

VIA EMAIL (NMSPlans@sec.gov)

July 8, 2024

Ms. Vanessa Countryman
Secretary
Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549-1090

Re: File Number 4-698 – Cost Savings Amendments

Dear Ms. Countryman:

On March 27, 2024, Consolidated Audit Trail, LLC (“CAT LLC”), on behalf of the Participants¹ in the National Market System Plan Governing the Consolidated Audit Trail² (the “CAT NMS Plan” or “Plan”), filed with the Securities and Exchange Commission (the “SEC” or “Commission”) proposed amendments to the CAT NMS Plan designed to save costs related to the operation of the CAT (the “Cost Savings Amendments”).³

The Cost Savings Amendments are expected to result in approximately \$23 million in annual cost savings in the first year with limited impact on the regulatory function of the CAT. The Financial Information Forum (“FIF”), the Securities Industry and Financial Markets Association (“SIFMA”), and Nasdaq, Inc. each have submitted supportive comment letters urging the Commission to approve the proposal.⁴ There have been no comment letters opposing the Cost Savings Amendments. CAT LLC is submitting this comment letter to address certain questions and clarifications that have been raised by the staff of the Commission (“Staff”) regarding the Cost Savings Amendments.⁵

Although the Commission does not bear any of the costs of the CAT, the Commission’s objective should be to ensure that the CAT achieves its regulatory objectives in an efficient and

¹ The twenty-five Participants of the CAT NMS Plan are: BOX Exchange LLC, Cboe BYX Exchange, Inc., Cboe BZX Exchange, Inc., Cboe C2 Exchange, Inc., Cboe EDGA Exchange, Inc., Cboe EDGX Exchange, Inc., Cboe Exchange, Inc., Financial Industry Regulatory Authority, Inc. (“FINRA”), Investors Exchange LLC, Long-Term Stock Exchange, Inc., MEMX LLC, Miami International Securities Exchange LLC, MIAX Emerald, LLC, MIAX PEARL, LLC, Nasdaq BX, Inc., Nasdaq GEMX, LLC, Nasdaq ISE, LLC, Nasdaq MRX, LLC, Nasdaq PHLX LLC, The NASDAQ Stock Market LLC, New York Stock Exchange LLC, NYSE American LLC, NYSE Arca, Inc., NYSE Chicago, Inc. and NYSE National, Inc.

² The CAT NMS Plan is a national market system plan approved by the Commission pursuant to Section 11A of the Exchange Act and the rules and regulations thereunder. See Exchange Act Release No. 79318 (Nov. 15, 2016), 81 Fed. Reg. 84696 (Nov. 23, 2016) (“CAT NMS Plan Approval Order”). The full text of the CAT NMS Plan is available at www.catnmsplan.com.

³ Securities Exchange Act Rel. No. 99938 (Apr. 10, 2024), 89 Fed. Reg. 26983 (Apr. 16, 2024).

⁴ Letter from Howard Meyerson, Managing Director, FIF, to Commission (May 7, 2024) (“FIF Letter”); Letter from Ellen Greene, Managing Director, Equities & Options Market Structure, and Joseph Corcoran, Managing Director, Associate General Counsel, SIFMA, to Vanessa Countryman, Secretary, Commission (May 31, 2024) (“SIFMA Letter”); Letter from Jeffrey S. Davis, Senior Vice President, Principal Deputy General Counsel, Nasdaq, Inc., to Vanessa Countryman, Secretary, Commission (July 1, 2024).

⁵ Terms used in this response letter that are capitalized but not otherwise defined have the meaning assigned to those terms in the Cost Savings Amendments and/or the CAT NMS Plan, as applicable.

cost-effective manner. In this case, the proposed cost savings substantially outweigh the minimal impact on the regulatory function of the CAT. Most significantly, the proposal to optimize the processing and storage of Options Market Maker Quotes would save approximately \$20 million annually, without eliminating them entirely from the CAT. Given that the vast majority of Options Market Maker Quote lifecycles do not involve any execution or allocation and usage data demonstrates that such data is very rarely accessed by regulators, the current cost associated with processing and storing such quotes far outweighs the regulatory value. In addition, the proposal to allow the Plan Processor to move Operational Data older than 15 days to a more cost-effective storage tier would save approximately \$1 million annually. After four years of operation, the Plan Processor has not seen any regulatory usage of this interim operational data, and under the proposal it would remain accessible to the Commission with some “manual intervention” by the Plan Processor. Finally, the proposal to provide an interim CAT-Order-ID on an “as requested” basis rather than every day would save approximately \$2 million annually, while preserving the Commission’s ability to obtain an interim CAT-Order-ID upon request in the event of an immediate regulatory need.

CAT LLC and the Plan Processor have put significant effort into reducing CAT costs that are within their control given the stringent requirements of the Commission-approved Plan, but Commission action to approve Plan amendments is important to achieving further cost savings. Accordingly, CAT LLC strongly urges the Commission to approve the Cost Savings Amendments immediately to prevent any further delay of these significant cost savings.

A. Staff Requests for Additional Details Regarding the Methodology for Calculating Cost Savings Figures Presented in the Cost Savings Amendments

The Cost Savings Amendments would result in approximately \$23 million in annual cost savings in the first year. As data volumes grow over time, future cost savings/avoidance could be greater than \$23 million per year. The proposal explains in detail the methodology and assumptions used by the Plan Processor to estimate these figures. The Staff has asked for additional details on these calculations.

As described in the proposal, all cost and savings projections necessarily are good faith estimates based on current information and reflect the current state and costs of CAT operations, including the current number of exchanges. Given that the proposals involve various interdependencies and assumptions, as well as the complex and dynamic nature of CAT operations, it would be unduly burdensome and not necessarily meaningful to require CAT LLC and the Plan Processor to provide separate cost estimates attributable to each interdependent subcomponent of a particular proposal, or to provide cost savings estimates for alternative or modified proposals that are not currently before the Commission. All of the cost savings estimates for the Cost Savings Amendments are based on, among other factors: current CAT NMS Plan requirements; reporting by Participants, Industry Members, and market data providers; observed data rates and volumes; current storage and compute pricing discounts, compute reservations, and cost savings plans (*i.e.*, including savings attributable to the daily On-Demand Capacity Reservations and Compute Savings Plans); and associated cloud fees. Actual

future savings could be more or less than estimated due to changes in any of these variables. CAT LLC believes that the cost savings estimates and assumptions are reasonable and provide an adequate basis for the Commission to evaluate the costs and benefits of the Cost Savings Amendments.

Specific to storage cost estimates, S3 Intelligent Tier storage fees in production are allocated at a ratio of 1 (S3 Frequent Access) : 1 (S3 Infrequent Access) : 8 (S3 Archive Instant Access). This ratio describes the current percentage distribution of data files between storage tiers, which is driven by regulatory usage. Data files that are either new or that have recently been read by regulatory users are stored in S3 Frequent Access. If a file is not read by a regulatory user for 30 days, then it moves to S3 Infrequent Access. Similarly, if a file is not read by a regulatory user for 90 days, then it moves to S3 Archive Instant Access. Based on current observed regulatory usage, the Plan Processor's storage cost model is based on a 1:1:8 ratio across the S3 storage tiers. If regulatory users begin to read more older data files, then those files would be moved up to S3 Frequent Access, and the 1:1:8 ratio between the S3 storage tiers would change. Because each S3 storage tier has its own cost-per-petabyte of data, any change in the 1:1:8 ratio based on regulatory usage would affect storage costs.

All savings projections are primarily based on production environments, which represent approximately two-thirds of all cloud fees.

1. Optimizing Processing and Storage Requirements for Options Market Maker Quotes

The Plan Processor estimates that no longer subjecting Options Market Maker Quotes to linkage validation, feedback, linkage and lifecycle processing, or Plan Processor enrichments would result in approximately \$20 million in annual cost savings. This number is based on an estimated 65 percent reduction in compute runtime associated with Options Exchange events, and an estimated 80 percent reduction in storage footprint through the elimination of versioned quote data (e.g., T+2 8AM version, Final, DIVER, and OLA copies). These estimates reflect the Plan Processor's best judgement based on currently known conditions and other factors and could change based on available AWS offerings or other variables discussed above.

2. Operational Data Older than 15 Days Moved to a More Cost-Effective Storage Tier

The reduction in AWS cloud fees by moving Operational Data older than 15 days to a more cost-effective storage tier is estimated to be \$1 million per year based on current storage tier pricing differentials and a 1:1:8 ratio of the data between the three S3 storage tiers. Operational Data older than 15 days is currently stored at the "S3-FA" storage tier. AWS cloud offers three storage tiers that are cheaper than the S3-FA storage tier, including Glacier Deep Archive. Moving Operational Data older than 15 days from S3-FA to Glacier Deep Archive, as contemplated in the Cost Savings Amendments, would result in storage savings of more than 90

percent the cost of continuing to store such data in the S3-FA storage tier, representing cost savings of approximately \$1 million per year.

3. Providing an Interim CAT-Order-ID on an “As Requested” Basis to the SEC

Providing an interim CAT-Order-ID on an “as requested” basis to the SEC, rather than on an ongoing daily basis, is estimated to result in approximately \$2 million in annual compute savings. The Plan Processor estimates that it currently costs between \$8,000 and \$10,000 to deliver an interim CAT-Order-ID on a typical trading day. That number is based on the current average daily compute costs for interim lifecycle processing, based on current volumes. Multiplying the \$8,000 to \$10,000 cost per day by 252 trading days per year, the Plan Processor estimates that it costs approximately \$2 million per year to generate an interim CAT-Order-ID on a daily basis.

The Plan Processor estimates that it would cost between \$10,000 and \$12,000 per request to generate an interim CAT-Order-ID for the SEC on an ad hoc, “as requested” basis. This estimate is based on on-demand AWS rates for a typical day with average data volumes, less Options Market Maker Quotes data volume and its associated storage needs. The Plan Processor cannot estimate the number of requests that it would receive from regulators each year to generate an interim CAT-Order-ID, but the estimated \$2 million in annual compute savings would decrease depending on how often the SEC requests interim CAT-Order-IDs. As noted in the proposal, CAT LLC would add a separate line item to its budget to reflect costs attributable to SEC requests to generate an interim CAT-Order-ID.

B. Options Market Maker Quotes in Listed Options Will Continue to Be Subject to Ingestion Validation but Would Not be Subject to Linkage Validation

Under the proposed amendments, Options Market Maker Quotes and related Reportable Events will be ingested and stored in CAT but will not be subject to any linkage requirement, resulting in approximately \$20 million in annual savings without eliminating Options Market Maker Quotes entirely from the CAT. Specifically, the proposal states that Options Market Maker Quotes will no longer be subject to “validation, feedback, linkage and lifecycle processing, or Plan Processor enrichments.”⁶

The Staff asked CAT LLC to clarify whether Options Market Maker Quotes would continue to be subject to *ingestion* validation, or if both ingestion validation and linkage validation would be eliminated under the proposal. To confirm, the Plan Processor would continue to perform ingestion validation, but would stop performing linkage validation. Linkage validation is not necessary for Options Market Maker Quotes because the *quoteID* is an effective replacement for tying quotes to trades.

⁶ Cost Savings Amendments at 26984.

C. The Processing and Storage Costs Required to Make Options Market Maker Quotes Accessible in DIVER Are Substantial

The Cost Savings Amendments would result in significant savings by eliminating optimizations that are currently required to make Options Market Maker Quotes accessible to regulatory users via DIVER. While Options Market Maker Quotes would no longer be available via DIVER, they would remain accessible through BDSQL and Direct Read interfaces, which represent a significantly more cost-efficient method of providing access to this data. The regulatory groups of each of the Participants have indicated that they are able to conduct their regulatory programs accessing Options Market Maker Quotations via BDSQL and/or Direct Read, and each group supports the proposed modification.

The Staff asked CAT LLC to quantify the costs of creating and storing DIVER-optimized copies of Options Market Maker Quotes. The Plan Processor estimates that the continued optimization of Options Market Maker Quotes to make them available via DIVER would cost approximately \$2.8 million per year. This estimate consists of approximately (i) \$2.2 million per year in compute costs for producing the DIVER-specific hash partition copy of Options Market Maker Quotes,⁷ and (ii) \$600,000 per year in storage costs for one year's worth of DIVER-specific copies of Options Market Maker Quotes.⁸ CAT LLC does not believe such costs are justified given the multiple additional and less costly alternative means that exist for regulatory users to access such data.

D. The Cost Savings Amendments Would Eliminate the Derived Next Event Time Stamp, Lifecycle Sequence Number, and CAT Lifecycle ID Enrichments for Options Market Maker Quotes

Under the Cost Savings Amendments, Options Market Maker Quotes will no longer be subject to “validation, feedback, linkage and lifecycle processing, or *Plan Processor enrichments*.”⁹ The Staff asked which specific enrichments would be eliminated under the proposal. The enrichments that would be eliminated under the proposal are (i) derived next event timestamp; (ii) lifecycle sequence number; and (iii) the CAT Lifecycle ID (collectively, the “Eliminated Enrichments”). Survey data indicates that only one Participant has used any of the three Eliminated Enrichments in connection with Options Market Maker Quotes. Nevertheless, the Eliminated Enrichments could be available to those regulators that would like them. As explained in Section E below, the Plan Processor will provide the code and/or logic required to derive the Eliminated Enrichments to SEC and Participant regulators upon request. Accordingly,

⁷ This estimate was calculated by multiplying (x) the cost of DIVER-specific ETL jobs for Options Market Maker Quotes, which is approximately \$13,500 per day, by (y) a 65 percent allocation of compute time toward Options Market Maker Quotes for Participant options data and multiplying that result by (z) 252 trading days in a year.

⁸ This estimate was calculated by multiplying (x) the total storage of DIVER-specific copies, which is 0.0542 petabytes per day by (y) a 90 percent allocation of storage toward Options Market Maker Quotes based on record volume and multiplying that result by (z) 252 trading days in a year. The Plan Processor applied the same 1:1:8 ratio of data between the S3 storage tiers that is described in Section A above to calculate this storage cost estimate.

⁹ Cost Savings Amendments at 26984 (emphasis added).

the Staff would be able to integrate that code and/or logic into the SEC's own systems in order to derive the Eliminated Enrichments itself. The regulatory groups of each of the Participants have indicated that they do not require the Eliminated Enrichments in order to perform their surveillance and regulatory functions and/or have the capability to derive the Eliminated Enrichments themselves.

E. The Plan Processor Will Provide SEC and Participant Regulatory Users with the Current Version of the Code and/or Logic Required to Derive the Eliminated Enrichments Upon Request

The Cost Savings Amendments provide that: “[a]ll necessary information for the eliminated enrichments would be available to regulators, but the regulators would need to derive the enrichments themselves; upon request, the Plan Processor would provide regulators with the code required in order to do so.”¹⁰

The Staff asked for clarity regarding what source code and/or logic would be provided to regulators and how regulators would use it to derive the Eliminated Enrichments. Upon request, the Plan Processor would provide regulators with the existing code and/or logic that it currently uses today to derive the Eliminated Enrichments. The logic would include written technical requirements explaining how regulators can generate the Eliminated Enrichments themselves. Regulators would then be able to integrate the existing code and/or logic into their own data processing systems as they see fit. CAT LLC and the Plan Processor believe that regulators have demonstrated the technical ability to integrate this code into their own environments and to process data sets of this size in their regulatory and surveillance activities to date.

The Plan Processor will not maintain the code or logic following approval of the Cost Savings Amendments, but it will maintain a copy of each so that they may be provided to any regulators that might request them in the future. Regulators that request the code and/or logic from the Plan Processor will all receive the same version of the code and/or logic regardless of whether they make their request immediately upon the approval of the Cost Savings Amendments or at some point in the future.

F. Clarifications Regarding the Definition of Options Market Maker Quotes

The Staff asked about the meaning and scope of “Options Market Maker Quotes,” as used in the Cost Savings Amendments.¹¹ In particular, the Staff asked for clarity regarding whether market maker quotes that exchanges report to CAT as order events would be affected by

¹⁰ Cost Savings Amendments at 26984.

¹¹ As noted in the proposal, the term “Options Market Maker Quotes” is intended include all “Options Market Maker quotes in Listed Options.” See Cost Savings Amendments at 26984. Section 1.1 of the CAT NMS Plan defines an “Options Market Maker” as “a broker-dealer registered with an exchange for the purpose of making markets in options contracts on the exchange.” Section 1.1 of the CAT NMS Plan defines a “Listed Option” as having “the meaning set forth in Rule 600(b)(35) of Regulation NMS.” Rule 600(b)(35) has since been redesignated as Rule 600(b)(43), which defines a “Listed Option” as “any option traded on a registered national securities exchange or automated facility of a national securities association.”

the proposal. To confirm, only market maker quotes that are reported to CAT as quote events would be affected by the proposal. Market maker quotes reported to CAT as order events will not be impacted by this proposal and will continue to receive all enrichments and be fully available to regulatory users in DIVER.

The proposal would affect only market maker quotes that are reported as quote events as opposed to order events because the quote events are primarily responsible for driving CAT operating costs. For example, over the last year, there has been an average of approximately 214 billion market maker quotes reported as quote events each day compared to an average of approximately 13 billion market maker quotes reported as order events each day. Additionally, CAT LLC believes that it is reasonable to distinguish between market maker quotes reported as quote events versus those reported as order events because (i) quote events are clearly identifiable as quotes while it would be difficult for the Plan Processor to discern which order events represent market maker quotes, and (ii) the Eliminated Enrichments are not required to determine the correct sequence of events for quotes like they are for orders.

G. Staff Requests for Future Access to Raw Unprocessed Data and Interim Operational Data Older Than 15 Days

The Cost Savings Amendments would save approximately \$1.0 million annually by permitting the Plan Processor to move raw unprocessed data (*i.e.*, as submitted data) and interim operational data older than 15 days to a more cost-effective storage tier that is optimized for infrequent access. In each case, retrieving such data for regulators would require some “manual intervention” by the Plan Processor.

The Staff asked for clarity around the “manual intervention” that would be required for SEC regulatory users to obtain such data upon request. As noted in the proposal, this data does not provide any regulatory value after the final corrected data version is delivered by T+5 at 8 a.m. ET. Today, this data is available “without manual intervention” in accordance with the CAT NMS Plan via the use of CAT data management APIs. However, after four years of operation, the Plan Processor has not observed any regulatory usage of the data in question. CAT LLC proposes that, upon request to the CAT Help Desk, the Plan Processor would restore archived data to an accessible storage tier so that it is available to and searchable by regulatory users directly. The Plan Processor would use a machine-to-machine interface to access the archived data and restore it to a storage tier that regulatory users can access and search electronically in the same way that they do today. Archived data will be restored generally within several hours or business days of a request, depending on the volume and size of the data range of the requested data restore. For example, a request to restore a single day of data may take less than 24 hours, whereas a request to restore a year’s worth of data may take several days.

Ms. Vanessa Countryman

July 8, 2024

Page 8

The Cost Savings Amendments are expected to result in approximately \$23 million in new annual cost savings in the first year with limited impact on the regulatory function of the CAT. Both the Participants and Industry Members have a strong interest in ensuring that the CAT achieves its regulatory objectives in an efficient and cost-effective manner because the Commission has determined that they alone are responsible for funding the costs of the CAT. Therefore, both the Participants and Industry Members strongly support the Cost Savings Amendments. Indeed, both FIF and SIFMA have submitted comment letters to the Commission supporting each of the proposals in the Cost Savings Amendments and even urging the Commission and the Participants to take additional steps to pursue more significant and extensive cost savings initiatives.¹²

Given the strong Participant and Industry Member support for the proposal, and the ability of regulators to achieve their objectives via less costly means, CAT LLC requests that the Commission approve the Cost Savings Amendments expeditiously.

Thank you for your attention to this matter. If you have any questions or comments, please contact me at branbecker@deloitte.com.

Respectfully submitted,

/s/ Brandon Becker

Brandon Becker
CAT NMS Plan Operating Committee Chair

¹² FIF Letter; SIFMA Letter.

cc: The Hon. Gary Gensler, Chair
The Hon. Hester M. Peirce, Commissioner
The Hon. Caroline A. Crenshaw, Commissioner
The Hon. Mark T. Uyeda, Commissioner
The Hon. Jaime Lizárraga, Commissioner
Mr. Hugh Beck, Senior Advisor for Regulatory Reporting
Mr. Haoxiang Zhu, Director, Division of Trading and Markets
Mr. David S. Shillman, Associate Director, Division of Trading and Markets
Mr. David Hsu, Assistant Director, Division of Trading and Markets
Mr. Mark Donohue, Senior Policy Advisor, Division of Trading and Markets
Ms. Erika Berg, Special Counsel, Division of Trading and Markets
CAT NMS Plan Participants