless the IF has instructed Pershing to automatically cancel.	For a selection of IFs, inspected the DENE configuration and associated pre-defined Global Credit and Market Risk Committee limits to determine whether credit limit and other order parameters were defined within the application based on approved limits.  For a selected IF, observed the DENE and NetX suite system screens generated when transactions were attempted within and beyond the IF's approved credit limit to determine whether DENE routed orders that exceeded the IF's limit to the FX Desk for review and resolution.	No exceptions noted.
B.6.1.2	Authorization of FX orders provided by clients via phone and email are recorded electronically and entered manually in the FX front-end system. On a daily basis, management signs off on an FX daily log to evidence that manually submitted orders are reviewed on a sample basis and approved by the FX Desk Manager or designated individual.	For a selection of manually entered FX trades, inspected the trade details in DENE and the order slips to determine whether the trade was accurately entered according to instructions from the IF.  For a selection of days, inspected FX daily logs to determine whether management reviewed manually submitted orders on a sample basis.	No exceptions noted.
B.6.1.3	FX employees document client approvals for change and/or cancellation requests for FX trades in the FX daily log. FX employees send the requests for execution by the NDTs group on or after the trade date.  Change and/or cancellation requests for FX trades on the trade date can be executed by the FX Desk if justification is provided to the FX Manager.	For a selection of modified and cancelled orders from FX daily logs, inspected the supporting documentation to determine whether the modification was requested by the client and accurately performed by the NDTs group or by the FX Desk and justification was provided to the FX Manager.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.6.1.4	FX employees and the FX Desk Manager (or designated individual) review and monitor manually entered orders, order change and cancellation requests, internal trades, GTC orders, and sales credits due to the IF. The review is documented using the FX daily log. Breaks on the FX Inventory Report are reviewed and resolved on a daily basis.	For a selection of days, inspected the FX daily log to determine whether FX management signed off on the logged events and whether the logs tracked trade reconciliation breaks, manually entered orders, change and cancellation requests and internal trades.  For a selection of days, inspected the FX Inventory Report to determine whether reconciliation breaks were documented as resolved by the FX department.	No exceptions noted.

## 7) ALTERNATIVE INVESTMENTS CONTROLS

**Control Objective B.7.1:** Controls provide reasonable assurance that alternative investment purchases, subscriptions, redemptions and distributions are processed completely and accurately, as per the client's instructions.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.7.1.1	Prior to subscribing/purchasing an ownership interest, a Pershing Private Investment Form and an investment company's subscription agreement are completed by the investor. A supervisor reviews and approves the paperwork to be delivered. The position is posted to the client account and a transfer memo is set up. The memo is subsequently cleared on confirmation from the investment company.	For a selection of purchases, inspected the Private Investment forms, subscription agreements, account activity and fund confirmation to determine whether purchase orders were approved by a supervisor before they were recorded and confirmation was received from the investment company.	No exceptions noted.
B.7.1.2	For redemption and liquidation orders, the Fund Redemption form is reviewed against the assets in the client account. A supervisor reviews and approves the Letter of Instruction and Fund Redemption form to be delivered. A reorg memo is placed on the position within the client account. The memo is subsequently cleared on the receipt of payment from the investment company and the shares are removed from the account.	For a selection of redemptions and liquidations, inspected the Letter of Instruction, reorg memo and Fund Redemption form to determine whether redemptions were approved by a supervisor before they were recorded, the receipt of payment was received from the investment company and shares were removed from the account.	No exceptions noted.
B.7.1.3	For IRA distributions of alternative investments from IRA accounts, an AI employee reviews an IRA distribution request form against the assets in the client account. A supervisor reviews and approves the IRA distribution request form and change of ownership form to be delivered. A transfer memo is set up on the position within the account.	For a selection of IRA distributions, inspected the IRA distribution request form, NetX360 account activity and change of ownership form to determine whether distribution orders were approved by a supervisor before they were recorded.	No exceptions noted.

**Control Objective B.7.2:** Controls provide reasonable assurance that alternative investments asset prices are recorded timely based on prices from authorized pricing sources.

*The controls included below are to be considered in conjunction with applicable controls and results in security information control objectives, Process Area B.9, Control Objectives B.9.1 and B.9.2.*

	<i>Pershing's Description of Controls</i>	<i>NPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.7.2.1	Upon the setup of an asset, the AI department approves the setup of an asset, notifies the SI department via Service Center request to set up the asset (CUSIP) in PROM as requested and in a timely manner and completes the AI department checklist.	For a selection of new assets, inspected approval from AI department on the setup of an asset, Service Center requests and AI department checklist to determine whether the AI department notified the SI department, the asset (CUSIP) was set up in PROM as requested and in a timely manner and completed the checklist as an evidence of review.	No exceptions noted.
B.7.2.2	Annually, the SI department receives an updated pricing file for alternative investments and private placements from a third-party pricing vendor containing any updates/changes as of the prior year end. The price updates/changes are identified by the SI department and updated automatically in the security master in IRAS. Price variances 10 percent or greater from the previous price are identified are sent via email to either the AI department or back to the vendor for confirmation.	For a selection of updated prices for alternative investments and private placements received from the third-party pricing vendor, inspected the pricing in IRAS to determine whether price updates/changes were identified accurately in the security master by the SI department.  Observed the system configuration and noted that for price updates/changes not in IRAS, the required information was automatically retrieved and updated in IRAS.  For a selection of price fluctuations identified by the SI department, inspected the email communications to determine whether price variances 10 percent or greater from the previous price were sent to either the AI department or back to the vendor for confirmation.	No exceptions noted.

**Control Objective B.7.3:** Controls provide reasonable assurance that Pershing's Stock Record completely and accurately reflect assets invested in funds and assets are balanced in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.7.3.1	On a quarterly basis, the investments and valuations from investment companies are reconciled against corresponding amounts and positions on Pershing's Stock Records. Differences are identified, monitored, researched and resolved by the AI department in a timely manner.	For a selection of amounts and positions, inspected the investments and valuations from investment companies and Pershing's Stock Record to determine whether the differences were identified, monitored, researched and resolved by the AI department in a timely manner.	No exceptions noted.
B.7.3.2	For unbalanced/unreceived funds, the AI department delivers the position from the account and notifies the IF of the delivery if Pershing does not receive a response or verification from the sponsor for one quarterly review period.  AI employees track notifications sent to general partners for unbalanced/unreceived funds using the AI Balancing Recon Report reviewed by AI management and completes the Associate Certification form.	For a selection of unbalanced/unreceived funds, inspected the account activity and notifications to the IF and Fund Administrator to determine whether the AI department delivered the position from the account if Pershing did not receive a response or verification from the sponsor for one quarterly review period.  For a selection of notifications sent to general partners for unbalanced/unreceived funds, inspected the AI Balancing Recon Reports and the Associate Certification forms to determine whether notifications were tracked and reviewed by AI management.	No exceptions noted.



## 8) OPTIONS EXPIRATION PROCESSING CONTROLS

**Control Objective B.8.1:** Controls provide reasonable assurance that expiring monthly options are processed according to instructions received from the IFs in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.8.1.1	On a monthly basis, the options expiring within the standard monthly expiration are made available to the IFs through NetX suite and NetX suite Services. On the day of expiration, Service Center instructions regarding option exercises are received from IFs, and entered on Pershing's bookkeeping records and at the OCC.	For a selection of monthly expiring options, inspected the IF option instructions to determine whether the records were exercised according to Service Center instructions.	No exceptions noted.
B.8.1.2	On a monthly basis, the online OCC Compare Report for expiring options is generated in NetX360 where in-the-money option positions are reviewed for position breaks and out-of-balance positions are researched and the appropriate corrective entries are made.	For a selection of positions from a selection of monthly expiring options, inspected the OCC Compare Report and evidence of action taken to determine whether in-the-money option position breaks and out-of-positions identified on the OCC Compare Report were researched and resolved in a timely manner.	No exceptions noted.
B.8.1.3	Pershing has incorporated the OCC's Automatic Exercise Procedure in determining whether or not to exercise an in-the-money option. Long in-the-money options for which exercise instructions have not been received are exercised automatically on a monthly basis.	For a selection of monthly options with auto-exercise eligibility from the Options Expiration- Position Compare with OCC, inspected the OCC Delivery Advice Report to determine whether the options were exercised according to eligibility.	No exceptions noted.
B.8.1.4	On a monthly basis, the Option Clearance Manager reviews the options exercise instructions received to verify if there are any contra instructions (instructions that go against the OCC Automatic Exercise Procedure) that need to be entered in the OCC ENCORE system. The exercise instructions are compared against the strike price of the option for verification of the contra instructions by Option Clearance management.	For a selection of monthly contra instructions received, inspected the strike price of the option to determine whether the contra instructions were accurate and documented in the OCC ENCORE system.	No exceptions noted.
B.8.1.5	On a monthly basis a file containing Pershing's exercise and assignment activity is received from the OCC and is processed through the mainframe that allocates positions to client	For a selection of monthly out-of-balance positions, inspected the Assigned Stock Records by Security Report and compared the positions to the manually booked Stock	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
	accounts. The Assigned Stock Record by Security Report is reconciled to the OCC file and any adjustments are manually booked to the Stock Record and the bookkeeping system.	Records to determine whether they were researched and resolved.	
B.8.1.6	Deliveries and receipts of securities regarding option exercises or assignments per TPS are reconciled with the NSCC on a daily basis. The OPD Derivatives group monitors the OLB for securities exceptions related to option exercises or assignments at the NSCC throughout the day. Out-of-balance situations (suspense breaks) are reviewed and the appropriate corrective entries are made. A daily OPD Derivatives Managers Log is completed and signed off by the department manager to evidence review.	Observed an Options Clearance employee review and research out-of-balance items on the OLB, and noted whether items were reported, reviewed and resolved.  For a selection of days, inspected the OPD Derivatives Managers Logs to determine whether the logs were prepared and signed off by management as evidence of their review.	No exceptions noted.

**Control Objective B.8.2:** Controls provide reasonable assurance that expiring weekly options are processed according to instructions received from the IFs in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.8.2.1	On a weekly basis, the options expiring within the weekly expiration are made available to the IFs through NetX suite and NetX suite Services. On the day of expiration, Service Center instructions regarding option exercises are received from IFs, and entered on Pershing's bookkeeping records and at the OCC.	For a selection of weekly expiring options, inspected the IF option instructions and NetX360 details to determine whether the records were exercised according to Service Center instructions.	No exceptions noted.
B.8.2.2	On a weekly basis, the online OCC Compare Report is generated in NetX360 where in-the-money option positions are reviewed for position breaks and out-of-balance positions are reviewed and the appropriate corrective entries are made.	For a selection of positions from a selection of weekly expiring options, inspected the OCC Compare Report and evidence of action taken to determine whether in-the-money option position breaks and out-of-balance positions identified on the OCC Compare Report were researched, and resolved in a timely manner.	No exceptions noted.
B.8.2.3	Pershing has incorporated the OCC's Automatic Exercise Procedure in determining whether or not to exercise an in the money option. Long in-the-money options for which exercise instructions have not been received are exercised automatically on a weekly basis.	For a selection of weekly options with auto-exercise eligibility from the Options Expiration- Position Compare with OCC, inspected the OCC Delivery Advice Report to determine whether the options were exercised according to eligibility.	No exceptions noted.
B.8.2.4	On a weekly basis, the department manager reviews the options exercise instructions received to verify if there are any contra instructions (instructions that go against the OCC Automatic Exercise Procedure) that need to be entered in the OCC ENCORE system. The exercise instructions are compared against the closing price of the underlying stock for verification of the contra instructions by Option Clearance management.	For a selection of weekly option exercise instructions received, inspected the underlying stock closing price to determine whether the contra instructions were accurate and documented in the OCC ENCORE system.	No exceptions noted.

## 9) SECURITY INFORMATION CONTROLS

### A. SECURITY MASTER

**Control Objective B.9.1:** Controls provide reasonable assurance that additions and modifications to the security master file are authorized and set up timely, completely and accurately.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.9.1.1	<p>Policies and procedures regarding security updates within the security master file are documented and accessible for SI employees. Each employee is required to sign a certification that he/she has read and understands the SI policies and procedures.</p> <p>Employee certification of the SI policies and procedures is completed semiannually.</p>	<p>Inspected the policies and procedures regarding security updates within the security master file to determine whether they were documented and available.</p> <p>For a selection of employees, inspected semiannual certifications to determine whether SI employees evidenced their review of the policies and procedures.</p>	No exceptions noted.
B.9.1.2	<p>During Straight Through Processing (STP), for trades and orders associated with securities not in PROM, the required security information is automatically retrieved from a vendor and updated in PROM. Notifications are generated when vendor data is not available, and the security is manually set up in PROM within required SLAs by an SI department employee.</p>	<p>Observed the system configuration and noted that for trades and orders associated with securities not in PROM, the required information was automatically retrieved from the vendor and updated in PROM.</p> <p>Observed the system configuration and noted that for trades and orders associated with securities not in PROM, notifications were generated during automated retrieval when the required information was not available from the vendor data.</p> <p>For a selection of notifications from a selection of days, inspected PROM security information data to determine whether the requests were researched and updated within required SLAs by an SI department employee.</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.9.1.3	An email that includes any outstanding Service Center queue requests for items with incomplete data, is distributed to SI management at the close of each business day for research and resolution.	For a selection of days, inspected daily notification emails indicating the status of the NetX suite Service Center queue at the conclusion of the business day to determine whether queue requests were reviewed and items with incomplete data, if any, were researched and resolved.	No exceptions noted.
B.9.1.4	Additions and modifications of securities in the security master file are requested by IFs or Pershing departments and validated against independent sources prior to their implementation in PROM.	For a selection of PROM-logged security additions and modifications to the security master file, inspected Service Center requests/email requests, workflow and screen prints of an independent source system to determine whether the addition or modification request was validated prior to implementation.	No exceptions noted.
B.9.1.5	Monthly, the RDQA group reviews a selection of manual security information items per SI employee. The RDQA employees review the security information and compare the security information to a vendor source to assess the accuracy of the manually entered information. The RDQA employees pass or fail each item reviewed. A manager reviews the QC to determine whether it was performed correctly. For failed items, the SI group researches the items through to remediation.	For a selection of months, inspected a selection of security information RDQA employee audits to determine whether the RDQA group reviewed a selection of manually updated security information items per employee.  For a selection of months, inspected a selection of security information reviewed by the RDQA group to determine whether a manager reviewed the QC review performed by RDQA group.  For a selection of items from the RDQA audits selected, inspected PROM screenshots to determine whether required actions were taken.	No exceptions noted.

**B. SECURITY PRICING**

**Control Objective B.9.2:** Controls provide reasonable assurance that security pricing information is calculated based on market prices from authorized pricing sources.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.9.2.1	The pricing information from authorized sources (e.g., vendors and IFs) is recorded in PROM. The incoming pricing transmission files are verified for the current date and are subject to variance testing between current and prior data.	For a selection of PROM automated pricing jobs, inspected the related PROM system's documentation to determine whether incoming transmissions files were tracked and PROM escalated rejected transmissions that had incorrect header dates or excessive variances between current and prior record counts.	No exceptions noted.
B.9.2.2	Pricing feeds are only obtained from authorized sources that have been approved by SI and Valuation Advisory Group.	For a selection of pricing vendors, inspected SI and Valuation Advisory Group meeting minutes to determine whether the sources were approved by senior management.  For a selection of PROM automated pricing jobs, inspected the related PROM system documentation to determine whether PROM was configured to record pricing information from authorized sources.	No exceptions noted.
B.9.2.3	On a daily basis, SI department management reviews, investigates and signs off on price fluctuation reports that identify price variances according to defined criteria.	For a selection of days, inspected a selection of price fluctuations from the daily price fluctuation report and corresponding third-party vendor pricing screens to determine whether price variances were identified and investigated, and reports were signed by management as evidence of their review.	No exceptions noted.
B.9.2.4	Each night, an automated pricing checkout routine is performed to confirm that the pricing from the automatic pricing feeds was processed. An automated pricing checkout status email is sent to SI management to monitor the status, and any issues in the pricing checkout status are researched and resolved.	Inspected PROM automated pricing checkout routine setup to determine whether the PROM system was configured to generate automated pricing checkout status emails to SI management.  For a selection of days, inspected automated pricing checkout status emails to determine whether price files were fed into PROM and no errors were recorded.	No exceptions noted.
B.9.2.5	SI management has established a defined methodology to price securities, which relies on an established hierarchy of price information sources that is based on business requirements.	Inspected the security pricing methodology and noted that a predefined hierarchy had been established and updated by management.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
		Observed the price of a security in PROM system and noted that the predefined hierarchy was established in the system.	
B.9.2.6	If the price that is manually input varies from the previous price by more than 25%, PROM generates a message indicating that the item exceeds the variance threshold and requires an approval, and the item is routed to an approval queue for a further examination. Systematic online edit checks prevent an employee from entering illogical entries in the PROM system.	Observed SI management induce a price change of more than 25% and noted that an online message was generated and the item was routed to an approval queue for a further examination.  For systematic edit checks determined by management to be relevant to the financial reporting of IFs, observed SI management enter illogical entries to the PROM system and noted that the PROM system rejected the entries and error messages were displayed.	No exceptions noted.
B.9.2.7	The department managers review a daily NYSE Manual Price Input Report to verify that only authorized Pershing personnel are manually processing and updating pricing changes.	For a selection of daily NYSE Manual Price Input Reports, inspected the manual pricing changes and compared the names to the list of authorized personnel to determine whether authorized personnel manually processed pricing changes.  For a selection of daily NYSE Manual Price Input Reports, inspected department manager sign-offs to determine whether management reviewed personnel who manually processed pricing changes.	No exceptions noted.
B.9.2.8	On a daily basis, SI management evidences via supervisory sign-off the review of: <ul style="list-style-type: none"> <li>NYSE Manual Input Report for manually updated pricing changes</li> <li>Automated email confirmation of the pricing checkout routine</li> <li>Price Fluctuation Report</li> </ul>	For a selection of days, inspected the daily supervisory sign-offs to determine whether the following were reviewed and signed off by SI management: <ul style="list-style-type: none"> <li>NYSE Manual Input Report for manually updated pricing changes</li> <li>Automated email confirmation of the pricing checkout routine</li> <li>Price Fluctuation Report</li> </ul>	No exceptions noted.
B.9.2.9	A stale price report is reviewed weekly by the SI department. SI employees attempt to find pricing from approved sources.  A stale priced securities file containing security information for CUSIPs held by the IF, including the price, zero or otherwise, is made available to IFs for review.	For a selection of stale priced securities from a selection of weekly stale price reports, inspected the security pricing source prices and PROM details to determine whether the SI employee researched the stale securities and updated PROM for those prices obtained from approved sources.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.9.2.10	Access to add, modify, or purge prices from the Security Pricing File in PROM is restricted to authorized individuals only based on job responsibilities.	For the production user IDs with privileges to add, modify, or purge prices in PROM, inspected the corresponding organizational chart and inquired of SI management to determine whether access to add, modify, or purge prices was restricted to authorized individuals based on job responsibilities.	No exceptions noted.
B.9.2.11	Pricing requests to the SI department from IFs are researched for the security prices and the SI department employee manually updates the security prices in PROM. The daily NYSE Manual Price Input Report includes manually updated security prices. On a daily basis, a daily email confirmation is sent to the SI department group notifying of the security updates performed by an SI employee and a secondary review performed by a peer reviewer.	For a selection of manual pricing updates of securities from a selection of daily NYSE Manual Price Input Reports, inspected the security updates in PROM screen and third-party sources to determine whether security prices manually updated in PROM were accurately entered by an SI department employee.  For a selection of days, inspected the daily email confirmations to determine whether security updates performed by an SI employee and a secondary review performed by a peer reviewer were notified to the SI department group.	No exceptions noted.



**10) CLEARANCE AND SETTLEMENT CONTROLS**

**Control Objective B.10.1:** Controls provide reasonable assurance that the DTC eligible client transactions are settled completely and accurately in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.10.1.1	A Settlement Status Report is generated from NetX360. The Settlement Status Report is filtered on aged or large dollar value open items to pull real time outstanding delivery obligations. The Delivery Management supervisor or designee reviews aged or large dollar value open items on a daily basis and evidenced in the supervisory checklist/OneNote signoff. Unsettled items are researched and resolved by a Customer Processing & Services employee.	<p>For a selection of days, inspected the supervisory checklist/OneNote signoff to determine whether the Settlement Status Report were reviewed and signed off by a Delivery Management supervisor or designee.</p> <p>For a selected day, inspected the trade details in the GCLR system to determine whether the Settlement Status Report captured open items completely and accurately.</p> <p>For a selection of open items identified from a selection of Settlement Status Reports, inspected the account activity to determine whether they were researched and resolved.</p>	No exceptions noted.
B.10.1.2	On a weekly basis, open trades that are aged 45 days or more or valued at over \$100,000 are submitted to the Global Credit and Market Risk Committee for review.	<p>For a selection of weeks, inspected emails to the Global Credit and Market Risk Committee and the attached open trades that were aged 45 days or more or valued at over \$100,000 to determine whether open trades were communicated to the Credit Risk Committee.</p> <p>For a selection of weeks, inspected the Aged Deliveries Report with open trades 45 days or more or valued over \$100,000 to determine whether open trades were researched and the reasons were annotated in the report by the Delivery Management department.</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.10.1.3	<p>When Pershing fails to receive an open Receive Versus Payment (RVP) transaction by the settlement day + 10 business days, Pershing files (if requested by IFs) an extension request with the FINRA as per the prevailing rules. If not settled within the available extensions, Pershing will buy in the trade.</p> <p>Reports are generated systematically each day that indicate positions requiring first extensions, second extensions or buy-ins that day, and are reviewed to confirm that appropriate action is taken.</p>	<p>For a selection of open RVP transactions extension items from a selection of Buy-in Reports, inspected the corresponding Service Center ticket notification and the FINRA Customer extension history to determine whether required actions, including filing of a first extension, second, or buy-in when necessary, were taken to resolve the transaction in a timely manner.</p>	No exceptions noted.
B.10.1.4	<p>When Pershing receives a "Don't Know" (DK) on a Delivery Versus Payment (DVP) transaction, Pershing files an extension request with the FINRA as per the prevailing rules, when necessary. If the transaction is not settled within the extension, Pershing will close out the trade.</p> <p>Daily reports are generated systematically that indicate positions requiring closeout for that day, and are reviewed to verify that appropriate action is taken by a Customer Processing &amp; Services employee.</p>	<p>For a selection of DVP fail transactions from a selection of daily open item reports, inspected the NetX suite account history to determine whether required actions, including filing of an extension request when necessary, were taken to resolve the transaction by a Customer Processing &amp; Services employee.</p>	No exceptions noted.
B.10.1.5	<p>Pershing's Global Clearance System (GCLR)/OLCA matches receive and delivery confirmations from the DTC against existing open item files. Unmatched items located on the DTC Match to Settle RADS screens are reviewed and resolved in a timely manner by the DTC Settlement group.</p>	<p>For a selection of unmatched items from a selection of days, inspected the unmatched items queue located on the DTC Match to Settle RADS screens and the GCLR/OLCA open items screen to determine whether unmatched items were reviewed and resolved in a timely manner by the DTC Settlement group.</p> <p>For a selection of days, inspected the DTC Settlement Daily Checklists to determine whether a supervisor reviewed the unmatched queues and signed off on the checklist.</p>	No exceptions noted.

**Control Objective B.10.2:** Controls provide reasonable assurance that government security clearance transactions are transmitted completely and accurately to BNY Mellon to affect the settlement process.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.10.2.1	At the end of each day, a Government Settlement Manager verifies that the clearance account at BNY Mellon has a zero balance, indicating items were appropriately transferred to the segregated account. Evidence of this process is reviewed and signed by a supervisor on the government clearance daily checklist. A daily discrepancy report is used to identify the items that were not cleared, and journal entries are posted to resolve uncleared items.	For a selection of days, inspected the clearance account balances to determine whether funds were transferred out of the BNY Mellon account into the segregated account and that the clearance account at BNY Mellon had a zero balance.  For a selection of days, inspected the daily discrepancy report and journal entries to determine whether items that were not cleared were reported on the discrepancy report, and resolved in a timely manner.  For a selection of days, inspected the government clearance daily checklists to determine whether a supervisor reviewed the clearance account for a zero balance and signed off on the checklist.	No exceptions noted.
B.10.2.2	Government Settlement personnel review reject queues received from BNY Mellon and take corrective action to receive valid instructions. Subsequent to the amendments, the instructions are retransmitted to BNY Mellon for settlement. Evidence of this process is reviewed and signed by a supervisor on the government clearance daily checklist.	For a selection of rejects from a selection of days, inspected the audit trails to determine whether they were researched, resolved and retransmitted to BNY Mellon completely and in a timely manner.  For a selection of days, inspected the government clearance daily checklists to determine whether a supervisor reviewed the reject queues and signed off on the checklist.	No exceptions noted.
B.10.2.3	Cash activity for securities transactions is reconciled to BNY Mellon daily and a net settlement proof is performed. Evidence of this process is reviewed and signed by a supervisor on the government clearance daily checklist.	For a selection of days, inspected the settlement proofs and cash activity report to determine whether cash activity was reconciled to BNY Mellon and differences were researched and resolved.  For a selection of days, inspected the government clearance daily checklists to determine whether a supervisor reviewed the settlement proofs report and signed off on the checklist.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.10.2.4	Receive and delivery confirmations from BNY Mellon's BDC system are matched against existing open item files in GCLR/OLCA. Unmatched items are reviewed and resolved in a timely manner by the Government Settlement group. Evidence of this process is reviewed and signed by a supervisor on the government clearance daily checklist.	For a selection of unmatched items from a selection of days, inspected the unmatched items queue and the GCLR/OLCA open items screen and noted that unmatched items were reviewed and rejects were resolved in a timely manner by the Government Settlement group.  For a selection of days, inspected the government clearance daily checklists to determine whether a supervisor reviewed the unmatched queues and signed off on the checklist.	No exceptions noted.
B.10.2.5	Access for new internal and external users of BDC requires the approval of a designated manager responsible for authorizing access, as documented via electronic access request forms. Following receipt of the approved forms, the DSA grants access to the application layer.	For a selection of new internal and external users, inspected the access request forms provided to the DSA team and determined that access levels were requested based on job responsibility, approved by the designated manager and granted in accordance with what was requested.  For a selection of internal and external users, inspected the access request forms and corresponding access levels in the system and determined that the access granted agreed with the access level requested.	No exceptions noted.
B.10.2.6	For BDC application access de-provisioning, electronic requests are sent to a DSA by a designated manager responsible for authorizing access or are automatically generated by the Enterprise Technology Asset Manager (ETAM) program and sent to a DSA. Following receipt of the approved forms, the DSA revokes access to the application layer.	For a selection of terminated or transferred internal and external users, inspected the termination request forms provided to the DSA and the system profiles and determined that users were revoked from the application in a timely manner.  For a selection of internal and external users, inspected the access removal requests and audit trails to determine whether the access was revoked from BDC application in a timely manner.	No exceptions noted.

**Control Objective B.10.3:** Controls provide reasonable assurance that international trade transactions are completely and accurately captured and settled in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.10.3.1	International trade statuses are reviewed on a daily basis by IFs through the NetX settlement status screen and unmatched trades in the market are either posted to the IF's reject account or subjected to a 25% margin haircut on the third business day past settlement date. Any trade remaining open past the third business day requires management approval. A supervisory checklist is prepared and approved in OneNote by management to evidence review.	For a selection of unresolved trades aged more than three days past settlement date, inspected the three day report to determine whether unresolved trades appeared on the three day report, each trade obtained management approval, and required action was taken for unmatched trades.  For a selection of days, inspected the supervisory checklists in OneNote to determine whether they were prepared and signed off by management to evidence review.	No exceptions noted.
B.10.3.2	International settlements made as free deliveries are monitored and aged on a daily basis on the Unsecured Money Reports. Any Money Only Transaction that is still open beyond three days from the actual delivery date of shares is moved to the IF's sundry account for resolution. Uncollected monies on Balance Order and ACAT deliveries are not eligible for journal into IF sundry accounts. For any sale trade on Balance Order Deliveries (BODs) or ACAT deliveries with an uncollected receivable aged past the second business date following the delivery date will be followed up with the contra brokers by Pershing.	For a selection of international settlements made as free deliveries from Unsecured Money Reports for a selection of days, inspected the trade history to determine whether they were aged, monitored, resolved, and the trades which were open past the third business day were moved to the IF sundry account for resolution.  For a selection of uncollected monies on BODs and ACAT deliveries from a selection of days, inspected the trade PAR history to determine whether they were aged, monitored and resolved, and the trades which were open past the second delivery date were followed up with the contra brokers.	No exceptions noted.

**Control Objective B.10.4:** Controls provide reasonable assurance that Pershing's records completely and accurately reflect option trades and positions with the Options Clearing Corporation.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.10.4.1	On a daily basis, Options Processing department (OPD) personnel review, investigate and resolve the breaks from NetX360 for breaks identified between the IF's trades and positions, and Pershing's positions at market centers per the OCC. A daily supervisory checklist is completed and signed off by OPD management to evidence review.	For a selection of trade breaks from a selection of daily trade and position break logs versus the OCC, inspected the corresponding history details to determine whether the breaks were identified and resolved in a timely manner.  For a selection of days, inspected supervisory checklists to determine whether breaks were resolved and OPD management signed off on the checklist.	No exceptions noted.
B.10.4.2	On a daily basis, a Banking & Funds OCC settlement sheet is reviewed and approved by OPD management and is delivered to the Money Desk for processing.	Inspected a selection of daily OCC Settlement Summary Reports to determine Pershing's net settlement was applied to the Banking & Funds OCC settlement sheet and reviewed via management sign-off.  For a selection of days, inspected a selection of OCC settlement sheets and communication to the Money Desk to determine whether the settlements were reviewed and approved by OPD management and delivered to the Money Desk for processing.	No exceptions noted.

**11) DEPOSITORY BALANCING CONTROLS**

**Control Objective B.11.1:** Controls provide reasonable assurance that Pershing's Stock Record completely and accurately reflect securities and cash held by depositories.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.11.1.1	Positions and cash balances are obtained directly from the applicable depositories and reconciled against corresponding amounts and positions on Pershing's records. Differences are communicated by DB personnel and subsequently monitored, researched and resolved in a timely manner by the responsible departments.	For the DTC, Fed and Euroclear automated depository reconciliations of positions and cash balances to Pershing's records on a selected date, inspected system configuration and position details to determine whether the differences were captured accurately and completely.  For a selection of differences, inspected the daily position and cash reconciliations to determine whether employees prepared the reconciliations and communicated any discrepancies to the responsible departments for timely resolution.  For a selection of discrepancies, inspected the account history within Pershing's records to determine whether employees resolved the discrepancies in a timely manner.  As of 12/31/2021, independently obtained and inspected the DTC, Fed and Euroclear position files and reperformed the reconciliation to Pershing records to determine whether the data was unaltered and the data was captured accurately in the reconciliation.	No exceptions noted.
B.11.1.2	On a daily basis, unreconciled items are directed to the appropriate departments for resolution. Unreconciled items that cannot be resolved within 2 business days for DTC/FED and 3 business days for Euroclear are moved to corresponding suspense accounts where the assigned department is responsible to adjust and review.	For a selection of daily reconciliation reports, inspected a selection of unreconciled items to determine whether the unreconciled items were booked to the corresponding suspense accounts, if not resolved within 2 business days for DTC/FED and 3 business days for Euroclear, for the assigned department to adjust and review.	No exceptions noted.
B.11.1.3	The Pershing Stock Record short positions are reconciled to the long positions on a daily basis. Identified discrepancies that are not resolved within by the end of next business day are moved to the business groups' suspense accounts.	For a selection of breaks from a selection of days, inspected the daily Plug Report to determine whether breaks between the Stock Record short positions and long positions were resolved within two business days and breaks not resolved within two business days, if any, were moved to the business group's suspense accounts.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.11.1.4	Positions and cash balances information is obtained directly from the applicable depositories by Pershing via secured dedicated lines.	<p>Inspected the data transmission policies and procedures to determine whether secure dedicated lines were utilized for positions and cash balances information obtained directly from the applicable depositories.</p> <p>Inspected transmission protocol configurations to determine whether positions and cash balances information was obtained directly from the applicable depositories over secure dedicated lines.</p>	No exceptions noted.



**12) PHYSICAL CUSTODY PROCESSING CONTROLS**

**Control Objective B.12.1:** Controls provide reasonable assurance that Pershing's records completely and accurately reflect physically held securities which are safeguarded from loss or misappropriation.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.12.1.1	The vault area is a restricted area and entry into the vault is limited to authorized personnel. Visitors to the vault must be authorized by Asset/Custody Services management. The area is protected by alarm systems and cameras are used for monitoring. Management performs a monthly review of personnel with key card access to the vault area.	Observed the vault area and noted that security cameras and alarm systems were in place to monitor the access to the vault area.  For a selection of days, inspected visitor sign-in logs to determine whether procedures were followed for visitor access to the vault area.  For a selection of months, inspected the vault key card access report and compared it to a list of authorized individuals within Asset/Custody Services to determine whether management reviewed personnel with key card access to the vault and only authorized individuals were granted access.	No exceptions noted.
B.12.1.2	The physical security received by the Custody department is compared to the routing entry in the Custody (PCAS) Safekeeping Audit Report to confirm that the security is processed accurately. Management evidences review of the daily journal entries and security received via the Securities Maintenance Supervisory sign-offs.	For a selection of physical securities from a selection of days, inspected the Custody (PCAS) Safekeeping Audit Report and the physical securities received to determine whether the details of routed securities matched the security details on the respective reports.  For a selection of days, inspected the Securities Maintenance Supervisory sign-offs to determine whether Asset/Custody Services management reviewed the daily journal entries and security received.	No exceptions noted.
B.12.1.3	Securities are imaged upon receipt into a box location or a client account. The imaged batches are indexed by date and box location and/or client account number. Certificates registered in clients' names for safekeeping and pending paper positions are imaged by client account number.	For a selection of physical securities from a selection of days, inspected the scanned image to determine whether securities were imaged upon receipt into box location or a client account and that the imaged batches were indexed by date and box location and/or client account.	No exceptions noted.
B.12.1.4	Custody Aging Transit Reports, which document aged items in transit, are reviewed by management. Securities not received within four days of recording the transfer on the PCAS application are researched and resolved in a timely manner. For	For a selection of days, inspected the Custody Aging Transit Reports to determine whether management reviewed the aged items in transit.  For a selection of securities from Custody Aging Transit Reports, inspected the PCAS audit trail to determine whether the	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
	items not received by business day five, the IF is contacted and the position is removed from the client account. Any position received at Pershing that requires additional research will be moved into a custody suspense account in a timely manner and should not exceed the 6 <sup>th</sup> business day. On a daily basis, the Custody Supervisor reviews the Custody Aging Transit Report to verify that items are properly updated.	security was researched, removed from the client account or transferred to the suspense account as necessary and resolved in a timely manner.	
B.12.1.5	Physical securities that are submitted to transfer agents produce a transfer fanfold/voucher. The fanfolds are maintained in date order. One day old vouchers are compared to Physical Transfer Daily Reports to verify that physical vouchers are accounted for.	For a selection of days, inspected the Physical Transfer Daily Reports to determine whether review was performed by management to account for physical vouchers.  For a selection of fanfold vouchers from a selection of Physical Transfer Daily Reports, inspected the vouchers to determine whether the fanfold vouchers were created for the securities submitted to transfer agents.	No exceptions noted.
B.12.1.6	The Custody department coordinates the firm's quarterly securities count (quarterly audit) of securities held in Pershing's vault. The count is conducted by Pershing employees that do not have daily balancing and reconciling responsibilities of the associated box and it is monitored by the DB department. Breaks identified during the quarterly audit are recorded on the Quarterly Security Verification Reports and researched and resolved.	For a selection of quarters, observed the counters performing their quarterly test counts, review and sign off on identified breaks per box and noted that quarterly audits of securities held in the vault were performed.  For a selection of quarters, inspected the Quarterly Security Verification Reports to determine whether quarterly verification reports were completed and recorded the summary of the breaks identified.  For a selection of breaks identified during the quarterly audit, inspected PCAS break details to determine whether the breaks were researched and resolved.	No exceptions noted.
B.12.1.7	On a daily basis, a systematic reconciliation comparing the positions on Pershing's Stock Record that are physically held in Pershing's safekeeping locations to the securities in PCAS system is performed. Differences are communicated to the responsible departments and monitored, researched and resolved in a timely manner in order to balance	For a selection of days, inspected the reconciliation reports between Custody (PCAS) and client positions by CUSIP to determine whether the out-of-balance securities were researched and resolved.  For a selection of days, inspected the Supervisor sign-offs to determine whether Asset/Custody Services management reviewed and approved the location account reconciliation.	No exceptions, except where noted.  Exception Noted

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
	<p>out the positions at Pershing Stock Record and PCAS.</p> <p>Asset/Custody Services management reviews and approves the location account reconciliation on a daily basis.</p>		
<p>Exception Noted:</p> <p>For two out of twenty six selected days, management was not able to provide evidence to demonstrate the performance of the daily reconciliation comparing the positions on Pershing's Stock Record that are physically held in Pershing's safekeeping locations to the securities in the PCAS System.</p> <p>Management Response:</p> <p>Refer to Section V for exception detail and management's response to the exception.</p>			

### 13) MARGIN CONTROLS

**Control Objective B.13.1:** Controls provide reasonable assurance that margin accounts are maintained in accordance with regulatory rules and IF arrangements.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.13.1.1	Account positions and current trades are recorded and maintained in GMAR from feeds received from Bookkeeping system (BKPG), which is fed by the core systems (e.g., TPS and ATOMS). A nightly system validation checkout is performed to verify that Pershing systems are updated in the GMAR system completely and accurately.	For a selection of days, inspected the daily system validation checkout emails sent to the Data Integrity Checkout group to determine whether the nightly system validation checkout was performed by Margin department to verify that Pershing systems were updated in the GMAR system completely and accurately.	No exceptions noted.
B.13.1.2	On a daily basis, GDMS lists client account exceptions that need to be addressed and maintains the history for items, whether opened or resolved. The Margin department reviews exceptions, takes appropriate action and monitors the status and activity of each IF's client accounts to verify that items are resolved. Unresolved items as reported on the All Open Items report are reviewed and approved by the Margin Manager and evidenced on the Supervisor Checklist on a daily basis.	Observed margin levels for a selected client account to determine whether the GDMS lists captured exceptions accurately and completely.  For an All Open Items report traced the items back to GDMS to determine whether the report captured the exceptions accurately and completely.  For a selection of client exceptions from Margin open item reports, inspected Credit View account history detail screenshots to determine whether the Margin department resolved the items.  For a selection of days, inspected the Supervisor Checklist to determine whether the Margin Manager reviewed and approved the unresolved items.	No exceptions, except where noted.  Exceptions noted.
<p>Exceptions noted:</p> <p>From October 1, 2021 through January 18, 2022, the All Open Items report did not capture multicurrency fed calls, as such multicurrency fed calls were not reviewed by the Margin Manager.</p> <p>Additional procedure:</p> <p>KPMG inspected the supporting documentation for activities performed as part of the management's impact assessment and remediation with respect to the exception noted and determined that management performed the procedures to assess the impact and to retroactively review the multicurrency fed call exception items. KPMG inspected management's retroactive review for the period 10/1/2021 – 1/18/2022 and noted that all multicurrency fed calls exceeding four days were actioned by the Margin department. After a permanent fix was installed on January 19, 2022, KPMG inspected an All Open Items report and traced the items back to GDMS to determine whether the report captured the exceptions accurately and completely.</p> <p>Management response:</p> <p>Refer to Section V for exception detail and management's response to the exception.</p>			

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.13.1.3	<p>The Margin department reviews open calls daily from the Correspondent Margin Status Report against the total open firm calls from Credit View.</p> <p>The Margin department's Firm Trading group tracks identified open firm calls from the Correspondent Margin Status Report to their respective due dates with the Daily Margin Recap Report, takes appropriate action and monitors the status and activity of each IF's proprietary firm accounts to verify that items are resolved.</p>	<p>For a selection of open firm calls from a selection of days, inspected the Corresponding Margin Status Reports and Daily Margin Recap Reports for the manual conversion work performed by the Margin department associate, if applicable, to determine whether open firm calls were identified and monitored for resolution.</p>	No exceptions noted.
B.13.1.4	<p>The Margin department prepares several credit risk management reports, highlighting significant aged exceptions and exposures. The reports are submitted to the Operations Risk Advisory Group for review on a weekly basis.</p>	<p>For a selection of weeks, obtained credit risk management reports submitted to the Operations Risk Advisory Group to determine whether the reports highlighted significant aged exceptions and exposures.</p> <p>For a selection of weeks, inspected emails submitted to the Operations Risk Advisory Group and the attached credit risk management reports to determine whether significant aged exceptions and exposures were reviewed by Operations Risk Advisory Group.</p>	No exceptions noted.

**14) CORPORATE ACTIONS PROCESSING CONTROLS****A. DIVIDENDS AND BOND INTEREST**

**Control Objective B.14.1:** Controls provide reasonable assurance that Domestic Dividend and Bond Interest announcements are received from authorized sources and transactions are identified, processed, settled and recorded completely, accurately and in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.14.1.1	New dividend and bond interest announcements received automatically on PDVA are compared to the existing announcements for discrepancies. Discrepancies are adjusted in PDVA on the announcement update screen and noted on the appropriate (DTC) compare report. The Dividend and Bond Interest Announcement Group Manager's Checklist is used to evidence review and approval by management.	For a selection of announcement discrepancies identified on the daily compare reports, inspected the adjustments made in the dividend and bond interest announcement entries in PDVA to determine whether the updates were made in PDVA to accurately reflect the authoritative source (DTC).  For a selection of days, inspected the Dividend and Bond Interest Announcement Group Manager's Checklists to determine whether they were reviewed and signed off by management.	No exceptions noted.
B.14.1.2	Events that have passed the record date are displayed on the On Hold Report and compared to a secondary source to verify accuracy. Discrepancies are adjusted in PDVA on the announcement screen or on the pending dividend allocation file update screen and noted on the On Hold Report as adjusted. The Dividend and Bond Interest Announcement Group Manager's Checklist is used to evidence review and approval by management.	For a selection of discrepancies noted on a selection of On Hold Reports, inspected the PDVA and the DTC announcement screens to determine whether the discrepancies were adjusted accurately.  For a selection of days, inspected the Dividend and Bond Interest Announcement Group Manager's Checklists to determine whether the checklists were reviewed and signed off by an employee and management.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.14.1.3	On payable date, payments received from the depository are reconciled to verify that funds received were allocated to clients. The Third Run Exception Report is used to identify funds received but not allocated or funds allocated and not received. The Dividend and Bond Interest Announcement Group Manager's Checklist is used to evidence review and approval by management.	<p>For a selection of days, inspected the payable date exception report to determine whether differences were reviewed by employees.</p> <p>For a selection of differences identified on the exception reports, inspected the system records to determine whether differences were corrected timely in the Pershing bookkeeping system (BKPG).</p> <p>For a selection of days, inspected the Dividend and Bond Interest Announcement Group Manager's Checklists to determine whether they were reviewed and signed off by management.</p>	No exceptions noted.
B.14.1.4	A second review is conducted the day following the payment date to reconcile any remaining receivable/payable balances in a timely manner by reviewing the Exception Reports. A daily checklist is prepared and signed off by the employee to evidence review. The Dividend and Bond Interest Announcement Group Manager approves each employee's checklist as validation the review has been completed. Any unallocated funds are reported to the Global Credit and Market Risk Committee and aged on a weekly basis.	<p>For a selection of days, inspected a selection of breaks on the Exception Reports and inspected the NetX360 activity to determine whether funds issues were researched and resolved in a timely manner.</p> <p>For a selection of days, inspected the daily checklist to determine whether they were reviewed and signed by the Dividend and Bond Interest Announcement Group Manager.</p> <p>For a selection of weeks, inspected the unallocated funds not due weekly aging reports to determine whether the unallocated funds were reported to the Global Credit and Market Risk Committee.</p>	No exceptions noted.

**Control Objective B.14.2:** Controls provide reasonable assurance that international dividend and bond interest announcements are received from authorized sources and transactions are identified, processed, settled and recorded completely, accurately and in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.14.2.1	<p>On a daily basis, pre-payable dividend announcements are sent from a SIX Financial Information feed (SWIFT messages) to Pershing corporate action system, N-TIER.</p> <p>Announcements in N-TIER are manually compared to SWIFT (SWIFT messages from the custodian). After the position, pay date, rate, currency and tax have been validated, the announcement is pushed to the payment on hold queue. Once management review is completed a payment is released and posted to the client's account. The International Processing Unit Manager's Checklist is used to evidence review and approval by management.</p> <p>The dividend amounts are automatically posted to the downstream system (NetX360).</p>	<p>For a selection of announcements, inspected the incoming SWIFT message to determine whether the SWIFT message for dividend announcements was reconciled with N-TIER and accurately and timely recorded in NetX360.</p> <p>For a selection of days, inspected the daily checklist to determine whether management reviewed and approved the checklist.</p>	No exceptions noted.
B.14.2.2	<p>On payment due date, additional SWIFT instructions are received detailing bank information and dividends amounts are paid out. A reconciliation is performed between the payments received from the depository and the payments released to verify that funds received were accurately allocated to clients. An exception report is used to identify funds received but not allocated or funds allocated and not received. The International Processing Unit Manager's Checklist is used to evidence review and approval by management.</p>	<p>For a selection of days, inspected exception reports to determine whether exceptions were identified, researched and resolved in a timely manner.</p> <p>For a selection of days, inspected the International Processing Unit Manager's Checklist to determine whether management reviewed and approved the checklists.</p>	No exceptions noted.



**B. REORGANIZATION CONTROLS**

**Control Objective B.14.3:** Controls provide reasonable assurance that reorganization transactions are identified, processed, settled and recorded accurately and in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.14.3.1	<p>Voluntary and mandatory corporate action events are announced in accordance with the terms of the event. The events are added to the REOR system, either automatically via vendor transmission or manually if they do not meet the criteria.</p> <p>Mandatory action announcements and voluntary action announcements are released by the Corporate Actions Reorganization Manager. Corporate Actions Reorganization management reviews both mandatory and voluntary actions to verify the accuracy of announcements entered in the REOR system.</p>	<p>For a selection of voluntary and mandatory actions, inspected voluntary and mandatory corporate action events and the voluntary reorganization announcements to determine whether the events were accurately added to the system, reviewed by Corporate Actions Reorganization management and released.</p>	No exceptions noted.
B.14.3.2	<p>A third-party reorganization servicer provides a nightly notification report which is reviewed daily by the Corporate Actions Reorganization group to identify offers with an upcoming mailing ("Must Mail") and verify the timeliness of the mailing by the third-party vendor as evidenced by the mailing confirmation.</p>	<p>For a selection of days, inspected the third-party reorganization servicer nightly notification reports to determine whether the reports were generated.</p> <p>For a selection of accounts marked as "Must Mail," inspected the mailing confirmation to determine whether the third-party vendor mailings to client accounts of Pershing's IFs were sent.</p>	No exceptions noted.
B.14.3.3	<p>The IF enters instructions on the client's behalf into the reorganization system (REOR) through IFA or via OpsCenter. Instructions input by clients are passed through the Rules Engine that confirms their completeness. When instructions are received outside of the REOR system, the instructions are added to the system by a Pershing employee and signed off by an independent employee.</p>	<p>For a selection of responses received outside of the REOR system from a selection of days, inspected instructions and the entry in the REOR system to determine whether they were accurately added to the system by an employee and checked by an independent employee.</p>	No exceptions noted.
B.14.3.4	<p>Pershing's REOR application transmits wires to correspondents for accounts that have not yet participated in the offer to the expiration date of the event. The wires provide IFs with the terms of the offer, critical dates and their list of holders. A report of</p>	<p>For a selected voluntary offer, inspected a wire transmitted by the REOR system prior to the expiration date of the event to determine whether a reminder wire was transmitted for scheduled dates and reports</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
	the administrative wires that were sent is retained electronically in Report Center and in deal folders. NetX360's IFA indicates offers that are expiring that day and offers that are cutting off that day. Filters within NetX360's IFA also list accounts that are without instructions.	of the wire sent was retained in the deal folder.	
B.14.3.5	Upon completion of the offer, payment is allocated to client accounts. Payment terms are entered in the REOR system and a report is generated identifying securities/funds that are being allocated. The allocation to clients is cross-referenced against funds received from the agent/depository and balanced and reviewed by management.	For a selection of days, inspected allocated offers and compared them to the debit payout and journal entry to determine whether the allocations to clients were balanced, cross-referenced against funds received from the agent/depository and reviewed by management.	No exceptions noted.
B.14.3.6	A daily Reorganization Dept. DTC v/s Pershing Cash Settlement Report is generated as a daily reconciliation between the money paid to Pershing by the DTC and the money Pershing allocated to its customers. On payable date of a maturity or redemption, Corporate Actions Reorganization management reviews the payments received from the depository to verify that funds received were allocated to clients.	For a selection of days, inspected the Reorganization Dept. DTC v/s Pershing Cash Settlement Report and the resolution support for a selection of differences to determine whether management reviewed and followed up on differences.	No exceptions noted.
B.14.3.7	End-of-day verifications are completed by the Corporate Actions Reorganization Manager daily to verify that mandatory entitlements received from the DTC have been allocated and that mandatory allocations processed on the REOR system have been approved by the manager.	For a selection of days, inspected daily critical business task reorganization checklists to determine whether end-of-day business tasks were completed and signed by the Corporate Actions Reorganization Manager.  For a selection of days, inspected the daily DTC settlement reporting and entitlements from DTC for a selection of allocations to determine whether allocations processed on the REOR system were approved by the Corporate Actions Reorganization Manager.	No exceptions noted.

**15) MONEY MARKET FUND AND FDIC BANK SWEEP CONTROLS**

**Control Objective B.15.1:** Controls provide reasonable assurance that money market fund and FDIC-insured sweep transactions are captured, processed and recorded timely and accurately in the client's account in accordance with client instructions.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.15.1.1	When money market fund or FDIC-insured deposits purchases are made, ACAM automatically reviews client account balances to determine if adequate funds exist in an account; conversely, while redeeming funds, ACAM determines that sufficient holdings are available in the client's sweep product.	Observed fund purchases or redemptions entered for amounts not in excess of the fund holding balance or client bank account and noted that no error messages were displayed by ACAM and the request succeeded.  Observed fund purchases or redemptions entered for amounts in excess of the fund holding balance or client bank account and noted that systematic error messages were displayed by ACAM and the request was rejected.	No exceptions noted.
B.15.1.2	For multi-bank FDIC insured settlements, prior to initiating any fed fund wire transfers, Pershing's Cash Management Services department receives a breakdown of money movements between the Pershing omnibus house accounts at program banks and the operating account (one from each processor R&T, TBS, PIN, or StoneCastle). An employee verifies the total figures provided in the breakdown vs. the ACAM system totals. Once confirmed, an employee approves/initiates the money movements for a particular program and the request is subsequently reviewed/approved by a second authorized employee.	For a selection of days, inspected the Settlement Reports to determine whether the total of money movements between the Pershing omnibus house accounts at program banks and the operating account provided by the third-party providers (R&T, TBS, PIN and StoneCastle) matched the totals in the ACAM system.  For a selection of days, inspected the Settlement Reports to determine whether the confirmed money movements between the Pershing omnibus house accounts for a particular program bank (R&T, TBS, PIN or StoneCastle) were approved or initiated by an employee and subsequently reviewed or approved by a second authorized employee.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.15.1.3	<p>For omnibus money market funds, ACAM performs a systematic reconciliation of the total client account balances to the omnibus house account balance, which is transmitted to Pershing by the fund company or their transfer agent. Daily exception reports identify differences resulting from the above automated reconciliations; the differences are researched and resolved by a Cash Management Services employee.</p> <p>A Cash Management Services Manager reviews and approves the omnibus reconciliation and signs off on the Cash Management Services Daily Checklist to evidence review.</p> <p>Scheduled job is in place to feed Pershing balances details from GMAR to ACAM.</p>	<p>For a selection of days, inspected the ACAM Omnibus Daily Reconciliation Reports to determine whether the report was reviewed for the unmatched total balance for client activities at Pershing and the transfer agent.</p> <p>As of 9/30/2022, for an ACAM Omnibus Daily Reconciliation Report, inspected Fund Master account details and source files to determine whether differences were captured accurately and completely.</p> <p>As of 9/30/2022, for a selected money market fund company / transfer agent, inspected the total online client account balance and the reconciliation to Pershing records and compared it to the money market transfer agent balance to determine whether the data was unaltered and the data was captured accurately in the reconciliation.</p> <p>For a selection of out-of-balance items between Pershing and money market transfer agents or fund companies from a selection of days, inspected rate maintenance details to determine whether, for significant rate differentials, the correct rate was applied to the client accounts to resolve the out-of-balance condition within five business days.</p> <p>For a selection of days, inspected the Cash Management Services Daily Checklist to determine whether a supervisor reviewed and authorized the omnibus reconciliation rate adjustments on exceptions noted in the Daily Exception Reports.</p> <p>For a selected day, inspected the job scheduling and monitoring tool and noted that it was run successfully as scheduled and traced the balance details from GMAR to ACAM to determine whether the balance details were captured completely and accurately from GMAR to ACAM.</p>	No exceptions noted.
B.15.1.4	<p>Daily rates are automatically fed into the ACAM system daily for those funds/bank products where Pershing performs sub-accounting. The ACAM system automatically performs edit checks and, if any fail, will reject the new rate and use the prior day's rate. For significant rate differentials identified during the omnibus daily</p>	<p>For a selection of rate rejections from the Transmitted Rates Report, inspected the ACAM Pro Cash Management system to determine whether the previous day's rates were automatically applied for the rejected rates.</p> <p>For a selection of days, inspected Omnibus Daily Reconciliation Reports and client account details to determine whether, for</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
	<p>reconciliation, Cash Management Services personnel investigate the reason for the rate rejection and make the necessary adjustments to the rates, which in turn will adjust the client accruals and balance the client to the house account.</p> <p>A Cash Management Services Manager reviews and approves the omnibus reconciliation and signs off on the Cash Management Services Daily Checklist to evidence review.</p>	<p>significant rate differentials, Cash Management Services personnel investigated the reasons for the rate rejections and adjusted the client's accounts to balance the client to the house account.</p> <p>For a selection of days, inspected the Cash Management Services Daily Checklist to determine whether a supervisor reviewed the omnibus reconciliation rate adjustments and signed off on the checklist.</p>	
B.15.1.5	<p>Sweep instructions are entered and stored at the account level in the cash management profile of a client's account. Sweep instructions are entered online by the IF in the Cash Management tab of Account Services or can be updated by a Cash Management associate via an IF's Service Center request if/when needed. Once an account has active sweep instructions, the ACAM system automatically includes that account in the sweep process.</p>	<p>Observed a client account with active sweep indicators inputted by the IF on ACAM and noted that the credit balances were automatically swept into the designated fund or client bank account.</p> <p>Observed a client account without active sweep indicators and noted that the credit balances were not automatically disbursed.</p> <p>Observed a client account with closed sweep instructions and noted that the credit balances were not automatically disbursed.</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.15.1.6	The sub-accounting process and bank allocation routines for the multi-bank FDIC-insured deposit products are performed by the third-party bank data allocation providers. On a daily basis, the program bank holdings are reconciled by Cash Management Services by independently confirming the total balance in each of the program banks and comparing them to the total balances held in each bank as documented by the third-party bank data allocation provider (R&T, TBS, StoneCastle and Promontory). The total balances held in the program banks is also compared to the total client account balances documented on Pershing's system.	<p>For a selection of days, inspected the Reconciliation Reports to determine whether the total balance in the Pershing omnibus account held at each bank matched the total balances held in client accounts at that bank as documented by the third-party bank data allocation provider and whether the total balances held in each bank as documented by the third-party bank data allocation provider matched the total balance in each of the program banks.</p> <p>As of 9/30/2022, obtained and inspected the source files used in the reconciliations of the Pershing omnibus account balances held at each program bank, as documented by the third-party bank data allocation provider (R&amp;T, TBS, StoneCastle, and Promontory), to the total client account balances documented on Pershing's system to determine whether the data was unaltered and the data was captured accurately in the reconciliation.</p> <p>For a selection of days, inspected the Reconciliation Reports to determine whether management reviewed and approved the Reconciliation Reports for each of the program banks.</p>	No exceptions noted.
B.15.1.7	Each morning, Cash Management Services personnel confirm and document within the Shareholder Morning Checklist for the Shareholder Checkout and via email for the Operational Checkout that the ACAM system is accessible, Pershing has received file transmissions, nightly batch updates occurred, information was updated correctly and the system is fully functional.	<p>Observed an active client sweep account and account activity in NetX360 each for the Shareholder Checkout and Operational Checkout and noted whether Pershing received the file transmission, the ACAM system's nightly batch updates occurred and information was accurate.</p> <p>For a selection of days, inspected Shareholder Morning Checklists to determine whether Cash Management Services personnel confirmed and documented that Pershing received the file transmission, the ACAM system was available, nightly batches were run and relevant account information was updated as part of the Shareholder Checkout.</p> <p>For a selection of days, inspected email communication to determine whether Cash Management Services personnel confirmed and documented that Pershing received the file transmission, the ACAM system was available, nightly batches were run and relevant account information was updated as part of the Operational Checkout.</p>	No exceptions noted.

**16) CASH DISBURSEMENT AND JOURNAL CONTROLS**

**Control Objective B.16.1:** Controls provide reasonable assurance that disbursements are authorized and recorded accurately and completely in the client's accounts in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.16.1.1	Systematic edit checks in NetX suite are used to verify whether pertinent information for the disbursement is entered. Failure to complete required fields results in a real-time online rejection.	For systematic edit checks determined by management to be relevant to the financial reporting of IFs, inspected the configuration of each edit check and determined that the edit checks were designed to reject disbursements containing incomplete or erroneous data.  For systematic edit checks determined by management to be relevant to the financial reporting of IFs, observed an Exception Processing unit employee attempt to enter incomplete or erroneous data fields and noted that the respective error messages were displayed by the systematic edit checks and the disbursement was rejected.	No exceptions noted.
B.16.1.2	Systematic check in NetX suite validates that available funds are in an account before a disbursement is permitted (e.g., insufficient funds). Requests for disbursements from accounts with insufficient funds are automatically routed to Exception Processing for review.	Observed the online warning message generated by NetX suite in response to disbursement requests in excess of account balances and traced the requests to the margin approval queue and noted that the disbursement requests in excess of account balances were routed to the Exception Processing unit for review.  Observed an Exception Processing unit employee submit a disbursement request not in excess of account balance and noted that the online warning message was not generated by NetX suite.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.16.1.3	On a daily basis, the Exception Processing unit reviews disbursement activity that warrants additional approvals, as determined by the systematic rules violations (e.g., insufficient funds). The exceptions are reviewed and approved by an Exception Processing unit designated approval employee.	For systematic rules determined by management to be relevant to the financial reporting of IFs, observed the Exception Processing unit employee submit disbursements in a production test account that violated the rules engine and noted that the disbursements were rejected with a warning message/rule violation.  For a selection of disbursements from a selection of days, inspected each systematic rules violation relevant to user entities' internal control over financial reporting and the corresponding audit trail to determine whether the disbursements that violated the rules engine were reviewed and approved by the Exception Processing unit designated approval employee before they were sent for processing.	No exceptions noted.
B.16.1.4	NetX suite restricts an individual from entering and subsequently approving the same disbursement request.	Observed an Exception Processing employee initiate a disbursement request in NetX suite and subsequently attempt to approve it and noted that the system prevented an individual from entering and subsequently approving the same disbursement request.	No exceptions noted.
B.16.1.5	NetX suite provides a facility to put a block on accounts at the IF, branch or client account level, so that future disbursements cannot be requested. A hold can also be entered on the IF, office or client account level that will cause disbursement requests to be routed to the Exception Processing unit for approval.	Observed an Exception Processing employee attempt to request a disbursement from a blocked account and noted the appropriate error messages were displayed.  Observed an Exception Processing employee attempt to request a disbursement from a hold account and noted that the request was routed to the Exception Processing unit for review and approval.	No exceptions noted.



	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.16.1.6	Disbursements require the approval of the IF's client, and such authorization must be on file at the IF. Disbursement requests exceeding LOA indemnification limits will cause systematic rules violations and will be routed to the Exception Processing unit for approval. Evidence of approval from the IF's client is required before the disbursement is approved.	For a selection of NetX suite enterprise rules, observed the Exception Processing unit submit disbursements in a production test account that violated the rules engine and noted that the disbursements were rejected with a warning message/rule violation.  For a selection of disbursements exceeding the IF LOA indemnification limits from a selection of days, inspected the disbursement requests and the LOA indemnification limits for the respective IF within AMPS to determine whether disbursement requests which exceeded the IF LOA indemnification limits were routed and approved by the Exception Processing unit.  For a selection of disbursements exceeding the IF LOA indemnification limits from a selection of days, inspected the LOA on file from the IF to determine whether an approval from the IF's client was obtained before the disbursements were processed.	No exceptions noted.
B.16.1.7	Upon initiation of disbursement requests, the client account's pending withdrawal and funds available to withdraw amounts are updated in real time in AMPS and NetX360. Upon approval and final processing of the disbursement request by the Exception Processing unit the pending withdrawal amount and the account activity are updated in real time in NetX360 and AMPS.	Observed an Exception Processing unit employee approve a disbursement request to determine whether, upon approval and final processing of the disbursement request by the Exception Processing unit, the pending withdrawal amount and the account activity was updated in real time in NetX360 and AMPS.	No exceptions noted.
B.16.1.8	The IF places standing instructions within NetX suite (Asset Movement). Standing instructions are reviewed to verify that they are properly authorized by the IF's client and approved by an Exception Processing employee before they are made available for future use.	For a selection of IF client standing instructions requests from a selection of days, inspected the audit trail to determine whether the standing instruction was authorized by the IF's client (e.g., standing instruction was on file) and approved by the Exception Processing employee.	No exceptions noted.
B.16.1.9	Third-party wires that exceed the predefined limit cause systematic rules violations and are routed to the Exceptions Processing unit for approval. Evidence of approval from the senior managers at the IF is required via the attestation form or in	For a selection of NetX suite enterprise rules, observed the Exception Processing unit submit disbursements in a production test account that violated the rules engine and noted that the disbursements were rejected with a warning message/rule violation.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
	<p>the form of comments before the disbursement is approved.</p> <p>If the Exception Processing unit is unable to identify the beneficiary on the third-party wires, the Exceptions Processing unit forwards the requests to the Margin department's Firm Trading unit. These third-party wires undergo further credit review by the Firm Trading unit, which includes an assessment of the IF's net worth prior to approval of disbursement. If the firm does not have the net worth to support the request, an additional review is conducted by Credit Risk unit by reviewing the IF's net capital.</p>	<p>For a selection of days, inspected a selection of disbursement requests and the attestation limits for the respective IF within AMPS to determine whether disbursement requests which exceeded the IF attestation indemnification limits were routed and approved by the Exception Processing unit.</p> <p>For a selection of disbursements, exceeding the IF's attestation indemnification limits, inspected the attestation forms or the form of comments on file from the IF to determine whether an approval from the IF's client was obtained by the Exceptions Processing unit before the disbursements were processed.</p>	

**Control Objective B.16.2:** Controls provide reasonable assurance that check disbursements are authorized, recorded completely, accurately, and distributed in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.16.2.1	Access to Pershing's Money Desk, where the check printing process takes place, is secured with a locked entranceway. Keycard access is reviewed by the Money Desk Management on a quarterly basis for the Jersey City location and the Lake Mary location.	Observed the Money Desk access entranceways at the Jersey City and Lake Mary locations and noted that the entrance to the Money Desk access was restricted and secured.  For a selection of quarters for the Jersey City location and Lake Mary location, inspected the quarterly review and list of individuals with access to the Money Desk area and compared it to the list of authorized individuals with Money Desk key card access to determine whether management reviewed personnel with key card access to the Money Desk area and only authorized individuals were granted access to the Money Desk.	No exceptions noted.
B.16.2.2	NetX360 restricts an individual from entering and subsequently approving the same disbursement request.	Inspected the system configuration to determine whether NetX360 restricts an individual from entering and subsequently approving the same disbursement request  Observed an Exception Processing employee initiate a disbursement request in NetX360 and subsequently attempt to approve it and noted that the system prevented an individual from entering and subsequently approving the same disbursement request.	No exceptions noted.
B.16.2.3	Data transmissions for check printing by an outsourced vendor service provider for checks are sent over a secure transmission. Encryption and dedicated lines are used for outbound transmissions.	Inspected data transmission policy and procedures and noted that secure data transmission to outsourced vendors required encryption and dedicated lines for outbound vendor transmissions.  Inspected transmission protocol configurations to determine whether secure transmission methods were being applied to external transmissions for checks.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.16.2.4	On a periodic basis, Money Desk Managers obtain confirmations from authorized outsourced vendor service provider personnel that they have received the complete file transmissions (e.g., quantity and amount) for printing.	For a selection of transmissions from a selection of days, inspected the confirmations from the outsourced vendor service providers and compared them to the Pershing transmission to determine complete and accurate file transmissions were received.	No exceptions noted.
B.16.2.5	For each file transmission, the outsourced vendor service provider sends the Money Desk a reject report of any checks that could not be processed. A Money Desk employee researches each rejection on the reject report and takes corrective action in a timely manner, as necessary.	For a selection of rejects from a selection of days, inspected the outsourced vendor reject log and compared it to the PACE log to determine whether the rejects were researched, recorded, and resolved in a timely manner.	No exceptions noted.
B.16.2.6	The Money Desk receives any requests to cancel submitted check requests from the IFs and internal departments. A Money Desk employee communicates cancelled requests via a "check pull log" that is sent to the vendor service provider. The same service provider notes the status of the cancellation requests on the check pull log and emails it back to the Money Desk. A Money Desk employee reviews the log for completeness and updates the client accounts as appropriate.	For a selection of days, inspected the check pull logs and voided physical checks from the outsourced vendor service provider to determine whether the information correctly matched the pull log.  For a selection of checks pulled from a selection of days, inspected the check request work history to determine whether the check was voided and not booked to the client account.  For a selection of days, inspected the check pull logs to determine whether a Money Desk employee reviewed the log for completeness and updated the client accounts as appropriate.	No exceptions noted.
B.16.2.7	At the end of each day, the Money Desk prepares a Check Disbursement File Summary log containing the number of checks printed, rejected and pulled that day at the vendor (one each for Wells Fargo and BNY Mellon). A Money Desk Manager signs off on the log to evidence review.	For the disbursements from a selection of days, inspected the Check Disbursement File Summary logs and compared them to the information on the vendor's acknowledgement document or web log to determine whether the log accurately detailed confirmed, rejected and pulled disbursements.  For a selection of days, inspected the Check Disbursement File Summary logs to determine whether management signed off as evidence of their review.	No exceptions noted.
B.16.2.8	The Money Desk employee compares the number of checks on PACE and the AMPS against the physical checks log to verify the completeness of the printing process for checks printed in Pershing's Money Desk. Money Desk	For a selection of days, inspected the PACE/AMPS Balance Sheets and compared them to the physical checks log to determine whether the total number of checks in AMPS and PACE system	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
	management reviews and signs off on the PACE/AMPS Balance Sheets on a daily basis.	matched the total amount of physical checks printed.  For a selection of days, inspected the PACE/AMPS Balance Sheets to determine whether balance sheets were reviewed and signed off by management.	
B.16.2.9	On a weekly basis, a package consisting of FX open items, unreconciled accounts, and unrecorded check deposits is reviewed by management and submitted to the Global Credit and Market Risk Committee for their review. On a monthly basis, unresolved USD differences above \$5,000 and aged over 10 days are added to this package.	For a selection of weeks, inspected Global Credit and Market Risk Committee packages consisting of the FX open items, unreconciled accounts and unrecorded check deposits to determine whether reconciled and open items were reviewed by management and reported to the Global Credit and Market Risk Committee.  For a selection of months, inspected Global Credit and Market Risk Committee packages consisting of unresolved USD differences above \$5,000 for domestic open items and aged over 10 days to determine whether domestic open items were reviewed by management and reported to the Global Credit and Market Risk Committee.	No exceptions noted.
B.16.2.10	On a monthly basis, balances and related activity for cash accounts used to process client cash transactions check disbursements (book balance) are reconciled to the bank statements (bank balance) for check disbursement bank accounts. Differences are researched and resolved in a timely manner. This reconciliation is reviewed and approved by the Financial Control Manager or designated employee.	For a selection of months, inspected the bank reconciliation proof report for a selection of check disbursement accounts comparing bank balances to book balances to determine whether the report was reviewed, adjusted, and signed off by the Financial Control Manager or designated employee in a timely manner.  As of 1/31/2022 and 8/8/2022, for a selection of check disbursement accounts, inspected the bank statements and the reconciliation to Pershing records and compared them to the client disbursement account balances to determine whether the data was unaltered and the data was captured accurately in the reconciliation.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.16.2.11	<p>On a daily basis, balances and related activity for cash accounts used to process client cash transactions check disbursements (book balance) are reconciled to the bank feeds (bank balance) for check disbursements bank accounts. Differences are researched and resolved in a timely manner. The reconciliation is reviewed and approved by the Banking and Funds or designated employee.</p> <p>The data feeds for reconciliation utilize a shared folder to store the incoming files.</p>	<p>For a selection of days, inspected the bank reconciliation reports to determine whether the reconciliations were reviewed and approved by the Banking and Funds Manager or designated employee in a timely manner.</p> <p>For a selection of bank activity differences from a selection of days, inspected the entries, corresponding spreadsheets and backup documentation to determine whether differences were resolved by a member of the Reconciliation Group.</p> <p>Inspected data feeds to the reconciliation tool and the reconciliation performed to determine whether the data was unaltered and the data was captured accurately in the reconciliation.</p> <p>For a selection of users with access to the shared folder, inspected the corresponding organizational chart to determine whether access was commensurate with their job responsibilities.</p>	No exceptions noted.

**Control Objective B.16.3:** Controls provide reasonable assurance that cash disbursements via wires are processed and recorded completely, accurately, and in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.16.3.1	Throughout the day, a Money Desk employee monitors the status of outgoing wires via the MERVA/EMX queue to verify they are acknowledged by SWIFT and accepted by the Federal Reserve. The Money Desk employee includes screen prints of the MERVA/EMX queue to evidence acknowledgement of the outgoing wires. At the end of the day, the Money Desk manager reviews the MERVA/EMX queue screen prints and signs off on the Money Desk Checklist as evidence of review.	For a selection of days, inspected the Money Desk Checklists for evidence of a Money Desk employee's sign-off and the management review to determine whether the outgoing wire queue was monitored throughout the day (multiple times a day) to verify wires were acknowledged by SWIFT and accepted by the Federal Reserve.	No exceptions noted.
B.16.3.2	On a weekly basis, a package consisting of FX open items, unreconciled accounts, and unrecorded deposits for outgoing FED fund wire bank accounts is submitted to the Global Credit and Market Risk Committee for their review. On a monthly basis, unresolved USD differences above \$5,000 and aged over 10 days are added to this package.	For a selection of weeks, inspected Global Credit and Market Risk Committee packages consisting of the FX open items, unreconciled accounts and unrecorded deposits for outgoing FED fund wire bank accounts to determine whether reconciled and open items were reported to the Credit Risk Committee.  For a selection of months, inspected Global Credit and Market Risk Committee packages consisting of the unresolved USD differences above \$5,000 and aged over 10 days to determine whether open items were reported to the Global Credit and Market Risk Committee.	No exceptions noted.





**17) CASH RECEIPTS CONTROLS**

**Control Objective B.17.1:** Controls provide reasonable assurance that cash receipts are recorded accurately and completely in the client's account in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.17.1.1	A Money Desk employee reviews incoming Fed Fund wires for account number and name. This information is used to apply the funds to the appropriate Pershing account in PACE/AMPS. Additionally, a twice-weekly supervisory review for a selection of incoming Fed Fund wires is performed to verify that funds are booked to the correct brokerage account in PACE/AMPS.	For a selection of Fed Fund wires, inspected the wire information, PACE/AMPS account detail, and PACE/AMPS booking to determine whether information was accurate and funds were booked to the respective Pershing account accurately.  For a selection of days, inspected the supervisory checklist to determine whether the incoming wires were reviewed by the supervisor.	No exceptions noted.
B.17.1.2	End-of-day balancing is performed to verify that incoming Fed Fund wires are accounted for as being deposited to the appropriate account, returned to the sending bank or booked to the suspense account for missing information. A Money Desk Supervisor reviews and signs off on the end-of-day balancing.	For a selection of days, inspected a selection of end-of-day balancing reports to determine whether the balancing was reviewed by a Money Desk Supervisor.  For a selection of days, inspected the total incoming credits received for the day from BNY Mellon, returns to the sending bank, and amounts booked to the suspense account to determine whether end-of-day balancing on the incoming wires balancing report was performed accurately.	No exceptions noted.
B.17.1.3	For physical checks, a Money Desk employee enters the account number in the AMPS system. The system pulls up the account information, which is reviewed by the Money Desk employee prior to entering the physical check deposit. This information is used to apply the funds to the appropriate Pershing account.	For a selection of incoming check deposits, from a selection of days, inspected checks, client profiles, and AMPS records to determine whether the information presented in AMPS was accurately posted to the client accounts.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.17.1.4	End-of-day balancing is performed to confirm that the total check deposits entered in the AMPS application match the end-of-day balance log. A Money Desk Supervisor signs off on the end-of-day balance log.	For a selection of days, inspected the total check deposit entered in the AMPS application to determine whether the total check deposits matched the end-of-day balance log.  For a selection of days, inspected the end-of-day balance logs to determine whether the logs were reviewed and signed off by the Money Desk Supervisor.	No exceptions noted.
B.17.1.5	On a daily basis, balances and related activity for cash accounts used to process client cash transactions and check deposits (book balance) are reconciled to the bank feeds (bank balance) for check deposits. Differences are researched and resolved in a timely manner. The reconciliation is reviewed and approved by the Banking and Funds Manager or designated employee. Refer to B.16.2.11 for the access to the data files used in the reconciliation process.	For a selection of days, inspected the bank reconciliation reports to determine whether the reconciliations were reviewed and approved by the Banking and Funds Manager or designated employee in a timely manner.  For a selection of bank activity differences from a selection days, inspected the entries, corresponding spreadsheets and backup documentation to determine whether differences were resolved by a member of the Reconciliation Group. Inspected data feeds to the reconciliation tool and the reconciliation performed to determine whether the data was unaltered and the data was captured accurately in the reconciliation.  Refer to B.16.2.11 for the testing of access to the data files used in the reconciliation process.	No exceptions noted.          Refer to the Result of Test at B.16.2.11.
B.17.1.6	A Money Desk employee reviews incoming Non-USD wires for account number and account name which are used to apply the funds to the appropriate Pershing account in AMPS. Additionally, a weekly Supervisory review for a selection of incoming Non-USD wires is performed to verify that funds are booked to the correct brokerage account in Netx360 account activity.	For a selection of Non-USD wires, inspected the wire information, AMPS account detail, and AMPS booking to determine whether information was accurate and funds were booked to the respective Pershing account accurately.  For a selection of weeks, inspected the supervisory checklist to determine whether the selection of incoming Non-USD wires were reviewed by the supervisor.	No exceptions noted.

## 18) ACCOUNT TRANSFER PROCESSING CONTROLS

### A. INCOMING ACCOUNT TRANSFER

**Control Objective B.18.1:** Controls provide reasonable assurance that incoming account transfer requests are authorized and processed completely, accurately and timely in accordance with IF and client instructions.

*These controls are applicable to Equity, Options and Fixed Income products.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.18.1.1	Incoming transfer requests are reviewed by an ACATS employee to verify the end client has authorized the transfer and the delivering account matches the receiving account type. Evidence of transfer review and documents received are stored on the system, along with any comments or activity.	For a selection of incoming transfer requests from a selection of days, inspected the transfer form, account statement, and the NetX360 system workflow to determine whether the client authorized the transfer, the delivering and receiving account type matched and the system audit trail contained evidence of transfer review by an ACATS employee and documents received.	No exceptions noted.
B.18.1.2	AMPS's Automated Customer Account Transfer (ACAT) exception report is monitored to verify that CUSIPs received that were not previously available on the Stock Record were added accurately. The required journal entries are made to update the brokerage accounts.	For a selection of ACATS CUSIP exceptions, inspected the resolution details to determine whether CUSIPs not previously available on the Stock Record were added and journal entries were made to the client's accounts.	No exceptions noted.
B.18.1.3	Letters are automatically generated and mailed to clients to inform them of any assets not received during the account transfer process due to a mutual fund not being on the platform, a deal agreement not being in place with the introducing firm, or a non-deliverable asset.	For a selected day, inspected an item which was indicated as not received in the system and its letter of notification to determine whether notifications to the client were generated accurately and sent to the client within a week following the settlement date.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.18.1.4	The IF enters non-ACATS incoming transfer requests in AMPS and mails, faxes, or uploads the paperwork to Pershing for review. Pershing processing employees review the paperwork to verify the instructions are clear and accurate before releasing the transfer to the delivering firm. Evidence of the transfer review and the documents received are stored on AMPS in the audit trail and online documents via NetX360 along with any comments.	For a selection of non-ACATS incoming transfer requests from a selection of days, inspected AMPS screenshots and NetX360 online documents to determine whether IFs entered non-ACATS transfer requests and processing employees reviewed these accounts before releasing transfers to the delivery firm.  For a selection of weeks, inspected the Non-ACATS Receives Transfer Review sign-offs to determine whether management evidenced review of the work performed.	No exceptions noted.
B.18.1.5	Non-ACATS employees use NetX360 to follow-up with the delivering firms to resolve outstanding paperwork issues or anything needed to complete the transfer. Communication is logged in NetX360 detailing feedback from the delivering firm to the IFs.	For a selection of non-ACATS transfers, inspected the NetX360 system audit trails to determine whether Pershing employees followed up with delivering firms to resolve outstanding paperwork issues to complete the transfer.	No exceptions noted.

**B. OUTGOING AUTOMATED CUSTOMER ACCOUNT TRANSFER**

**Control Objective B.18.2:** Controls provide reasonable assurance that outgoing account transfers from the National Securities Clearing Corporation (NSCC) member firms are processed completely, accurately, and timely in accordance with the transmission received from the NSCC.

*These controls are applicable to Equity, Options and Fixed Income products.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.18.2.1	Outgoing transfer requests from the NSCC member firms are automatically validated based on business rules embedded in ACATS. Rejected transfers are manually reviewed and cleared by 11:00 a.m. on the second business day (per the NSCC guidance, action must be taken on outgoing account transfers by 11:00 a.m. on the second business day).	For a selection of rejected outgoing transfers from a selection of days, inspected the system audit logs to determine whether requests were reviewed, processed and cleared by 11:00 a.m. on the second business day.	No exceptions noted.
B.18.2.2	Outgoing transfers from the NSCC member firms are processed via the Enterprise Rules Engine to prevent validation of transfers containing rules violations.	For systematic rules determined by management to be relevant to the financial reporting of IFs, observed management execute orders with exceptions in a test account and noted that the Rules Engine rejected the orders with an error message.	No exceptions noted.
B.18.2.3	The AMPS Rules Engine violations are manually reviewed by authorized ACATS department personnel for resolution. Evidence of the transfer validation is stored within the system audit log, along with any comments or other activity.	For a selection of outgoing transfer requests from a selection of days, inspected the system audit logs to determine whether the audit trail contained evidence of transfer validation and comments.	No exceptions noted.
B.18.2.4	Letters are automatically generated and mailed to clients to inform them of any assets not delivered during the account transfer process due to a receiving firm not holding a mutual fund or a non-deliverable asset.	For a selected day, inspected an item which was indicated as not delivered in the system and its letter of notification to determine whether notification to the client were generated accurately and sent to the client within a week following the settlement date.	No exceptions noted.

**C. MUTUAL FUND ACCOUNT TRANSFER**

**Control Objective B.18.3:** Controls provide reasonable assurance that mutual fund transfer requests are processed accurately, completely and in a timely manner.

*These controls are applicable to the Mutual Fund products.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.18.3.1	Incoming mutual fund transfers are reviewed by a Mutual Funds employee to verify the end client has authorized the transfer, the receiving account information on the transfer matches the Pershing receiving account and titles match. Once the quality check has been performed, the transfer instructions are sent to the fund for processing.	For a selection of incoming mutual fund transfers requests from a selection of days, inspected the transfer form, account statement, and the system audit logs to determine whether a Mutual Funds employee reviewed the client authorization of the transfer, the receiving account information and the titles matched and, once the review was performed, the instructions were sent to the fund for processing.	No exceptions noted.
B.18.3.2	Open incoming mutual fund transfer requests older than three business days are systematically aged and researched and resolved by a Mutual Funds employee.	For a selection of open incoming mutual fund transfers older than three business days from a selection of days, inspected the system audit logs to determine whether the transfers were aged, researched, and resolved by a Mutual Funds employee.	No exceptions noted.
B.18.3.3	Open outgoing mutual fund transfer requests older than three business days are systematically aged and researched and resolved by a Mutual Funds employee.	For a selection of open outgoing mutual fund transfers older than three business days from a selection of days, inspected the system audit logs to determine whether the transfers were aged, researched, and resolved by a Mutual Funds employee.	No exceptions noted.

**D. INTERNAL ACCOUNT TRANSFER**

**Control Objective B.18.4:** Controls provide reasonable assurance that account transfers between two Pershing IFs are processed completely, accurately and in a timely manner.

*These controls are applicable to Equity, Options and Fixed Income products.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.18.4.1	Internal transfer requests between different IFs are reviewed by an ACATS employee to verify the end client has authorized the transfer and the amounts in the delivering account and receiving accounts agree.	For a selection of internal transfer requests from a selection of days, inspected account transfer forms and internal account transfer details to determine whether the client authorized the transfer, the delivering and receiving accounts agreed and the system audit trail contained evidence of transfer review by an ACATS employee.	No exceptions noted.
B.18.4.2	Internal transfer requests between different IFs are processed within 48 hours of receipt. Evidence of the transfer review and the documents received are stored on AMPS in the audit trail and online documents via NetX360 along with any comments.	For a selection of internal transfer requests from a selection of days, inspected the system audit logs to determine whether transfer requests were processed within 48 hours of receipt and the system audit trail contained evidence of transfer review and documents received.	No exceptions noted.

**E. OUTGOING NON-ACATS TRANSFER**

**Control Objective B.18.5:** Controls provide reasonable assurance that outgoing non-ACATS transfer requests are processed accurately, completely and in a timely manner.

*These controls are applicable to Equity, Options and Fixed Income products.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.18.5.1	Non-ACATS outgoing transfer requests are received by Pershing from the non-NSCC member firms and the physical paperwork is mailed or faxed to Pershing for review. Pershing processing employees perform quality checks to verify that the end client has authorized the transfer, specified the clear transferring instructions (delivering instructions, assets in transfer), and the account types match.	For a selection of outgoing non-ACATS transfer requests from a selection of days, inspected the account transfer forms and system audit trail to determine whether the client authorized the transfer, the account types matched and the system audit trail contained evidence of transfer review.	No exceptions noted.
B.18.5.2	Outgoing transfer requests received from the non-NSCC member firms are processed within 10 business days of receipt. Evidence of the transfer review and the documents received are stored on AMPS audit trail, along with any comments.	For a selection of outgoing non-ACATS requests from a selection of days, inspected the system audit logs to determine whether transfer requests were processed within 10 business days of receipt and the system audit trail contained evidence of transfer review and documents received.	No exceptions noted.
B.18.5.3	When a transfer is rejected during the quality check process, the status of the transfer and reason for the rejection is updated in the audit trail.	For a selection of rejected outgoing non-ACATS requests from a selection of days, inspected the audit logs trail to determine whether a status of the transfer and the reason for the rejection was updated in the audit trail.	No exceptions noted.



**F. ALTERNATIVE INVESTMENTS ACCOUNT TRANSFER**

**Control Objective B.18.6:** Controls provide reasonable assurance that incoming and outgoing account alternative investment transfer requests are authorized and processed completely, accurately and timely in accordance with IF and client instructions.

*These controls are applicable to the Alternative Investment products.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.18.6.1	For non-ACATS AI deliveries, AI creates the re-registration documentation or Letter of Instruction. A supervisor reviews and approves the documentation to be delivered and AI then sends the documents to the counter party. The position is removed from the client account and moved to an outgoing reconciliation table.	For a selection of non-ACATS AI outgoing orders, inspected the re-registration documentation or Letter of Instruction and account activity to determine whether outgoing transfers were approved by a supervisor.	No exceptions noted.
B.18.6.2	For non-ACATS AI receives, AI receives and reviews the re-registration documentation. AI completes the receiving portion of the re-registration documentation and a supervisor reviews and approves the documentation to be delivered. AI delivers the documentation to the general partner/administrator and confirms receipt. The position is posted to the client account and a transfer memo is set up.	For a selection of non-ACATS AI incoming orders, inspected the re-registration documentation and account activity to determine whether incoming transfers were approved by a supervisor.	No exceptions noted.
B.18.6.3	For ACATS deliveries, an open fails file is used to settle ACATS, and the positions are delivered systemically through the ACATS settlement process against the fail. The activity on the open fail file is reviewed and the re-registration documentation is created. A supervisor reviews and approves the paperwork to be delivered. The documentation is sent to the counter party.	For a selection of ACATS AI outgoing orders, inspected the re-registration documentation and account activity to determine whether re-registration documentation was reviewed and approved by a Pershing supervisor.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.18.6.4	For ACATS receives, an open fails file is used to settle ACATS, and the positions are booked long into a client's account versus a fail account. The fail is cleaned up upon the receipt of re-registration documentation via the NSCC window. The AI department completes the re-registration documentation and a supervisor reviews and approves the documentation to be delivered. AI delivers the documentation to the general partner/administrator. A transfer memo is added to the position.	For a selection of ACATS AI incoming orders, inspected the re-registration documentation and account activity to determine whether re-registration documentation was approved by an AI employee and the account position was moved from the hold account to transfer account through supervisor approval.	No exceptions noted.
B.18.6.5	For internal transfers, where there is no change in custodian, the account number is updated where Pershing is custodian or servicing agent. The general partner is notified of the change. A supervisor reviews the update.	For a selection of AI internal transfer orders where there was no change in custodian, inspected the general partner notification and account activity to determine whether the internal transfer took place between the two accounts and was reviewed by a supervisor.	No exceptions noted.
B.18.6.6	For internal re-registrations with a change in custodian, AI records the transaction and a supervisor reviews the instructions and documentation, AI delivers the documentation to the general partner/administrator per fund instructions, and a transfer memo is set up.	For a selection of internal re-registration orders with a change in custodian, inspected the re-registration documentation and account activity to determine whether the internal re-registrations were approved by a supervisor.	No exceptions noted.

**19) COST BASIS REPORTING/PORTFOLIO EVALUATIONS CONTROLS**

**Control Objective B.19.1:** Controls provide reasonable assurance that transactions processed are completely and accurately updated in the PORT system.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.19.1.1	On a daily basis, bookkeeping data involving non-trade, trade and foreign transactions are transferred from GMAR to PORT completely and accurately. Jobs within PORT creates position and cash reconciliation files by comparing the PORT data to the data from GMAR.	<p>Inspected the batch job configurations to determine whether the automated batch jobs were configured to feed the bookkeeping data from GMAR to PORT.</p> <p>For a selected date, inspected the GMAR and PORT system screens to determine whether the data feeds containing non-trade, trade and foreign transactions were transferred completely and accurately from GMAR to PORT.</p> <p>For a selected date, inspected the reconciliation files and compared it to GMAR and PORT systems to determine whether the position and cash reconciliation files were generated completely and accurately.</p>	No exceptions noted.
B.19.1.2	On a daily basis, pricing details are transferred from PROM to PORT completely and accurately to update the PORT.	<p>Inspected the batch job configurations to determine whether the automated batch jobs were configured to feed the pricing information from PROM to the PORT and automatic tickets are created for transmission failures.</p> <p>For a selected date, inspected the PROM and PORT system screens to determine whether the data feeds containing pricing details were transferred completely and accurately from PROM database to PORT.</p>	No exceptions noted.
B.19.1.3	On a daily basis, daily breaks are displayed in the CBP cost basis system to be reconciled with the position files from GMAR. The identified position reconciliation breaks are investigated and tracked to resolution by the Recon team by making necessary updates to the CBP cost basis system data.	<p>Inspected the batch job logs to determine whether the automated batch jobs were configured to feed the daily breaks from PORT to the CBP cost basis.</p> <p>For a selected date, inspected the CBP cost basis system screens to determine whether the reconciliation files containing position breaks were transmitted completely and accurately from PORT to CBP cost basis.</p> <p>For a selection of days, inspected position breaks to determine whether breaks in the report were resolved in a timely manner.</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.19.1.4	On a daily basis, Global Tax Management (GTM) monitors the status and resolution of aged breaks.	For a selection of days, inspected CBR User Performance Reports to determine whether the status and resolution of aged breaks were monitored by GTM.	No exceptions noted.
B.19.1.5	Systematic edit checks prevent clients and Pershing personnel from entering invalid data on the CBP cost basis system.	For systematic edit checks determined by management to be relevant to the financial reporting of IFs, observed the CBR Manager enter incomplete, incorrect and false data using a test account in a production environment and noted that the correct error messages were generated.	No exceptions noted.

## 20) CREDIT AND DEBIT INTEREST CONTROLS

**Control Objective B.20.1:** Controls provide reasonable assurance that interest income and expense on client and firm balances are processed to accounts accurately, completely and in a timely manner.

*These controls are applicable to introducing firms only.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.20.1.1	Manual setup and updates of client interest rates/schedules on FundsU are completed upon receipt of a fully executed disclosed pricing agreement or addendum approved by Pershing personnel as well as the ICG's review of the authorized approval.	For a selection of new and updated client pricing profiles, inspected the fully executed disclosed pricing agreement or addendum to determine whether the setup or change was approved by authorized Pershing personnel.	No exceptions noted.
B.20.1.2	A review of the Pershing Base Lending Rates (PBLR) and Pershing Money Market Rates (PMMR) is performed by the Pershing Rate Committee. Interest rate changes set by the committee are manually updated by the ICG in FundsU.	For a selection of rate changes, inspected PBLR and PMLR rate reports and the rates on FundsU to determine whether interest rate changes were updated accurately.  For a selection of rate changes, inspected the communication on rate changes to determine whether base interest rates were reviewed by management in the Pershing Rate Committee.	No exceptions noted.
B.20.1.3	ICG management reviews the manual setup and any update of rates/schedules and base interest rates on FundsU against source documentation.	For a selection of new and updated rates, inspected the IF pricing agreements to determine whether ICG management signed off as evidence of their review.  For a selection of new and updated rates, inspected the IF pricing agreements and client pricing profiles on FundsU to determine whether the IF pricing agreement and FundsU agreed.	No exceptions noted.
B.20.1.4	ICG management conducts weekly reviews of a FundsU-generated exception report which highlights IF office and/or accounts that are not coded with an interest profile. ICG personnel and management then determine if any updates are needed based on the pricing agreements.	For a selection of weeks, inspected the FundsU-generated exception reports to determine whether ICG management signed off as evidence of their review.  For a selection of modified accounts from a selection of weeks, inspected the profile update requests and the corresponding FundsU interest profile to determine whether the updates were implemented accurately.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.20.1.5	On a monthly basis, ICG reviews a sample of client accounts, with which they verify the interest charges, credits and participation by manually recalculating the interest amount.	For a selection of months, recalculated the manual recalculation of interest charges, credits and participations for a selection of accounts and noted that the manual recalculation was performed accurately by ICG.	No exceptions noted.
B.20.1.6	Each month, ICG reconciles the bookkeeping file produced from FundsU for input into FundsU from PAR.	For a selection of months, inspected a selection of bookkeeping interest amounts and compared them to the monthly bookkeeping file produced from FundsU to determine whether amounts were accurately recorded in the bookkeeping system.  For a selection of months, inspected a selection of FundsU/bookkeeping manual reconciliations to determine whether ICG management review was performed and signed off.	No exceptions noted.
B.20.1.7	On a monthly basis, ICG reconciles the balance in each of the related PAR bookkeeping accounts to the FundsU bookkeeping file to verify that the interest amounts were recorded accurately and completely by the PAR bookkeeping system.	For a selection of months, recalculated a selection of FundsU bookkeeping interest amounts to determine whether amounts were accurately recorded in the PAR bookkeeping system.	No exceptions noted.

## 21) CLIENT AND PRODUCT BILLING OPERATIONS

**Control Objective B.21.1:** Controls provide reasonable assurance that fees are calculated and billed accurately based on agreed-upon terms and that billing adjustments are authorized and processed accurately.

*These controls are applicable to introducing firms only.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.21.1.1	Upon receipt of a fully executed Fee Schedule/addendum from the BUCs, a CPBO Group Manager or designated employee assigns the Fee Schedule for implementation to CPBO employees based on the applicable billing systems in the CCL DB. An email is generated notifying the CPBO employees of the contracts assigned for implementation. Upon completion of the implementation, each assigned CPBO employee updates the Contract Log with the completion date.	For a selection of fully executed Fee Schedule/addendums, inspected the Peer Review DB sheet to determine whether the contracts were assigned for implementation and the employee updated the contract log with completion date.	No exceptions noted.
B.21.1.2	Upon completion of Fee Schedule implementation, a peer review (PR) is performed for all GCR and DBS fee schedule components introduced into the applicable billing system. A designated peer reviewer reviews the implementation of the contract for completeness and accuracy. Discrepancies identified during the peer review are documented in the PR DB and are communicated for action to the original CPBO implementer or another CPBO employee. The peer review confirms the remediation and updates the PR DB with a completion date, upon completion of necessary investigation performed by the implementer. A CPBO Group Manager then reviews the PR documentation and results to ensure the completion of PR and remediation of issues identified and signs off as an evidence of review.	For a selection of Fee Schedule implementations, inspected the PR DB sheet to determine whether a peer review was performed and discrepancies were documented in the database.  For the peer review discrepancies identified from a selection of Fee Schedule implementations, inspected the IF pricing profiles in the relevant billing applications and compared the terms to the fully disclosed pricing agreement to determine whether discrepancies were remediated.  For a selection of Fee Schedule implementations, inspected Schedule A and Fee setup to determine whether the rates were implemented completely and accurately.  For a selection of Fee Schedule implementations, inspected the PR DB to determine whether the CPBO Group Manager reviewed that the issues identified have been remediated and, if applicable, the financial impact had been documented.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.21.1.3	<p>Fee Schedules renegotiated with a prior year revenue exceeding 1 million dollars or any other contract implementation deemed by CPBO management that a post-implementation review is necessary require a post implementation review performed by CPBO, relationship management team and GCR/DBS business unit controllers. Any action items identified during the post implementation review are documented on the post implementation share point site, and researched and resolved by an assigned individual.</p>	<p>For a selection of Fee Schedules renegotiated with a prior year revenue exceeding 1 million dollars, inspected the Post-Implementation Call Report, Business Acceptance Review, Peer Review Control Sheet, Schedule A and amendments/addendums to determine whether post implementation reviews were performed by the CPBO, relationship management team and GCR/DBS business unit controllers.</p> <p>For a selection of action items from a selection of contracts that required post implementation review, inspected the log of the action items to determine whether the action items were documented, and researched and resolved by an assigned individual.</p>	No exceptions noted.
B.21.1.4	<p>CPBO Group Manager or a designated employee reviews the rebate system queue, which contains the requests eligible for processing based on predefined required approval and predefined threshold.</p> <p>The CPBO employee processes a journal entry for the corresponding rebate via AMPS.</p> <p>CPBO Group Manager performs a review of all rebates submitted via AMPS to the rebate details extracted from the rebate request system.</p>	<p>For a selection of IF rebate requests, inspected the rebate requests and account history to determine whether rebates were reviewed, approved, and processed accurately.</p>	No exceptions noted.



	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.21.1.5	IF firm and client daily activity fed to the billing applications are calculated and posted to bookkeeping systematically. Out-of-balance conditions result in suspense items are remediated by processing adjusting entries via JR10/AMPS. Monthly, a CPBO employee performs reconciliations of the suspense accounts, which are reviewed by the CPBO Group manager.	For a selection of months, inspected the suspense account reconciliations and the bookkeeping journal entry to determine whether out-of-balance items were identified, balanced, booked to JR10/AMPS and reviewed by CPBO management.	No exceptions noted.
B.21.1.6	Fee Schedule and revenue sharing related calculations are automatically performed by PCIS, GBLs, EBS and TFSM and GFSM in accordance with the IF profile.	For Fee Schedule and revenue sharing related calculations billed to client accounts, recalculated the IF billing fees to determine whether the system accurately calculated the fees in accordance with the IF profile.	No exceptions noted.
<i>These controls are applicable to only Managed Accounts clients.</i>			
	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.21.1.7	CPBO employees complete monthly checklists to evidence supervisory review of manually setup accounts on a sample basis. Differences identified are researched and resolved by the CPBO employees.	For a selection of months, inspected the monthly checklists to determine whether supervisory review was completed for manually setup new accounts on a sample basis.  For a selection of differences noted from the checklist, inspected corresponding resolution to determine whether the differences were researched and resolved by the CPBO employees.	No exceptions noted.
B.21.1.8	EBS restricts users from processing a client or advisor fee that exceeds the audit threshold. Any fees entered that exceed the threshold are identified as exceptions and are placed on hold. On a quarterly basis, CPBO employees perform data verifications to determine whether the fees calculated are justified. Any exceptions are investigated and resolved by the CPBO employees.	For a selected account, observed a user attempt to process a fee exceeding the audit threshold within EBS and noted the fee was placed on hold and not processed. For a selection of billing cycles, inspected the data verifications results to determine whether CPBO employees performed data verifications on exceptions to determine whether the fees calculated were reasonable and exceptions were resolved. For a selection of exceptions, inspected corresponding resolution to determine whether the differences were researched and resolved by the CPBO employees.	No exceptions noted.

**Control Objective B.21.2:** Controls provide reasonable assurance that money market fund product payments and waivers are calculated and applied accurately.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.21.2.1	IF money fund fee calculations are automatically performed by EBS in accordance with the IF profile. EBS also calculates fees expected to be paid by fund managers or FDIC administrators.	For a selected money fund fee billed systematically to an IF account, recalculated the billing fee calculation to determine whether the EBS system accurately calculated the fee in accordance with the IF profile.	No exceptions noted.
B.21.2.2	A monthly reconciliation is performed between the payments received from the money market funds and the fees expected per invoices systematically in EBS. CPBO AB Group manager reviews and signs off the reconciliation. Differences exceeding a predefined threshold are reviewed and followed up to resolution.	For a selection of months, inspected the reconciliation reports by EBS to determine whether they were signed off by CPBO Group Manager.  There were no differences over the predefined threshold; therefore, the operating effectiveness of the follow-up procedures for variances could not be tested.	No exceptions noted.  There were no differences over the predefined threshold; therefore, the operating effectiveness of this control attribute could not be tested.

## 22) CONFIRM CONTROLS

**Control Objective B.22.1:** Controls provide reasonable assurance that the daily production and distribution of confirms are performed completely, accurately and in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.22.1.1	Rules and business logic in the Confirm application determine the eligibility for hard copy confirms. Confirms are archived within eDocs regardless of delivery method.	For a selection of trades, inspected the confirms generated to determine whether the Confirm application applied eligibility rules and business logic for hard copy confirms and eDocs archiving.	No exceptions noted.
B.22.1.2	Pershing distributes confirm information via dedicated lines using SFTP and Connect:Direct protocol with encryption.	Inspected the data transmission policies and procedures to determine whether secure data transmissions were utilized to/from external parties and encryption was utilized for outbound confirm data transmission.  Inspected transmission protocol configurations to determine whether secure transmission methods were applied to confirm data transmissions.	No exceptions noted.
B.22.1.3	On a daily basis, QA completes automated confirm health check procedures, for a selection of IF accounts, to verify relevant confirm changes and trade details are complete and accurate.	For a selection of IF accounts from a selection of days, inspected QA health check procedures performed to determine whether QA verified that relevant confirm changes and trade details were complete and accurate.	No exceptions noted.
B.22.1.4	On a daily basis, an automated reconciliation is performed to compare the total number of confirms from the print facility file and total confirms extracted from Mainframe logs via Exstream. Discrepancies are researched and resolved in a timely manner.  On a daily basis, a report detailing the end-to-end reconciliation is reviewed by the Print Management team and emailed to the Director of Print Management for review.	For a selected automated reconciliation, inspected the relevant systemic configuration and source data used in generating the reconciliation report to determine whether the reconciliation captured unreconciled items completely and accurately.  For a selection of days, inspected the reconciliation reports to determine whether discrepancies were researched and resolved in a timely manner and determined that there were no discrepancies identified for investigation and resolution; therefore, the operating effectiveness of this control attribute could not be tested.  For a selection of days, inspected the email communication to the Director of Print Management to determine whether an end-to-end reconciliation of confirms was performed.	No exceptions noted.  There were no discrepancies identified for investigation and resolution; therefore, the operating effectiveness of this control attribute could not be tested.

### 23) STATEMENT CONTROLS

**Control Objective B.23.1:** Controls provide reasonable assurance that changes to the client statement process are authorized, tested and approved.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.23.1.1	Requests for changes are received in automated form from the Account Managers, the Conversion team and/or Compliance. Pershing inserts are reviewed and approved by the Legal department prior to processing. IBD custom inserts are reviewed by the requestor for accuracy. Logos are verified by SCG and subsequently reviewed by the requestor for accuracy.	For a selection of insert and logo changes, inspected the request forms and email correspondence to determine whether changes were documented and received from authorized sources.  For a selection of insert and logo changes, inspected the request forms to determine whether they were approved by the Legal department and appropriate management prior to implementation.	No exceptions noted.
B.23.1.2	SCG participates in a third week preliminary run to verify whether test data correctly reflects statement changes and layouts on the hard copy. Statement QA reviews and approves the test data.	For a selection of preliminary runs, inspected the statement test data to determine whether Statement QA reviewed and approved the statement changes and layouts.	No exceptions noted.
B.23.1.3	Requests or updates to an IF's statement layout are initiated through the use of the KORR Request Form contained within the SharePoint site. The request is then entered into the KORR system and verified by SCG and subsequently reviewed by the requestor for accuracy.	For a selection of KORR change requests, inspected the KORR Change Request Forms, SharePoint audit trail, and KORR system logs to determine whether the change requests were accurately entered into the system, verified by SCG and reviewed by the requestor for accuracy.	No exceptions noted.
B.23.1.4	Prior to enrolling for delivery of electronic statements via NetXInvestor, clients are required to agree to terms and conditions and provide informed consent to receiving the information electronically.	For a selected test account, observed a user enroll in delivery of electronic statements via NetXInvestor, and noted that NetXInvestor prompted the user to agree to terms and conditions and provide informed consent before they were enrolled in e-Delivery.	No exceptions noted.
B.23.1.5	For e-Delivery notifications that are undelivered, the e-Delivery system automatically sends a hard copy notice of the availability of electronic statements. After three consecutive undelivered e-Delivery notifications, the e-Delivery system switches the account to hard copy delivery for statements.	For a selected account, inspected the statement system's logs and configuration to determine whether a hard copy notice of the availability of electronic statements was sent for each undelivered e-Delivery notification and the account was enrolled to hard copy delivery for statements after the third consecutive undelivered e-Delivery notification.	No exceptions noted.

**Control Objective B.23.2:** Controls provide reasonable assurance that processing of statement files is accurate and complete.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.23.2.1	Rules embedded in the program logic for statements determine the accounts that will receive a statement. Criteria for statements include type of account, type of transaction and account activity.	For a selection of accounts eligible to receive month-end statements, inspected statements generated to determine whether the statements were generated based on criteria, including: type of account, type of transaction and account activity.	No exceptions noted.
B.23.2.2	The Month End Statement Processing Reports, including record counts, activity completeness balancing and intra-month preliminary runs, are generated and distributed to management to verify that the processing is complete and accurate.	For a selection of months, inspected Month End Statement Processing Reports to determine whether SCG generated the statement processing statistics and distributed the report to SCG management.	No exceptions noted.
B.23.2.3	On a monthly basis, SCG performs a month end statement test run. Discrepancies identified during the month-end statement test run are investigated and resolved in a timely manner. The statements are loaded on eDocs for review and approval by the business owners.	For a selection of months, inspected the month-end test run to determine whether the statement test run was completed and results were recorded and identified discrepancies, if any, were investigated and resolved in a timely manner.  For a selection of months, inspected the statement test sign-off sheet to determine whether business owners approved the test runs.	No exceptions noted.
B.23.2.4	On a monthly basis, the Statement QA team performs statement test runs, including at least two validation runs and one month-end run. QA performs procedures over the accuracy of statement test runs for validations.	For a selection of months, inspected the validation and month-end runs to determine whether the statement test runs were completed and results recorded.  For the discrepancies identified in the validation and month-end runs selected above, inspected Statement QA management's escalation and resolution to determine whether identified discrepancies were investigated and resolved in a timely manner.  For a selection of months, inspected the sign-off mail to determine whether the QA statement team sent a validation sign-off to SCG confirming statement testing was completed.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.23.2.5	<p>On a monthly basis, the number of accounts eligible to receive statements is reconciled against the number of statements printed to identify any out-of-balance items that appear in WebFOCUS, the statements reconciliation system.</p> <p>An incident ticket is automatically raised for any out-of-balance items and assigned to Statements technology group for investigation and resolution. The PMT monitors the resolution of out-of-balance items. Once an open item has been resolved by technology group, PMT records the reason for the out-of-balance condition and action taken and updates the status of the open item to "completed."</p>	<p>Inspected the WebFOCUS system logic to determine whether the reconciliation system was configured to identify an out-of-balance condition if there were discrepancies in the number of accounts eligible to receive statements compared to the number of statements printed.</p> <p>For the out-of-balance conditions from a selection of monthly reconciliations, inspected the associated incident tickets and action change history within the WebFOCUS system to determine whether the discrepancies were reviewed, researched and resolved.</p>	No exceptions noted.

**Control Objective B.23.3:** Controls provide reasonable assurance that the production and distribution of statements are monitored for completeness.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.23.3.1	Pershing distributes statement information distributed via dedicated lines (Connect:Direct protocol) and FTP with encryption.	Inspected data transmission policy and procedures to determine whether data transmissions to/from external parties were required to utilize encryption for inbound/outbound client transmissions.  Inspected transmission protocol configurations to determine whether secure encrypted transmission methods were applied to statement information distribution.	No exceptions noted.
B.23.3.2	The Print Management team reconciles statements created (Mainframe Print Vendor Balancing Reports) to statements printed (Project Summit logs) on a monthly basis.	For a selection of months, inspected the month-end statement report to determine whether management reconciled the statements created to the statements printed.  For a selection of months, inspected Mainframe Print Vendor Balancing Reports and the Project Summit logs from the printer to determine whether statements created reconciled to statements printed and unreconciled items were identified and resolved.	No exceptions noted.
B.23.3.3	Pershing monitors the distribution process to assure that client statements are mailed within five business days.	For a selection of months, inspected client statements reports to determine whether management monitored the timely distribution and mailing of client statements within five business days.	No exceptions noted.

**Control Objective B.23.4:** Controls provide reasonable assurance that the production and distribution of electronic statements are monitored for completeness.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.23.4.1	CD-ROM requests are submitted via the CD-ROM Request Form by the account manager within the Global Customers unit, a client service representative, the Legal department or the Compliance department to the SCG.	For a selection of CD-ROM requests, inspected the CD-ROM Request Forms to determine whether electronic statement requests were requested by an authorized source and processed in a timely manner.	No exceptions noted.
B.23.4.2	SCG verifies that data sent from the Pershing mainframe system to the CD-ROM and electronic document service providers is captured daily. A daily comparison is performed between the number of images sent and the number of images loaded.	For a selection of days, inspected CD-ROM and electronic document verification emails to determine whether daily comparisons between the number of images sent and the number of images loaded was performed.	No exceptions noted.
B.23.4.3	Electronic statements are generated based on client e-Delivery preferences. Enrolled clients are notified of the availability of electronic statements via email, after the month-end statement processing is completed.  Scheduled jobs are in place to feed the statement details from STMT to e-Delivery.	For an electronic statement generated, inspected the automated email delivered to determine whether enrolled clients were notified of the availability of electronic statements.  For a selected statement, inspected the job scheduling and monitoring tool and noted that it was run successfully, and traced the statement details from STMT to e-Delivery to determine whether the statement details were captured completely and accurately from STMT to e-Delivery.	No exceptions noted.



**24) PRIME SERVICES CONTROLS**

**Control Objective B.24.1:** Controls provide reasonable assurance that new client accounts are authorized and set up accurately.

*These controls are applicable to introducing firms only.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.24.1.1	A Prime IS prepares the BAR Committee Transmittal, a checklist of required documentation in order to present a new relationship for BAR approval. Upon compilation of required documents, a Prime Services Manager signs the BAR Transmittal for each new relationship.	For a selection of new prime brokerage clients, inspected the signed BAR Transmittal Checklist to determine whether the checklists were completed and signed off by the Prime Services Manager.	No exceptions noted.
B.24.1.2	Formal BAR Committee approval is required prior to new relationship setup and opening. Approvals are documented within BAR meeting minutes.	For a selection of new prime brokerage clients, inspected the BAR Committee approval to determine whether approvals were in place prior to account initiation.  For a selection of new prime brokerage clients, inspect the BAR meeting minutes to determine whether BAR approvals were received.	No exceptions noted.
B.24.1.3	A Prime Services Series 24 licensed manager authorizes and signs the prime brokerage agreement prior to opening a prime broker account.	For a selection of new prime brokerage clients, inspected the prime brokerage agreement to determine whether sign-off by a Prime Services Series 24 licensed manager was received.	No exceptions noted.
B.24.1.4	Upon receipt of BAR approval and the agreement for prime brokerage, an IS submits the New Account Form, approved by a Series 24 licensed manager and branch manager, to Prime Support to open the account on NetX suite.	For a selection of new prime brokerage clients, inspected the New Account Form to determine whether sign-off by a Series 24 licensed manager and branch manager was received.  For a selection of new prime brokerage clients, inspected the NetX suite system to determine whether the new client was set up in NetX suite as required by the client agreement.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.24.1.5	Prime Support tests end-of-day trade files in the test environment to ensure the file conforms to the format agreed between Pershing and the client, if requested. Prime Support tests SFTP mailbox connectivity in the test environment to ensure end-of-day trade files are received completely and accurately.	For a selection of end-of-day trade files for a selection of new client accounts, inspected test output and email communications between Prime Services and new clients to determine whether the file conforms to the agreed formats.  For a selection of new client SFTP mailboxes, inspected the results of mailbox connectivity test to determine whether the end-of-day trade files were received completely and accurately.	No exceptions noted.
B.24.1.6	If Pershing initiates a termination of a relationship with a client, termination procedures begin on the transfer date communicated to the client. The appropriate departments are notified of the termination via email. Pershing provides notice of termination to the client in accordance with the prime broker agreement.	Inspected the listing of terminated accounts and inquired with Management and determined that there were no terminated accounts processed during the reporting period; therefore, the operating effectiveness of this control attribute could not be tested.	There were no terminated accounts during the period; therefore, the operating effectiveness of this control attribute could not be tested.

**Control Objective B.24.2:** Controls provide reasonable assurance that prime securities lending transactions with trading counterparties are authorized, monitored and fees are billed by management.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.24.2.1	SLS monitors and reviews various records in email, online, and real-time screen format regarding box loans, short sales, locates, borrows, system rates and changes, security allocations, and international borrows to ensure they are recorded completely and accurately in the system. On a daily basis, an employee indicates their review of the reports on the SLS Department Checklist and SLS management signs off at the end of the day as evidence of their supervisory review.	For a selection of days, inspected the SLS Department Checklists for each employee to determine whether employees evidenced their review of the SLS reports on the checklists and SLS management signed off at the end of the day.	No exceptions noted.
B.24.2.2	Trading counterparties are added to the system once an agreement is in place and authorized by the Securities Lending Operations management and the Pershing Credit Risk Committee.	For a selection of newly added counterparties, inspected the approval form signed by Securities Lending Operations and the Pershing Credit Risk Committee and system implementation date to determine whether approvals were received prior to addition to the system.	No exceptions noted.
B.24.2.3	Access to the PAL/BOLT, SmartLoan and Loanet applications is restricted to appropriate SLS personnel.	For users with access to PAL/BOLT, SmartLoan and Loanet inspected the user and group access profile in PAL/BOLT, SmartLoan and Loanet and inquired of Securities Lending Operations management regarding their job roles and responsibilities to determine whether access to PAL/BOLT, SmartLoan and Loanet was restricted to authorized personnel.	No exceptions noted.
B.24.2.4	Domestic equity short sale locate requests are approved in the PAL/BOLT application based on availability, which automatically reduces the securities available in PAL/BOLT for lending and provides reasonable expectation that securities are available for delivery.	Observed the setup in PAL/BOLT and a domestic short sale locate request being approved in PAL/BOLT and noted that PAL/BOLT automatically reduced securities available for lending accurately in PAL/BOLT.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.24.2.5	Syncova automatically calculates and applies security-level rebates to direct prime brokerage accounts per short position based on security lending rates downloaded from the rate engine. FundsU automatically calculates and applies rebates to all other indirect accounts. In addition, the FundsU system stores client level pricing information that is fed to Syncova.	<p>For a selected date, inspected job scheduler to determine whether the automated job configurations were set up to feed the client level pricing data from FundsU to Syncova.</p> <p>For a selected date, observed FundsU and Syncova system screens and noted that the data feed from FundsU was transmitted completely and accurately to Syncova.</p> <p>Inspected account rebate details in Syncova and rates in the rate engine and recalculated rebates to determine whether Syncova automatically calculated and applied rebates accurately per short position based on rates downloaded from the rate engine.</p> <p>Inspected account rebate details in FundsU and rates in the rate engine and recalculated fees to determine whether FundsU automatically calculated and applied rebates accurately per short position based on rates downloaded from the rate engine.</p>	No exceptions noted.
B.24.2.6	<p>A Prime Services Client Technology employee manually overrides system-generated rates in Syncova based on instruction provided by a Securities Lending Sales trader.</p> <p>On a daily basis, the Syncova "Rate Overrides Report" is distributed to all Collateral Funding &amp; Trading traders for review. On a weekly basis, a Securities Lending manager evidences his review of the Rates Override Report on a supervisory checklist.</p>	<p>For a selection of manual rate overrides entered in Syncova, inspected the Rate Overrides Report and the list of users authorized to override rates to determine whether the manual overrides were entered by authorized personnel based on job responsibilities.</p> <p>For a selection of weeks, inspected the supervisory checklist to determine whether the supervisory review was performed and evidenced.</p>	<p>No exceptions, except where noted.</p> <p>Exceptions noted.</p>
<p>Exceptions noted:</p> <p>For one out of six selected weeks, management's review of the Rate Override report did not contain commentary on all rate overrides.</p> <p>Management response:</p> <p>Refer to Section V for exception detail and management's response to the exception.</p>			
B.24.2.7	On a daily basis, GMAR feeds Syncova settled short positions to calculate daily short interest accruals.	For a selected date, inspected job scheduler to determine whether the automated job configurations were set up to feed the settled short positions to calculate daily short interest accruals from GMAR to Syncova on a daily basis.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
		For a selected date, observed GMAR and Syncova system screens and noted that the data feed on settled short positions to calculate daily short interest accruals were transmitted completely and accurately from GMAR to Syncova.	

**25) POSSESSION OR CONTROL**

**Control Objective B.25.1:** Controls provide reasonable assurance that Pershing obtains timely and thereafter maintains physical possession or control of fully paid securities and excess margin securities as required or action is taken as per policy.

*The controls included below to maintain possession or control over IFs' and IF clients' securities are to be considered in conjunction with applicable controls and results in depository balancing, margin, physical custody, clearance and settlement, and account transfers control objectives.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.25.1.1	<p>SmartSeg/S3 automatically updates the Stock Record at the start of each business day to calculate segregation memo requirements for client accounts.</p> <p>On a daily basis, the Operational Efficiency department reviews the Under-segregated Report to ensure that there are no client accounts under-segregated. Under-segregated accounts are researched and resolved by the Operational Efficiency department.</p>	<p>For a selected active margin account, inspected the SmartSeg/S3 reports and recalculated the segregation memo to determine whether SmartSeg/S3 calculated the segregation memo accurately.</p> <p>For a selected cash account, inspected the SmartSeg report and recalculated the cash maintenance requirement to determine whether SmartSeg calculated the segregation memo accurately.</p> <p>For a selection of days, inspected the Under-segregated Report to determine whether under-segregated accounts were reported, researched and resolved.</p>	No exceptions noted.
B.25.1.2	<p>Setup of good control location accounts in OLCA are approved by the DB group using fully executed papers and a supervisory checklist is completed to evidence the completion of the setup.</p> <p>On a daily basis, a daily exception report, including accounts with missing codes in OLCA are reviewed by the DB group.</p>	<p>For a selection of new good control location account setups, inspected the fully executed papers to determine whether the Credit Risk, Legal, Global Network and Government/DTC departments approved the setup of the good control location.</p> <p>For a selection of new good control location account setups, inspected checklist details to determine whether the DB group and Operational Efficiency management approved that the change was accurately implemented.</p> <p>For a selection of days, inspected the daily exception report, including accounts with missing codes (Accounts Not Coded Report) in OLCA to determine whether it was reviewed by the DB management.</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.25.1.3	A Delivery Deficit Report is generated from SmartSeg after maintenance runs; the report is monitored by the Operational Efficiency group on a daily basis to determine appropriate action for resolution. Identified delivery deficits are reviewed by the Operational Efficiency group subsequent to resolution to verify resolution is appropriate. Operational Efficiency management signs off on the Delivery Deficit Report to evidence the review and approval.	For a selection of days, inspected daily Delivery Deficit Reports to determine whether there was Operational Efficiency management review and sign-off.  For a selection of delivery deficits from a selection of Delivery Deficit Reports, inspected the resolution audit log to determine whether actions were taken for resolution.	No exceptions noted.
B.25.1.4	A weekly Cumulative Deficit Report is generated and items greater than \$100K are reviewed and communicated to Pershing senior management.  On a monthly basis, the control owner verifies that no unauthorized changes were made to the configuration of the Cumulative Deficit Report.	For a selection of weeks, inspected the weekly Cumulative Deficit Reports and emails to determine whether the reports were reviewed by Operational Efficiency management and items greater than \$100K were reviewed and communicated to Pershing senior management.  For a selection of delivery deficits from a selection of weekly Cumulative Deficit Reports, inspected the audit log to determine whether deficits were researched and resolved.  For a selection of months inspected management review of the macros used to generate the Cumulative Deficit Report to determine whether management reviewed the macros to verify that changes made to the configuration of the report were authorized.	No exceptions noted.
B.25.1.5	A monthly Cumulative Deficit Report is generated and securities in deficit longer than 30 days are researched to determine action for resolution. The report and checklist are reviewed and signed off by the Deficit Reporting unit.  On a monthly basis, the control owner verifies that no unauthorized changes were made to the configuration of the Cumulative Deficit Report.	For a selection of months, inspected the monthly Cumulative Deficit Reports and checklist to determine whether securities in deficit longer than 30 days were reviewed and signed off by management.  For a selection of deficits from the monthly Cumulative Deficit Report, inspected resolution details to determine whether actions were taken for resolution.  For a selection of months inspected management review of the macros used to generate the Cumulative Deficit Report to determine whether management reviewed the macros to verify that changes made to the configuration of the report were authorized.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.25.1.6	On a daily basis, memo-segregation instructions per cusip are automatically transmitted from OLCA to the DTC. For excess securities, memo segregation is equal to the requirements, allowing excess shares to be free at DTC. For instances where the requirements are equal to possession or control, memo segregation is equal to DTC holdings. For deficit, if there is no stock loan, memo segregation is equal to DTC position; if there is a stock loan, memo segregation would be equal to possession plus the lesser of the deficit or stock loan position.	For a selection of securities, inspected Stock Record segregation details and memo-segregation instructions sent to the DTC to determine whether memo-segregation was calculated correctly based on type.	No exceptions noted.
B.25.1.7	For domestic transactions, OLCA allocates and processes deliveries through the DTC. OLCA will wait on the message that the delivery was made from DTC. If there is insufficient availability, the delivery will not be made based on memo seg requirements. The Government Clearance department transmits clearing instructions through the OLCA system. Deliveries on government bonds are made by OLCA by releasing the available securities through the Broker Dealer Clearing system. The OLCA system allows for the turnaround of securities at the FICC when there is sufficient availability.	For a selected domestic transaction, inspected OLCA delivery instructions details and memo-segregation requirements to the DTC to determine whether OLCA processed deliveries through the DTC when there is sufficient availability.  For a selected government bonds delivery, inspected OLCA delivery instructions through the Broker Dealer Clearing system to determine whether OLCA processed deliveries through the FICC when there is sufficient availability.	No exceptions noted.



	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.25.1.8	<p>Retail non-ACATS transactions and ACATS transactions of fully paid for or excess margin international securities are delivered from Pershing's custody account at the international custodians. Sales of international securities are settled out of Pershing's clearance account or settle directly out of a custody account that is a good control location, if applicable to market convention. For passenger markets, the transaction is delivered directly from the IF's or IF client's custody account via SWIFT message.</p> <p>Margin securities are delivered from Pershing excess availability at the international custodian.</p>	<p>For a selection of international transactions of fully paid for or excess margin securities, inspected SWIFT messages to international custodians to determine whether instructions were sent for deliveries to be made with segregated securities in the custody account.</p> <p>For a selected international securities sale, inspected SWIFT messages to international custodians to determine whether instructions were sent for trades to be settled out of Pershing's clearance account or settled directly out of a custody account as per market convention.</p> <p>For a selected passenger markets transaction, inspected SWIFT messages to international custodians to determine whether instructions were delivered directly from the IF's or IF client's custody account via SWIFT message.</p>	No exceptions noted.
B.25.1.9	<p>Within the Corporate Actions department, requests for confirmation from the transfer agent are initiated (submitted) when open transfers reach between 20 and 39 days old.</p> <p>Within the Custody Services department, requests for confirmation from the transfer agent are initiated (submitted) prior to open transfers reaching 40 days old. If confirmation is not received by the 40<sup>th</sup> day, the transfer is automatically flagged in TOLS as "unconfirmed" and items unconfirmed at week and/or month end are reported to the Regulatory Reporting group and the Credit Committee.</p>	<p>For a selection of corporate action transfers from a selection of weekly aged transfer reports, inspected confirmations to determine whether open transfers were reviewed and requests for confirmations were initiated for open transfers between 20 and 39 days old and transfers that were not confirmed were marked in TOLS and reported to the Regulatory Reporting group and the Global Credit and Market Risk Committee weekly and/or monthly.</p> <p>For a selection of Custody Services transfers from a selection of weekly aged transfer reports, inspected confirmations to determine whether open transfers were reviewed and requests for confirmations were initiated for open transfers prior to reaching 40 days old and transfers that were not confirmed were marked in TOLS and reported to the Regulatory Reporting group and Global Credit and Market Risk Committee weekly and/or monthly.</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
		For a selection of weeks and months, inspected documentation from the Regulatory Reporting group's and Credit Committee's review of aged transfers and determined that the Regulatory Reporting group and Credit Committee reviewed unconfirmed aged transfers individually and the inaccurate summarization of aged transfers was not subject to the Regulatory Reporting group's or Credit Committee's review.	
B.25.1.10	On a daily basis, the Stock Loan Recall Report is reviewed and signed off by the Stock Loan department. A recall is issued to the counterparty by 11:30 a.m. for any items that remain to be recalled by the second business day. The contract is closed if securities are not returned by the sixth business day, and a buy-in is issued if Pershing is still deficient in the position.	For a selection of days, inspected the Stock Loan Recall Reports to determine whether the report was reviewed and signed off by the Stock Loan department.  For a selection of open recalls from a selection of daily Stock Loan Recall Reports, inspected the issuance of the recall on the second business day, and a buy-in if Pershing was still deficient in the position on the sixth business day, to determine whether required actions, including issuance of the recall, or buy-in when necessary, were performed in a timely manner.	No exceptions noted.
B.25.1.11	Excess eligible to be loaned and deficient securities that are required to be borrowed are defined in OLCA and transmitted daily into SmartLoan. Intra-day loans within SmartLoan are processed by Loanet and communicated to OLCA to adjust securities inventory. Borrows within SmartLoan are processed by Loanet and transmitted to the DTC, and the securities inventory is updated in OLCA on confirmation from the DTC. SmartLoan is reconciled to OLCA on a daily basis, and discrepancies are reviewed and resolved by the Stock Loan department.	Observed a loan and a borrow of a security in SmartLoan, OLCA availability and the DTC confirmation to note whether OLCA adjusted the inventory based on the transaction quantity on confirmation from the DTC.  For a selection of days, inspected SmartLoan and OLCA recon reports to determine whether the system reconciled SmartLoan and OLCA and management review was performed.  For a selection of breaks on the SmartLoan and OLCA daily reconciliations reports, inspected SmartLoan and OLCA logs to determine whether differences were reviewed, researched and resolved in a timely manner.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.25.1.12	Unresolved differences identified during the quarterly verification process are booked to the QV suspense account after seven business days. The Banking and DB department monitors the account to ensure that differences, including short positions subject to buy-in, are researched and resolved timely and accurately by the responsible business unit(s).	For a selection of quarters, inspected a selection of suspense items from the quarterly verification worksheet and Stock Record details to determine whether the differences were researched and resolved by the responsible business unit and reviewed by the Banking and DB department.	No exceptions noted.
B.25.1.13	For sell trades where the security is not delivered to Pershing within the prescribed timeframe, the Margin department either files for an extension with the FINRA or institutes buy-in instructions for the security.	For a selection of open stock due items over the prescribed timeframe from the daily Stock Dues Report, inspected extensions or buy-in instructions to determine whether a Margin employee filed for an extension with the FINRA or instituted buy-in instructions for the security in a timely manner.	No exceptions noted.
B.25.1.14	For partial calls, Pershing automatically updates the Stock Record based on instructions from depositories' lottery results, which determine which Pershing accounts are affected by the redemption.  On a daily basis, accounts expected to be affected by the call and that are listed as short on the Partial Call Lottery Technical Short Report are monitored and a service center notification is submitted by the Corporate Actions department to the client to notify a tech short.	For a selected partial call, inspected the Stock Record, instructions, and account details to determine whether the partial call was updated based on instructions from depositories' lottery results.  For a selection of tech shorts on the Partial Call Lottery Technical Short Reports from a selection of partial calls, obtained and inspected the notifications to IFs and IF clients to determine whether the shorts were monitored and communicated to IFs by the Corporate Actions department.	No exceptions noted.
B.25.1.15	A reorg instruction memo for shares on Pershing's Stock Record is created for tender instructions received for voluntary reorganizations and increases Pershing's requirements. The REOR system generates the fulfillment control form, including IF's instructions received via REOR, securities tendered at depository and total requirement to be fulfilled. The Reorganization department reviews tender instruction, completes the fulfillment control form, and makes an entry in JR10/AMPS to reflect the tender instruction.	For a selection of voluntary reorganizations, inspected the fulfillment control form and Pershing's requirements to determine whether the Reorganization department reviewed the tender instruction, completed the fulfillment control form and created an entry in JR10/AMPS to reflect the tender instruction.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.25.1.16	For accounts where the quantity of securities with reorg memos is greater than the quantity of securities segregated, automated bookkeeping jobs increase securities required to be in Pershing's possession or control in the REOR Memo Seg Requirement accounts and reduces availability. Possession or control procedures will obtain securities for which a deficit condition exists.	For a selected voluntary reorganization where the reorganization memo quantity is greater than segregated quantity, inspected the REOR Memo Seg Requirement account details to determine whether the associated securities were automatically added to client segregation requirements for possession or control.	No exceptions noted.
B.25.1.17	For voluntary reorganizations where Pershing holds a client account or counterparty liable, and there is a net short position, the Reorganization department increases securities required to be in Pershing's possession or control and reduces availability by the net short liability amount. On a monthly basis, the Reorganization department reviews the accounts where net short positions are held liable.	For a selection of voluntary reorganizations where Pershing holds a client account or counterparty liable with a net short position, inspected the Pershing Journal (JR10/AMPS) to determine whether entries were processed by the Reorganization department to increase the requirement for securities and decrease the security availability by the net short liability amount.  For a selection of voluntary reorganizations where Pershing holds a client account or counterparty liable with a net short position, inspected the JR10/AMPS printouts to determine whether the Reorganization department reviewed on a monthly basis the accounts where net short positions are held liable.	No exceptions noted.
B.25.1.18	Stock dividend and bond (pay in kind) receivable transactions are researched and resolved by a Corporate Actions employee on a daily basis, as evidenced by a daily checklist. Aged deficiencies are resolved by requesting an extension or issuing buy-in instructions. On a weekly basis, aged deficiencies are reviewed by Corporate Actions management. Management uses the Short Market Value Aging Report to research and resolve aged deficiencies older than 45 days in a timely manner.	For a selection of days, inspected the Daily Stock Dividend and Bond Receivable Checklist to determine whether it was completed by an employee and signed off by management.  For a selection of weeks, inspected the weekly aged receivables report to determine whether the receivables were reviewed by Corporate Actions management.  For a selection of stock dividend and bond receivables from the Short Market Value Reports selected, inspected the audit log to determine whether aged receivables were researched and extensions or buy-in instructions were issued.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.25.1.19	On a weekly and month-end basis, the customer reserve calculation is reviewed by the Regulatory Reporting Manager. The review work papers and corresponding supporting documentation are maintained by the Regulatory Reporting group and the relevant checklist is signed by the Regulatory Reporting Manager to document the review.	For a selection of weeks, inspected the weekly customer reserve calculation checklists to determine whether the customer reserve calculation was reviewed and approved by the Regulatory Reporting Manager and Department Manager.  For a selection of months, inspected the month-end customer reserve calculation checklists to determine whether the customer reserve calculation was reviewed and approved by the Regulatory Reporting Manager.	No exceptions noted.

26) **SUBSCRIBE ANNUITY**

**Control Objective B.26.1:** Controls provide reasonable assurance that annuity orders are captured, submitted for execution and processed in a timely manner.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.26.1.1	The Financial Solutions group receives and tracks to completion any requests to add/update customized rules and forms from the IFs.	For a selection of form and rule updates requested by the IFs, inspected the request forms and backup documentation to determine whether changes were tracked to completion and implemented as requested, and the IF was notified upon completion.	No exceptions noted.
B.26.1.2	Annuity orders require IF principal or IF delegate approval before they are marked as fully executed.	For a selection of fully executed annuity orders, inspected the audit trail to determine whether IF principal or IF delegate approval was received before the order was marked as fully executed.	No exceptions noted.
B.26.1.3	Fully executed annuity orders are funded on the same day and a debit advice is sent to clients for brokerage settling accounts' orders. Annuity orders that are settling through brokerage accounts and transmitted to the DTCC will be settled the same day through the DTCC money settlement process.	For a selection of annuity orders placed through brokerage accounts, inspected the NetX360 screenshots to determine whether orders were funded on the same day directly from the client accounts.  For a selection of funded annuity orders, inspected IF accounts to determine whether a debit advice was sent to the client for brokerage settling orders.	No exceptions noted.
B.26.1.4	Orders that have not received IF principal approval or, if processed through brokerage accounts, have not been funded, will expire in accordance with the FINRA and Pershing setup expiration rules.	Inspected the workflow configuration settings in the mainframe to determine whether expiration timeframes were set in accordance with the FINRA and Pershing requirements.  For a selection of expired orders, inspected order details to determine whether the order expired timely because it was not funded or approved.	No exceptions noted.
B.26.1.5	On a daily basis, Subscribe employees review approved annuity trades which are automatically flagged as having a registration mismatch for the day to verify that owner registration on the annuity matches the owner on the Pershing brokerage account.  If a mismatch is identified, the order is cancelled and logged, and a notification is sent to the IF through Service Center.	For a selection of days, inspected the daily trading confirmation emails of approved orders to determine whether the Subscribe employees reviewed the orders for registration mismatches and, if required, the IFs were notified of cancelled orders due to registration mismatches.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.26.1.6	<p>On a daily basis, the Annuity Operations management reviews daily trading confirmation emails containing:</p> <ul style="list-style-type: none"> <li>• Status of the DTCC file processing</li> <li>• Any manually processed purchase order for the day</li> <li>• Deleted trades as a result of owner information registration mismatch</li> <li>• The DTCC rejected annuity trades</li> <li>• Confirmation of employees' review of trades</li> </ul> <p>All identified DTCC annuity trade rejects are communicated to the IF. If the trade reject was caused by a Pershing or Ebix and the order is brokerage settling, the order is manually sent to the carrier by Annuity Operations on the same day. If the order is not brokerage settling, Annuity Operations assists the IF to get the order sent to the carrier at a later date. If the cause of the reject was due to data entered by the advisor, the advisor must correct the order and resubmit.</p>	<p>For a selection of days, inspected the daily trading confirmation emails to determine whether these were reviewed by Annuity Operations management.</p> <p>For a selection of DTCC annuity trade rejects, inspected the communication and evidence of action taken to determine whether the IF was notified of the DTCC annuity trade reject and the order was resolved.</p>	No exceptions noted.
B.26.1.7	<p>Fully executed annuity orders marked as processed will be identified through a DTCC transmission of the positions file.</p> <p>The positions are documented on the client account and daily valuations are updated by the carrier.</p>	<p>For a selection of orders marked as "processed," inspected the current day client positions to determine whether they were updated on the client's account and valuations were updated by the carrier.</p>	No exceptions noted.
B.26.1.8	<p>Commission payments for brokerage settling orders are automatically posted to IF accounts, when applicable.</p>	<p>For a selected commission payment, inspected the transmission from an Ebix file and ASPS order information to determine whether commission payments were posted to IF accounts in accordance with customer instructions.</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.26.1.9	Carrier rejected brokerage settling orders are communicated to Pershing Annuity Operations. Commission payments are reversed through a manual bookkeeping entry.	For a selection of brokerage settling orders rejected by carriers, inspected order details within NetX360 to determine whether reversal entries for the IF commission and the initiating brokerage settling amounts were processed and posted.	No exceptions noted.



**27) CAPS AND FIRM TRADE REPORTING**

**Control Objective B.27.1:** Controls provide reasonable assurance that revenue data resulting from broker trades is captured completely and accurately by the Commission and Payout System (CAPS).

*These controls are applicable to introducing firms only.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.27.1.1	An IF is set up in CAPS per the IF and Product Reporting questionnaire. Management performs a supervisory review of the account setup.	For the population of added IFs, inspected CAPS setups to determine whether IFs were set up on CAPS accurately per the IF and Product Reporting questionnaire completed by the IF.  For the population of added IFs, inspected the IF and Product Reporting questionnaire to determine whether management performed a supervisory review of the account setup.	No exceptions noted.
B.27.1.2	Scheduled jobs are in place to feed the principal and firm trading activity details (branch, CUSIP, account number, trade and settlement dates and amount) from Bookkeeping and TPS to CAPS.  A UACR system configuration is implemented in CAPS and performs an automated reconciliation on the total number of records transferred.  In case of batch job failures, the Application Production Support team is contacted to investigate and resolve.	For a selected transaction, traced the transaction details from Bookkeeping to CAPS to determine whether the transaction details were captured completely and accurately from Bookkeeping to CAPS.  For a selected transaction, traced the transaction details from TPS to CAPS to determine whether the transaction details were captured completely and accurately from TPS to CAPS.  For a selection of days, inspected the daily completion of the scheduled jobs details to determine whether the scheduled jobs were performed to feed the principal and firm trading activity details completely and accurately and batch job failures, if any, were escalated to the Application Production Support team for investigation and resolution.	No exceptions noted.
B.27.1.3	CAPS is systematically configured to split commissions for participating RRs.	For a selected participating RR, inspected the CAPS configuration on split commissions and re-calculated a commission split to determine whether the commission was split accurately per setup in CAPS.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.27.1.4	IFs request entry adjustments within CAPS via email. The change is made by the CPBO and Reporting department as requested and email communication is sent to the IF with notification of the completed change requested.	For a selection of CAPS entry adjustments requested by the IF and applied by Pershing internal personnel, inspected email requests from IFs, audit reports, and email communication to the IF on the completion of the requested adjustments to determine whether updates were made within CAPS according to IF instructions.	No exceptions noted.

**Control Objective B.27.2:** Control provides reasonable assurance that reports generated and communicated to IFs from the Firm Trading Portfolio System (FIRM) are complete and accurate.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.27.2.1	<p>An IF is set up in FIRM per the IF and Product Reporting questionnaire.</p> <p>Management performs a supervisory review of the account setup.</p>	<p>For the population of IFs added to FIRM, inspected FIRM setups to determine whether IFs were set up on FIRM accurately per the IF and Product Reporting questionnaire completed by the IF.</p> <p>For the population of added IFs, inspected the IF and Product Reporting questionnaire to determine whether management performed a supervisory review of the account setup.</p>	No exceptions noted.
B.27.2.2	<p>Scheduled jobs are in place to feed the principal and firm trading activity details (branch, CUSIP, account number, trade and settlement dates and amount) from PROM, Bookkeeping and TPS to FIRM.</p> <p>A UACR system configuration is implemented in FIRM and performs an automated reconciliation on the total records transferred.</p> <p>In case of batch job failures, the Application Production Support team is contacted to investigate and resolve.</p>	<p>For a selected transaction, traced the transaction details from PROM to the FIRM database to determine whether the transaction details were captured completely and accurately from PROM.</p> <p>For a selected transaction, traced the transaction details from Bookkeeping to the FIRM database to determine whether the transaction details were captured completely and accurately from Bookkeeping.</p> <p>For a selected transaction, traced the transaction details from TPS to the FIRM database to determine whether the transaction details were captured completely and accurately from TPS.</p> <p>For a selection of days, inspected the daily completion of the scheduled jobs to determine whether the scheduled jobs were performed to feed the principal and firm trading activity details completely and accurately and batch job failures, if any, were escalated to the Application Production Support team for investigation and resolution.</p>	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.27.2.3	The FIRM vs. GMAR Out of Balance Report is generated on a daily basis to capture balance differences on a trade date and settlement date basis. Discrepancies are investigated and corrected in the FIRM online system if required. Firm Trading management reviews the month-end audit report on the differences identified and corrected online in FIRM on a monthly basis.	For a selection of months, inspected the FIRM vs. GMAR Out of Balance Reports and the month-end audit reports to determine whether the Out of Balance Report was generated to capture balance differences on a trade date and settlement date basis and discrepancies were reviewed and corrected where necessary.	No exceptions noted.
B.27.2.4	IFs request entry adjustments within FIRM via email. The change is made by the CPBO and Reporting department as requested and email communication is sent to the IF with notification of the completion of the adjustment requested.	For a selection of FIRM entry adjustments requested by the IF and applied by Pershing internal personnel, inspected email requests from IFs, audit reports, and email communication to the IF on the completion of the requested adjustment to determine whether updates were made within the FIRM according to IF instructions.	No exceptions noted.

**28) POSITION AND BALANCING**

**Control Objective B.28.1:** Controls provide reasonable assurance that access to configure standard files is restricted based on authorized entitlements.

*These controls are applicable to introducing firms only.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.28.1.1	SFDI is configured to prevent duplicate data in standard files.	Observed a Data Delivery department employee enter a duplicate account within SFDI and noted that SFDI prevented duplicate data in standard files.	No exceptions noted.
B.28.1.2	Based on the user entitlement mapped in the system, SFDI limits destinations to a single IF, or a group of related IFs when applicable. For a user ID without the required EMS entitlement, SFDI denies access to destinations outside their authorized entitlements.	Observed an authorized user from the Data Delivery department navigate SFDI and noted that the access was restricted to the destinations based on the user entitlement within EMS.	No exceptions noted.
B.28.1.3	For configuration changes made in the SFDI Extract Criteria screen by the Data Delivery team members that do not have supervisor designation, changes are directed to the SFDI workflow tool until an approval from a Data Delivery department peer user is obtained prior to implementation.	Inspected the list of users with supervisor designation to determine whether the user access was appropriate based on job responsibilities.  For a selected configuration change created by a user without supervisor designation, observed the SFDI Extract Criteria workflow tool to determine whether the SFDI configuration change was directed to the SFDI workflow tool for approval by a Data Delivery department peer user prior to implementation.	No exceptions noted.

**Control Objective B.28.2:** Control provides reasonable assurance that standard files are completely and accurately scheduled and delivered to the intended destination.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.28.2.1	<p>Delivery jobs write the created standard file records to a temporary file and the records in the temporary file are transmitted to the destination.</p> <p>The ESP monitoring tool automatically re-transmits for an unsuccessful transmission to the destination and sends an email alert on subsequent transmission failure to Standard File Delivery Infrastructure (SFDI) team and Data Delivery department. The alerts are monitored and tracked to resolution by Pershing critical batch support, Pershing production services and SFDI team.</p>	<p>Observed the system configuration and noted that when transmission fails, the transmission job is set to re-run automatically.</p> <p>For a selection of unsuccessful transmissions to the destination, inspected the transmission run logs and email alerts to determine whether re-transmissions were successful, alerts were monitored and tracked to resolution.</p>	No exceptions noted.
B.28.2.2	<p>Delivery jobs verify the cycle date in the header record against the batch cycle date to ensure that the current processing cycle data is being transmitted.</p>	<p>For a selected standard file, inspected the system configuration of delivery jobs to determine whether the cycle date in the header record was matched against the batch cycle date and that the current processing cycle data was transmitted.</p>	No exceptions noted.
B.28.2.3	<p>Each standard file record is verified against the configuration database to ensure that the standard file record generated is configured to be delivered to the intended destination.</p>	<p>For a selected standard file, inspected the system configuration to determine whether the standard file record was matched against the configuration database and that the standard file record generated was configured to be delivered to the intended destination.</p>	No exceptions noted.

**Control Objective B.28.3:** Control provides reasonable assurance that new standard file creation and standard file changes are authorized prior to development.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.28.3.1	The SFC authorizes proposed standard file creation or modifications.	For a selection of new or modified standard files, inspected the SFC committee minutes and the production date in the standard file matrix to determine whether SFC authorization was received prior to creation or modification.	No exceptions noted.

**29) NETX360 REPORT CENTER**

**Control Objective B.29.1:** Controls provide reasonable assurance that reports available via the NetX suite of products are generated completely and accurately.

*These controls are applicable to introducing firms only.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.29.1.1	<p>Pershing's platforms generate reports and the reports are loaded into NetX360 Report Center.</p> <p>New reports are set up in NetX360 Report Center upon Report Governance Council approval of the Report Request Form filled out by the business owner. After Report Governance Council approval, the approved Report Request Form is sent along with a DPG form to the business owner, who submits the form to Output Management for setup.</p> <p>Request for modifications to existing reports in NetX360 Report Center requires completion of the Report Request Form or email request by the business owner. Upon completion of the form, the business owner submits the request to Output Management to be implemented.</p>	<p>For a selection of new reports, inspected the Report Request Form and the DPG form to determine whether the Report Request Form and the DPG form were completed and Report Governance Council approved the request before the request was sent to Output Management for setup.</p> <p>For a selection of modified reports, inspected the Report Request Form or email request by the business owner to determine whether the Report Request Form or email request by the business owner were completed before the request was sent to Output Management for implementation.</p>	No exceptions noted.
B.29.1.2	<p>Upon receipt of the approved request, a test report is created in NetX360 Report Center for the requestor to test. Once testing has been completed successfully, the tester signs off on the report on the on-line request form which is sent to Output Management and Output Management promotes the report to production.</p> <p>If the test is not successful, the report is sent back to Output Management and DPG to make the necessary adjustments.</p>	<p>For a selection of new and updated reports, inspected the test result and sign-off on the on-line request form to determine whether the test was performed successfully and was signed off by the requestor before the report was promoted to production.</p>	No exceptions noted.



	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.29.1.3	Reports are available to IFs via NetX360 Report Center based on the requests (i.e., frequency, criteria) indicated on the Report Request Form.	For a selection of reports, inspected the Report Request Form to determine whether the reports were set up in the NetX360 Report Center per the Report Request Form.	No exceptions noted.
B.29.1.4	Scheduled jobs are configured to generate complete and accurate reports that are available to IFs via NetX360 based on the selection criteria. Through eAnalytics, IFs can generate standard reports on-demand. <i>Please refer to paragraph "NetX360 Report Center and eAnalytics Reporting – Completeness and Accuracy" in "Section V – Other Information Provided by BNY Mellon   Pershing" for the list of standard reports available to IFs via NetX360 and their description.</i>	For a selection of reports that are available to IFs via NetX360, inspected the system configuration and scheduled jobs to determine whether systems were set up to generate reports based on the selection criteria.  For a selection of reports that are available to IFs via eAnalytics, inspected the system configuration to determine whether systems were set up to generate reports based on the selection criteria.	No exceptions noted.

**30) MANAGED ACCOUNTS CONTRIBUTIONS AND WITHDRAWALS**

**Control Objective B.30.1:** Controls provide reasonable assurance that trading partners are notified of withdrawal requests or contributions accurately and in a timely manner.

*These controls are applicable to Managed Accounts clients only.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.30.1.1	Account Services notifies the Money Managers for completed contributions and withdrawals from the prior day. When exceptions are identified, the notification is not sent to Money Managers by Account Services until resolved. The client is notified by Account Services personnel regarding any exceptions identified, if required per agreement.	For a selection of contributions and withdrawals, inspected the notification to the Money Managers to determine whether Account Services personnel notified the Money Managers for completed contributions and withdrawals. For the selected contributions and withdrawals, inspected the notifications and determined that Account Services notified the client for any exceptions identified.	No exceptions noted.
B.30.1.2	Account Services personnel perform monthly reviews documented in the QC Review Form or Account Workflow Activity Log to determine whether contribution and withdrawal related activities were completed accurately and timely. Exceptions identified are tracked to resolution.	For a selection of months, inspected the contributions and withdrawals reviewed and the QC Review Form or Account Workflow Activity Log to determine whether Account Services personnel validated whether contribution or withdrawal related activities were completed accurately and in a timely manner and exception identified, if any, were tracked to resolution.	No exceptions noted.

**31) MANAGED ACCOUNTS RECONCILIATION**

**Control Objective B.31.1:** Controls provide reasonable assurance that account cash and position records within the portfolio accounting system are completely and accurately balanced with the records of the corresponding custodian or sponsor and exceptions are resolved in a timely manner.

*These controls are applicable to Managed Accounts clients only.*

	<b><i>Pershing's Description of Controls</i></b>	<b><i>KPMG LLP's Tests of Controls</i></b>	<b><i>Results of Tests</i></b>
B.31.1.1	Reconciliation Administrators perform a daily reconciliation of their assigned outage report(s) that identifies share and cash position differences between the portfolio accounting system and the respective custodian or sponsor. These differences are researched in a timely manner and the appropriate action is noted on the outage report.	For a selection of days, inspected the daily outage reports to determine whether share and cash positions within the portfolio accounting system were reconciled to records at the respective custodian or sponsor.  For a selection of breaks from the daily outage reports selected above, inspected break details and portfolio accounting system positions to determine whether the exceptions were researched and resolved by the Reconciliation Administrators in accordance with internally developed timelines.	No exceptions noted.
B.31.1.2	On a daily basis, Reconciliation Administrators notify the designated trading contacts, where applicable, of traded accounts that are not considered fully reconciled prior to commencement of trading.	For a selection of unreconciled trades from a selection of days, inspected correspondence to the designated trading contacts to determine whether the Reconciliation Analysts communicated un-reconciled accounts to the designated trading contacts prior to commencement of trading.	No exceptions noted.
B.31.1.3	The completed outage reports are submitted for review daily to a senior peer. An audit over a sample of breaks is performed to determine whether the conclusions reached by the administrator are accurate.	For a selection of days, inspected a selection of outage reports to determine whether the senior peer review was performed.	No exceptions noted.
B.31.1.4	Prior to performance statement processing, the Reconciliation Administrators notifies the Performance Reporting team of accounts that are not fully reconciled. Quarterly reports are not issued until the respective accounts have been fully reconciled or assessed by the Performance Reporting team and deemed acceptable.	For a selection of quarters, inspected correspondence to the Performance Reporting team and the sign-off checklist to determine whether un-reconciled accounts were communicated to the Reporting team and quarterly reports were issued after the respective accounts have been fully reconciled or assessed by the Performance Reporting team and deemed acceptable.	No exceptions noted.

**Control Objective B.31.2:** Controls provide reasonable assurance that security master data is accurately maintained in the portfolio accounting system.

*These controls are applicable to Managed Accounts clients only.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.31.2.1	New security information added or modified within the portfolio accounting system is agreed to industry data or other authorized sources by the Reconciliation team. Differences are resolved in the portfolio accounting system by the Reconciliation Administrator.	For a selection of new security information added or modified, inspected external industry data and reconciliation reports to determine whether new securities added or modified in the portfolio accounting system were agreed to external industry data or other authorized sources and differences were documented and resolved by the Reconciliation team.	No exceptions noted.
B.31.2.2	On a daily basis, data validation checks are performed by the Reconciliation Administrator to determine whether the security master information is accurate. Exceptions identified are investigated and resolved.	For a selection of dates, inspected data validations checks to determine whether the Reconciliation Administrator performed data validations to verify whether security master information was accurate.  For a selection of exceptions from the daily data validation checks, inspected exception details and security master information to determine whether exceptions identified were investigated and resolved.	No exceptions noted.

**32) MANAGED ACCOUNTS INVESTMENT SUPPORT SERVICES**

**Control Objective B.32.1:** Controls provide reasonable assurance that trades are executed in accordance with client instructions.

*These controls are applicable to Managed Accounts clients only.*

	<i>Pershing's Description of Controls</i>	<i>NPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.32.1.1	Investment model change requests and trade related requests such as rebalancing of accounts, cash contributions/withdrawals or ad-hoc trading requests are properly and accurately authorized and implemented in the portfolio accounting system accurately by an ISS employee in accordance with properly authorized instructions. These requests are reviewed by an ISS employee to determine whether the recommendations are reasonable based upon the defined account investment model or client instructions.	For a selection of investment model changes, rebalanced accounts, cash contributions/withdrawals, and ad-hoc trading requests, inspected Service Order requests, the Effects of Block Report and portfolio accounting system details to determine whether the changes in the portfolio accounting system were accurately implemented by the ISS employee in accordance with authorized instructions.  For a selection of investment model changes, rebalanced accounts, cash contributions/withdrawals, and ad-hoc trading requests, inspected documentation to determine whether the recommendations were reviewed for reasonableness by an ISS employee.	No exceptions noted.
B.32.1.2	After trades are submitted, an ISS employee compares trades submitted to the custodian to those trades processed by the custodian to determine whether each trade was processed completely and accurately and to identify rejected trades. Any exceptions identified are researched and resolved by the ISS employee.	For a selection of trades submitted to the custodian, from a selection of days, inspected the trade reconciliation reports to determine whether the reconciliations were reviewed by an ISS employee and exceptions identified were researched and resolved.	No exceptions noted.
B.32.1.3	The contents of each daily trading package are reviewed and approved by the ISS Manager or designee.	For a selection of days, inspected the daily trading packages to determine whether the contents of packages were reviewed and approved by the ISS Manager or designee.	No exceptions noted.

### 33) MANAGED ACCOUNTS PERFORMANCE REPORTING

**Control Objective B.33.1:** Controls provide reasonable assurance that the quarterly reporting packets are generated completely and accurately.

*These controls are applicable to Managed Accounts clients only.*

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.33.1.1	A reporting project plan is developed, utilized and completed by the Reporting department each quarter that defines critical tasks, the related timelines and the assigned owners.	For a selection of tasks within the project plans, from a selection of quarters, inspected project plans to determine whether the project plans were developed, utilized and completed by the Reporting department and defined critical tasks, the related timelines, and the assigned owners.	No exceptions noted.
B.33.1.2	The performance reporting applications automatically calculate the account level performance completely and accurately based on data in the portfolio accounting system.	For a selected account, re-performed the account level performance to determine whether the performance reporting applications automatically calculated the account level performance completely and accurately based on data in the portfolio accounting system.	No exceptions noted.
B.33.1.3	Reporting department personnel perform variance analyses (i.e., market value analysis, ROI analysis) to determine whether the data presented in the quarterly reports is in accordance with expected results. Anomalies identified are investigated and resolved before the respective quarterly report is issued.	For a selection of quarters, inspected data variance reports to determine whether Reporting department personnel performed variance analyses over data presented in the quarterly reports.  For a selection of anomalies, inspected portfolio accounting system details and end client reports to determine whether the anomalies identified were researched and resolved by Reporting personnel prior to issuing the respective quarterly report.	No exceptions noted.
B.33.1.4	Quarterly postmortem sessions are held by the Reporting department to discuss the accomplishments and challenges of the previous quarter and to identify potential improvements in the process.	For a selection of quarters, inspected the quarterly meeting minutes to determine whether accomplishments and challenges of the previous quarter were discussed and potential improvements were identified in the process.	No exceptions noted.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.33.1.5	As a part of the month-end pricing process, pricing validation checks are performed by the Performance Reporting team to determine that the prices used to value positions in the clients' account reports accurately reflect market conditions as of the reporting period end date.	<p>For a selection of months, inspected the review of month end prices to external industry data sources to determine whether the exceptions were identified, researched, and resolved by the Performance Reporting team.</p> <p>For a selection of pricing validation checks performed by the Performance Reporting team, inspected pricing system details and external industry data sources to determine whether the prices used to value positions in the clients' account reports matched to industry source.</p>	No exceptions noted.

**34) DOCUMENT MANAGEMENT (DM) DATA PROCESSING****1. DOCUMENT SCANNING AND FAXING**

**Control Objective D.34.1:** Controls provide reasonable assurance that documents are processed by authorized personnel and indexed in accordance with client instructions.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.34.1.1	Physical access to the imaging workspaces for scanning and processing client documentation is restricted to authorized Pershing employees in Jersey City and Lake Mary.	For the enabled IDs from the security door report, inspected the active Pershing imaging employee list and the Imaging Operations job functions to determine whether access was commensurate with their job responsibilities.	No exceptions noted.
B.34.1.2	Kofax application accounts are restricted to authorized personnel and privileges are assigned based on job responsibilities and requirements.	For the enabled IDs from the Kofax imaging application security report, inspected the active Pershing Imaging employee list and the Imaging Operations job functions to determine whether access privileges were commensurate with their job responsibilities.	No exceptions noted.
B.34.1.3	If specified in the client Business Requirements Document, Pershing provides segregated fax lines based on Client.	For a selected client with dedicated fax lines, observed incoming faxes being displayed in Kofax and noted that client-specific fax transmissions were segregated by incoming fax line within Kofax.	No exceptions noted.
B.34.1.4	Hardcopies of documents are sent by the clients via USPS mail or overnight courier to the processing locations with the barcodes placed on most documents. Documents are scanned on dedicated Imaging Room scanners into Kofax. If a document issue is identified, the documents are placed in a Quality Control (QC) queue to be resolved by a Document Imaging supervisor.	Observed a Document Imaging associate scan a document with an illegible page into Kofax and noted that the batch including the document was automatically placed into the Quality Control (QC) queue to be resolved by a Document Imaging supervisor.	No exceptions noted.
B.34.1.5	Documents are faxed by clients through a Pershing fax line or a client-segregated fax line with barcodes containing pre-defined client identifiers (e.g., document type). The barcode is recognized by Kofax and assigned with attributes with a unique batch name. The Document Imaging group reviews the document images and unidentified items are flagged by the system. Unidentified documents	Observed a Document Imaging associate review and process document batches received via Pershing fax line or a client-segregated fax line and noted that document batches were assigned with a batch name.	No exceptions noted.



	are placed in the suspense account associated to that fax number.	<p>Observed a Document Imaging associate attempt to index an unrecognized document to production with a document type missing” to determine whether the system generated errors.</p> <p>Observed a Document Imaging associate attempt to index a document without an assigned type or valid account number and noted that Kofax flagged the entry for client resolution.</p>	
B.34.1.6	System edit checks are in place to prevent Pershing personnel from entering illogical data (e.g., a non-Pershing account number, an account number that is less than nine characters). Items that fail built in system logic (i.e., account number range vs. batch class) and items that an associate escalates because they require supervisory assistance are forwarded to management via the Validation Quality Control (QC) queue for review.	For systematic edit checks determined by management to be relevant to the financial reporting of clients, observed Document Imaging associate attempt to induce illogical and incorrect data to the Kofax system to determine whether the system automatically generated error messages and uncorrected errors were forwarded to the Validation Quality Control (QC) queue for review.	No exceptions noted.
B.34.1.7	Documents with an invalid account number are flagged to the designated client suspense account, based on client contract. Clients have real-time access to their specific error account via NetExchange for review and resolution.	Observed a Document Imaging associate submit a document with an invalid account number to determine whether the document was forwarded to the client’s suspense account for review and resolution.	No exceptions noted.
B.34.1.8	When an indexing error occurs, the error is remediated by a Document Imaging associate and an incident report is filed manually.	For a selection of incidents, inspected the ADM audit trail and corresponding incident ticket to determine whether processing errors were remediated.	No exceptions noted.

## 2. DAILY PROCESSING

**Control Objective D.34.2:** Controls provide reasonable assurance that production data and file transmissions are monitored for completeness of reception and import.

	<i>Pershing's Description of Controls</i>	<i>KPMG LLP's Tests of Controls</i>	<i>Results of Tests</i>
B.34.2.1	On a daily basis, documents indexed and reviewed in Kofax are processed into the document imaging tool DOI and stored in ECS and reviewed for completeness.	For a selection of days, inspected the Kofax Statistical report and compared the amount of documents indexed from Kofax and the amount of documents processed into the document imaging tool DOI, and stored in ECS to determine whether the numbers of documents committed from Kofax were processed into the Document Management system.	No exceptions noted.
B.34.2.2	Client Sterling SFTP accounts are monitored for activity and document batches including images and metadata are processed into the document imaging tool DOI, and stored in ECS.  If the image import job fails during processing, an error notification is automatically sent the corresponding client for their review and resolution.	Inspected screenshots of the image import job configuration to determine whether client Sterling SFTP was processed through the standard image import job processing.  Observed a failure induced during image import job processing and noted that error notifications were generated to the corresponding client for their review and resolution.  Observed the number of records processed by the image import job against the number of records committed to DOI and stored in ECS to determine whether document batches were processed from Sterling SFTP completely.	No exceptions noted.

**SECTION V: OTHER INFORMATION PROVIDED BY BNY  
MELLON | PERSHING**

## MANAGEMENT'S RESPONSE DETAILS

## 1) LOGICAL ACCESS CONTROLS

**Control Objective A.2.1:** Controls provide reasonable assurance that logical access to systems, programs and data is limited to authorized individuals.

<i>Control Number</i>	<i>Pershing's Description of Control</i>	<i>Result of Testing</i>	<i>Management's Response</i>
A.2.1.4	On a periodic basis, employee access is verified completely and accurately at the department and application levels via the entitlement review process. Access Management Operations group reviews reports to monitor completion of the reviews. Outstanding reviews are escalated to senior management to remediate. A Remedy help desk ticket is created for technical issues.	For one of 40 user access removal requests selected, inspected system access lists and determined user access was not removed per the request.	<p>At the conclusion of each semi-annual access review, the TSAR Team submits an incident ticket that contains the access removal requests. For the second semi-annual access review conducted, an incident ticket was submitted with a script containing 1,801 remove requests. Of the 1,801, one of the removals was not completed due to an error in the file sent for processing. The access that was not removed from the file was then manually removed after the error was identified. The script was then manually reviewed after the error was identified. Management is confident through this manual review that it was a one-time issue due to human error and not an issue with the overall process or control.</p> <p>This was the final cycle of the decentralized access review process. Going forward these reviews will be performed using the enterprise tool, SailPoint, and the associated removal processes. The enterprise controls include nightly automated reconciliation processes which will alert provisioners if access was not successfully removed.</p>

<b><i>Control Number</i></b>	<b><i>Pershing's Description of Control</i></b>	<b><i>Result of Testing</i></b>	<b><i>Management's Response</i></b>
<b>A.2.1.7</b>	On a quarterly basis, activities of employee with root access to the Global One application are verified for appropriateness. Any identified activities are researched, and appropriate corrective measures are taken	The quarterly review of activities performed using Global One root access was not verified for the period 1/1/2022 – 9/30/2022.	Due to a performance stress on the Global One system, placed by queries necessary to perform the review, the employee access decentralized review was not performed for the period 1/1/2022 – 9/30/2022. Management performed a retroactive review for the period 1/1/2022 – 9/30/2022 and determined that the activities of employees with root access were appropriate and there were no actions identified. Management initiated a data maintenance procedure to improve system performance and run queries necessary to perform the review without a performance stress. Additionally, management performs a daily reconciliation of Global One system data that would detect any change in financing data or system parameters. Management onboarded Global One system to the centralized enterprise access review process and will continue to perform a periodic data maintenance procedure to eliminate performance stress on the Global One system.

## 2) PHYSICAL CUSTODY PROCESSING CONTROLS

**Control Objective B.12.1:** Controls provide reasonable assurance that Pershing's records completely and accurately reflect physically held securities which are safeguarded from loss or misappropriation.

<i>Control Number</i>	<i>Pershing's Description of Control</i>	<i>Result of Testing</i>	<i>Management's Response</i>
<b>B.12.1.7</b>	On a daily basis, a systematic reconciliation comparing the positions on Pershing's Stock Record that are physically held in Pershing's safekeeping locations to the securities in PCAS system is performed. Differences are communicated to the responsible departments and monitored, researched and resolved in a timely manner in order to balance out the positions at Pershing Stock Record and PCAS.  Asset/Custody Services management reviews and approves the location account reconciliation on a daily basis.	For two out of twenty six selected days, management was not able to provide evidence to demonstrate the performance of the daily reconciliation comparing the positions on Pershing's Stock Record that are physically held in Pershing's safekeeping locations to the securities in the PCAS System.	Due to a data loss incident, documentation from October 4, 2021 and October 5, 2021 was not available to demonstrate the performance of the daily reconciliation comparing the positions on Pershing's Stock Record that are physically held in Pershing's safekeeping locations to the securities in the PCAS System. Documentation was retained from the reconciliation performed on October 6, 2021 which compared positions on Pershing's Stock Record against the securities in the PCAS system.

### 3) MARGIN CONTROLS

**Control Objective B.13.1:** Controls provide reasonable assurance that margin accounts are maintained in accordance with regulatory rules and IF arrangements

<i>Control Number</i>	<i>Pershing's Description of Control</i>	<i>Result of Testing</i>	<i>Management's Response</i>
<b>B.13.1.2</b>	On a daily basis, GDMS lists client account exceptions that need to be addressed and maintains the history for items, whether opened or resolved. The Margin department reviews exceptions, takes appropriate action and monitors the status and activity of each IF's client accounts to verify that items are resolved. Unresolved items as reported on the All Open Items report are reviewed and approved by the Margin Manager and evidenced on the Supervisor Checklist on a daily basis.	From October 1, 2021 through January 18, 2022, the All Open Items report did not capture multicurrency fed calls, as such multicurrency fed calls were not reviewed by the Margin Manager.	Due to a systemic error in All Open Items Report, the multicurrency fed calls were not pulled into the All Open Items Report, and subsequently, the supervisory review was not performed for multicurrency fed calls. During the investigation, it was noted that the supervisory review was not performed, however, the margin associates took appropriate actions on the multicurrency fed calls via Credit View. Management performed a retroactive review for the period 10/1/2021 – 1/18/2022 and determined that there was no impact as the four multicurrency fed calls exceeding four days were actioned appropriately in a timely manner. Additionally, management installed a permanent fix on January 19, 2022.

#### 4) PRIME SERVICES CONTROLS

**Control Objective B.24.2:** Controls provide reasonable assurance that prime securities lending transactions with trading counterparties are authorized, monitored and fees are billed by management.

<i>Control Number</i>	<i>Pershing's Description of Control</i>	<i>Result of Testing</i>	<i>Management's Response</i>
<b>B.24.2.6</b>	<p>A Prime Services Client Technology employee manually overrides system-generated rates in Syncova based on instruction provided by a Securities Lending Sales trader.</p> <p>On a daily basis, the Syncova "Rate Overrides Report" is distributed to all Collateral Funding &amp; Trading traders for review. On a weekly basis, a Securities Lending manager evidences his review of the Rate Override Report on a supervisory checklist.</p>	For one out of six selected weeks, management's review of the Rate Override report did not contain commentary on all rate overrides.	All overrides on the Rate Override Report were appropriate. Management has reminded the control owner to provide commentary on all items appearing on the Rate Override Report.



# **INFORMATION ABOUT RELEVANCE OF THE CONTROLS TO THE USER ENTITIES**

The following table details the relevance of the general computing controls and transaction processing controls as they relate to the internal control over financial reporting of the user entities of this report.

	Introducing Firms	Clients of Introducing Firms
A.1 Information Security Governance	√	√
A.2 Logical Access	√	√
A.3 NetX Suite of Products	√	√
B.1 Enterprise Rules Engine	√	√
B.2 New Account Setup and Maintenance	√	Information only
B.3 Equities and Options Order Execution Controls	√	√
B.4 Fixed Income Order and Trade Processing Controls	√	√
B.5 Mutual Fund Order Processing Controls	√	√
B.6 Foreign Exchange Controls	√	√
B.7 Alternative Investments Controls	√	√
B.8 Options Expiration Processing Controls	√	√
B.9 Security Information Controls	√	√
B.10 Clearance and Settlement Controls	√	√
B.11 Depository Balancing Controls	√	√
B.12 Physical Custody Processing Controls	√	√
B.13 Margin Controls	√	√
B.14 Corporate Actions Processing Controls	√	√
B.15 Money Market Fund and FDIC Bank Sweep Controls	√	√
B.16 Cash Disbursement and Journal Controls	√	√

	Introducing Firms	Clients of Introducing Firms
B.17 Cash Receipts Controls	√	√
B.18 Account Transfer Processing Controls	√	√
B.19 Cost Basis Reporting/Portfolio Evaluation Controls	√	√
B.20 Credit and Debit Interest Controls	√	Information only
B.21 Client and Product Billing Operations	√	Information only
B.22 Confirm Controls	√	√
B.23 Statement Controls	√	√
B.24 Prime Services Controls	√	Information only
B.25 Possession of Control	√	√
B.26 Subscribe Annuity	√	√
B.27 CAPS and FIRM Trade Reporting	√	Information only
B.28 Position and Balancing	√	Information only
B.29 NetX360 Report Center	√	Information only
B.30 Managed Accounts Contributions and Withdrawals	√	√
B.31 Managed Accounts Reconciliation	√	√
B.32 Managed Accounts Investment Support Services	√	√
B.33 Managed Accounts Performance Reporting	√	√
B.34 Managed Accounts Fiserv APL Logical Access	√	√

## NETX360 REPORT CENTER AND eANALYTICS REPORTS – COMPLETENESS AND ACCURACY

The following chart details the pertinent reports available to IFs in NetX360 Report Center and eAnalytics and are tested for completeness and accuracy as part of the control B.29.1.4 in “Section IV – BNY Mellon | Pershing’s Control Objectives, Related Controls, Testing Performed by KPMG LLP, and Results of Testing.”

<i>Report Name</i>	<i>Report Description</i>
Incoming/Outgoing wires, checks and ACH Report	Consolidated Incoming/Outgoing Wire/Check Report for Compliance Department
SWIFT messages – USD incoming and outgoing wires and non-USD outgoing wires report	Report that mirrors SWFF standard file which captures the entire SWIFT message for all incoming USD wire payments and outgoing USD and non-USD wires
Account Services Detail Audit Report	Daily log of changes to an account profile from the previous business day
CATS Consolidated Audit Trail Report	This report provides a list of order events that are CAT eligible
Stock Record Takeoff for Equities Report	Daily log of accounts that modified their position for a range of CUSIPs
Daily Trade Date Detail Report	Daily commission report produced on Trade Date basis
Daily Settlement Date Commission Report	Daily commission report produced on Settlement date basis
SLATE Report	The report provides detailed account information including new account information, moneyline information as well as activity
Firm Daily Margin Recap Report	Trade date report that gives the overall margin status and balance for each firm account
Firm Daily Trade Date Inventory Recap	Trade date based report that summarizes the status of each security in a firm trading account
Interest Calculation Detail Report	A daily interest calculation detail report for customer, firm, and IRA account types
Trading Activity Per Security Report	Daily report that displays all trade activity for a given CUSIP
Margin Haircut Report	This report will show Margin haircut requirements for all approved IBD’s
Firm Settlement Date Inventory Recap Report	Settlement date based report that summarizes the status of each security in a firm trading account
Stock Record Takeoff for Bonds Report	Daily log of accounts that modified their position for a range of CUSIPs
Firm Daily Activity Summary Report	Recap of the prior days trading activity for each security including opening and closing balances
CAPS Daily AE Trading Activity Report	Summary of all trading activity for the day with detailed information on each trade based on the trade date
Moneyline by Office Report	Snapshot of account balances for all customer accounts
Post-Settlement Date Open Item Report	A daily post-settlement date order report to view trade details for deliveries and receives

<i>Report Name</i>	<i>Report Description</i>
To Be Announced Requirements by IBD Report	A daily report run per IBD containing detailed TBA Requirement values
Tech Shorts Report	Report run by IBD including amount and quantity of tech shorts
Holdings Report	Ad hoc report run by account that displays all holdings by asset type
IBD Activity Summary Report	Ad hoc report that displays summary and detailed views of revenues and expenses generated by an IBD at various levels
Balances Report	Ad hoc report run by account that displays current account balance
Trade and Non-Trade Activity History Report	Ad hoc report run by account that displays all trade and non-trade activity

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## ENTERPRISE RESILIENCY OVERVIEW

### *Our Strategy*

Enterprise resiliency is a critical component of BNY Mellon's overall business strategy. In our "always on" world, it is necessary to take a robust, holistic approach—considering not just how to resume operations after disruptions, but also how to manage through them to deliver continuous service. BNY Mellon's Enterprise Resiliency Office aligns, centralizes and integrates disciplines and capabilities to deliver timely and effective incident identification, impact assessment, escalation, communication and resolution; and to deliver resilient products and services. We leverage best practices, lessons learned from our enterprise-wide operational activities, and feedback from third parties, including our clients, peers, vendors and other service providers to continuously improve our resiliency posture.

### *Guiding Principles*

- Executive management commitment to enterprise resiliency
- Robust, holistic, centralized governance and approach
- Extensive planning and testing across all lines of business, technologies, operations, applications, and solutions
- Redundancy in data centers, recovery sites, networks and infrastructure, and power and telecommunications to help avoid single points of failure
- Utilization of real-time data replication to support disaster recovery

### *Our Approach*

#### Centralized Enterprise Resiliency

BNY Mellon's Enterprise Resiliency Office (ERO) coordinates the Company's approach to incident and crisis management, business continuity, disaster recovery, and technology resiliency. It provides global expertise, regional focus and local support, with dedicated managers and incident officers in the U.S., Europe, and Asia, complemented by globally positioned business continuity professionals who are involved in the development and coordination of business continuity plans.

Our continuity specialists and client service staff plan for contingency in an effort to provide uninterrupted service for our clients. In the event of an emergency, an incident and crisis management team oversees the Company's recovery and directs corporate support teams to initiate required recovery procedures.

#### Business Continuity

BNY Mellon is committed to providing uninterrupted delivery of its products and services to clients. As a global institution, the Company is exposed to uncontrollable events that cause varying degrees of disruption to normal business processes. The Business Continuity Program is designed to plan for, respond to and recover from business interruptions, with a view to minimizing the impact of disruptions, and facilitating service continuity within recovery time objectives and based on prioritization of business objectives and operations.

To support recoverability and resilience, business continuity plans, which include business impact analysis, recovery strategies, recovery requirements and staffing details, are reviewed, updated, and tested regularly. Our all-hazards approach considers diverse event scenarios—including application failures, natural disasters, civil disruptions, and severe weather—as well as extreme situations, such as significant technology disruptions due to cyberattacks and staff loss due to pandemics. In addition, ERO manages a global portfolio of recovery solutions—including establishing and managing physical alternate sites,

utilizing remote work, and leveraging our global footprint to implement cross-regional recovery—to respond to disruption of the availability of a building, workforce, technology, and/or supplier service.

### Technology Recovery

Our data centers are dedicated to processing functions and are strategically separated from our business operations. Our primary production data center, located in the U.S., recovers to one of two dedicated backup data centers, in different U.S. locations, controlled and supported by BNY Mellon, with replication of data occurring continuously. These sites provide disaster recovery services as well as computer operations command centers and crisis situation event rooms.

Our data centers are connected via high-speed redundant fiber optics. Telecommunications circuits are configured for continuous connectivity to our clients and third-party providers, with all major buildings designed with diverse telecommunications access where available.

In addition, our data centers receive power from redundant sources and through diverse paths. Within data centers, power delivery is protected by redundant Universal Power Supply (UPS) systems and supported by multiple backup generators. Similarly, our computing infrastructure components are equipped with multiple power supplies, connected to dual UPS systems and configured with redundant network connections.

### ***Pandemic Planning Overview/COVID-19 Impact***

As noted above as part of our Business Continuity Program, BNY Mellon monitors and prepares for potential pandemic outbreak events. BNY Mellon's response to COVID-19 was conducted through our established and tested continuity and pandemic plans, leveraging guidance from global health organizations and in alignment with various government restrictions. Beginning in mid-March 2020, a majority of our global workforce began to work remotely or at alternate sites, enabling social distancing and business continuity. In early March 2022, we initiated our return to office program, with most employees in most offices working a hybrid schedule, dividing their days between in office and remote. We continue to monitor conditions worldwide and remain ready to adjust to changing conditions, as necessary and appropriate.

### Cybersecurity

Our cybersecurity program, which includes controls that are aligned to national and international industry standards, is independently ISO/IEC 27001:2013 certified and regularly updated to keep pace with the changing threat landscape.

In addition to a multi-layered control infrastructure with built-in redundancy and checks, our program includes: leveraging threat intelligence capabilities that aid investigations and inform key business decisions; evolving our cybersecurity and risk management program to stay ahead of the dynamic threat landscape; and collaborating across our businesses and our technology risk, compliance, and internal audit organizations to help ensure a consistent and transparent approach.

### Vendor Continuity

BNY Mellon's Third-Party Governance group provides oversight for vendors and includes steps for evaluating a vendor's business continuity effectiveness prior to the procurement decision as well as over the life of the relationship, including periodic evaluation of existing service providers across established business continuity criteria. This work is done in collaboration with the ERO. Vendors are evaluated using a risk-based approach for recovery time objectives, emergency management, pandemic readiness, alternate staff and data facilities, security controls, recovery facilities, and testing. Our evaluation may also include an assessment of our vendors' oversight of their third parties (i.e., fourth parties).

**SEC RULE 206(4)-2, "CUSTODY OF FUNDS OR SECURITIES OF CLIENTS BY INVESTMENT ADVISORS" UNDER THE INVESTMENT ADVISORS ACT OF 1940**

The Securities and Exchange Commission has adopted rules under the Investment Advisors Act of 1940 requiring registered Investment Advisors or their related persons who serve as qualified custodians for advisory client funds or securities to obtain or receive from their related person on at least an annual basis a written report from an independent public accountants with respect to the advisors' or related persons' internal controls relating to custody of client assets. Below is an exhibit that summarizes certain elements of the internal control report relating to the custody of client assets and illustrates where these elements are addressed within the scope of the Pershing IF Services, Prime Services and Managed Accounts Operations SOC 1®.

<i>Elements of Internal Control Report Relating to Custody of Client Assets</i>	<i>SOC 1® Matrix</i>	<i>Control Objective</i>
Documentation for the opening and modification of client accounts is received, authenticated, and established completely, accurately, and timely on the applicable system	Refer to Control Objective B.2.1	<u>New Account Setup and Terminations</u> Controls provide reasonable assurance that requests for new zero and firm accounts and terminations are authorized and completed accurately and in a timely manner.
Trades are properly authorized, settled and recorded completely, accurately, and timely in the client account.	Refer to Control Objective B.3.1 for equities order execution	<u>Equities Order Execution Controls</u> Controls provide reasonable assurance that equity and option orders and trades are captured, submitted for execution and recorded completely, accurately and in a timely manner.
	Refer to Control Objective B.4.1	<u>Fixed Income Order and Trade Processing Controls</u> Controls provide reasonable assurance that fixed income orders and trades submitted to Pershing are captured, recorded and processed timely and accurately.
	Refer to Control Objective B.5.1	<u>Mutual Fund Order Processing Controls</u> Controls provide reasonable assurance that mutual fund orders and trades are recorded and processed accurately, completely and in a timely manner.
	Refer to Control Objective B.6.1	<u>Foreign Exchange Controls</u> Controls provide reasonable assurance that Foreign Exchange trades are captured, executed, recorded and reported accurately and in a timely manner.

<i>Elements of Internal Control Report Relating to Custody of Client Assets</i>	<i>SOC I<sup>®</sup> Matrix</i>	<i>Control Objective</i>
	Refer to Control Objectives B.10.1-B.10.4	<p><u>Clearance and Settlement Controls</u></p> <p>Controls provide reasonable assurance that DTC eligible client transactions are settled in a timely manner.</p> <p>Controls provide reasonable assurance that government security clearance transactions are transmitted completely and accurately to BNY Mellon to affect the settlement process.</p> <p>Controls provide reasonable assurance that international trade transactions are completely and accurately captured and settled in a timely manner.</p> <p>Controls provide reasonable assurance that Pershing's records completely and accurately reflect option trades and positions with the Options Clearing Corporation.</p>
Client transactions, including contributions and withdrawals, are authorized and processed in a complete, accurate and timely manner.	Refer to Control Objective B.15.1	<p><u>Money Market Fund and FDIC Bank Sweep Controls</u></p> <p>Controls provide reasonable assurance that money market fund and FDIC-insured sweep transactions are captured, processed and recorded timely and accurately in the client's account in accordance with client instructions.</p>
	Refer to Control Objectives B.16.1 – B.16.3	<p><u>Cash Disbursement and Journal Controls</u></p> <p>Controls provide reasonable assurance that disbursements are authorized and recorded accurately and completely in the client's accounts in a timely manner.</p> <p>Controls provide reasonable assurance that check disbursements are recorded completely, accurately, and distributed in a timely manner.</p> <p>Controls provide reasonable assurance that cash disbursements via wires are processed and recorded completely, accurately, and in a timely manner.</p>
	Refer to Control Objective B.17.1	<p><u>Cash Receipts Controls</u></p> <p>Controls provide reasonable assurance that cash receipts are recorded accurately and completely in the client's account in a timely manner.</p>



<i>Elements of Internal Control Report Relating to Custody of Client Assets</i>	<i>SOC 1<sup>®</sup> Matrix</i>	<i>Control Objective</i>
	Refer to Control Objectives B.18.1 – B.18.6	<p><u>Account Transfer Processing Controls</u></p> <p>Controls provide reasonable assurance that incoming account transfer requests are authorized and processed completely, accurately and timely in accordance with IF and client instructions.</p> <p>Controls provide reasonable assurance that outgoing account transfers from National Securities Clearing Corporation (NSCC) member firms are processed completely, accurately, and timely in accordance with the transmission received from the NSCC.</p> <p>Controls provide reasonable assurance that mutual fund transfer requests are processed accurately, completely and in a timely manner.</p> <p>Controls provide reasonable assurance that account transfers between two Pershing IFs are processed completely, accurately and in a timely manner.</p> <p>Controls provide reasonable assurance that outgoing Non-ACAT transfer requests are processed accurately, completely and in a timely manner.</p> <p>Controls provide reasonable assurance that incoming and outgoing account alternative investment transfer requests are authorized and processed completely, accurately and timely in accordance with IF and client instructions.</p>
New securities and changes to securities are authorized and established in a complete, accurate and timely manner.	Refer to Control Objective B.9.1	<p><u>Security Information Controls</u></p> <p>Controls provide reasonable assurance that additions and modifications to the security master file are authorized and set up timely, completely and accurately.</p>
Securities income and corporate action transactions are processed to client accounts in a complete, accurate and timely manner.	Refer to Control Objectives B.14.1 – B.14.3	<p><u>Corporate Actions Processing Controls</u></p> <p>Controls provide reasonable assurance that domestic dividend and bond interest announcements are received from authorized sources and transactions are identified, processed, settled and recorded completely, accurately and in a timely manner.</p>

<i>Elements of Internal Control Report Relating to Custody of Client Assets</i>	<i>SOC I<sup>®</sup> Matrix</i>	<i>Control Objective</i>
		<p>Controls provide reasonable assurance that international dividend and bond interest announcements are received from authorized sources and transactions are identified, processed, settled, and recorded completely, accurately and in a timely manner.</p> <p>Controls provide reasonable assurance that Reorganization transactions are identified, processed, settled and recorded completely, accurately and in a timely manner.</p>
Cash and security positions are reconciled completely, accurately and in a timely manner between the custodian and depositories.	Refer to Control Objective B.11.1	<p><u>Depository Balancing Controls</u></p> <p>Controls provide reasonable assurance that Pershing's Stock Record completely and accurately reflect securities and cash held by depositories.</p>
	Refer to Control Objective B.5.1	<p><u>Mutual Fund Order Processing Controls</u></p> <p>Controls provide reasonable assurance that mutual fund orders and trades are recorded and processed accurately, completely and in a timely manner.</p>
	Refer to Control Objective B.15.1	<p><u>Money Market Fund and FDIC Bank Sweep Controls</u></p> <p>Controls provide reasonable assurance that money market fund and FDIC-insured sweep transactions are captured, processed and recorded timely and accurately in the client's account in accordance with client instructions.</p>
	Refer to Control Objectives B.16.1 – B.16.3	<p><u>Cash Disbursement and Journal Controls</u></p> <p>Controls provide reasonable assurance that disbursements are authorized and recorded accurately and completely in the client's accounts in a timely manner.</p> <p>Controls provide reasonable assurance that check disbursements are recorded completely, accurately, and distributed in a timely manner.</p> <p>Controls provide reasonable assurance that cash disbursements via wires are processed and recorded completely, accurately, and in a timely manner.</p>

<i>Elements of Internal Control Report Relating to Custody of Client Assets</i>	<i>SOC 1<sup>®</sup> Matrix</i>	<i>Control Objective</i>
	Refer to Control Objective B.17.1	<u>Cash Receipts Controls</u> Controls provide reasonable assurance that cash receipts are recorded accurately and completely in the client's account in a timely manner.
Physical securities are safeguarded from loss or misappropriation.	Refer to Control Objective B.12.1	<u>Physical Custody Processing Controls</u> Controls provide reasonable assurance that Pershing's records completely and accurately reflect physically held securities which are safeguarded from loss or misappropriation.
Account statements reflecting cash and security positions are provided to clients in a complete, accurate and timely manner.	Refer to Control Objectives B.23.1 – B.23.4	<u>Statement Controls</u> Controls provide reasonable assurance that changes to the client statement process are authorized, tested and approved. Controls provide reasonable assurance that processing of statement files is accurate and complete. Controls provide reasonable assurance that the production and distribution of statements is monitored for completeness. Controls provide reasonable assurance that the production and distribution of electronic statements are monitored for completeness.
Managed accounts cash and position records are reconciled completely, accurately and in a timely manner between the custodians and sponsors.	Refer to Control Objective B.31.1.	<u>Managed Account Reconciliation Controls</u> <u>Controls provide reasonable assurance that account cash and position records within the portfolio accounting system are completely and accurately balanced with the records of the corresponding custodian or sponsor and exceptions are resolved in a timely manner.</u>



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