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Ms. Phoebe W. Brown
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Public Company Accounting Oversight Board
1666 K Street, N.W.
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Proposed Amendments Related to Aspects of Designing and Performing Audit Procedures that Involve Technology-Assisted Analysis of Information in Electronic Form

Dear Ms. Brown:

Ernst & Young LLP welcomes the opportunity to offer its views on the Public Company Accounting Oversight Board (PCAOB or Board) proposal to amend Auditing Standard (AS) 1105, *Audit Evidence*, and AS 2301, *The Auditor's Responses to the Risks of Material Misstatement*, and make conforming amendments.

We support the Board's efforts to modernize the standards related to the auditor's use of technology-assisted analysis (also known as data analytics). As the Board noted in the proposing release, the use of technology by the auditors to perform audit procedures has significantly increased since 2010 when the PCAOB adopted AS 1105 and AS 2301. This trend will likely accelerate as the use of technology, including emerging technologies, expands and financial statement users expect the auditors to use data and technology to more effectively and efficiently obtain audit evidence. Updating the standards to include considerations and principles that are flexible to support the rapid pace of change is essential to maintaining audit quality.

We believe that technology-assisted analysis, when designed and executed appropriately, enhances the effectiveness of audit procedures in all phases of the audit, and the need for new technology-assisted procedures is increasing as issuers incorporate the use of highly automated IT applications and emerging technologies into their accounting processes. Auditors can and should use the available comprehensive, detailed and disaggregated data to more accurately identify risks of material misstatement, understand the flow of data through a company's financial reporting processes, and design and execute audit procedures to more precisely address identified risks.

We generally support the PCAOB's proposed guidance to address the increasing use of technology-assisted analysis. However, we discuss below certain changes and clarifications to the proposal that we believe would help the auditor more confidently perform data analytics and improve the relevance and quality of the assurance provided to investors and other users of a company's financial statements.

We encourage the Board to make the following adjustments in the final amendments.

Specifying the difference between substantive analytical procedures and tests of detail

We recommend that any new guidance focus on whether a procedure is designed appropriately to address the identified risks and whether it provides sufficient appropriate audit evidence rather than focusing on the differences between a substantive analytical procedure (SAP) and a test of details.

Given the evolution of technology-assisted analysis, it will become increasingly challenging to categorize new procedures. Further, these procedures may provide sufficient and appropriate audit evidence but do not meet the proposed definitions. For example, a regression model can be used to compare variables of individual revenue transactions posted throughout the year to identify outliers outside of the confidence bounds for further investigation. In another example, the expected revenue for all individual lease contracts may be re-calculated using certain terms extracted from the contracts and other assumptions using auditor judgment (e.g., monthly interest rate). The techniques in these examples could be classified either as a test of details, since they are performed at the “individual item” level, or as a SAP, which identifies and investigates outliers outside of the expected range.

If the proposed amendments to paragraphs .13 and .21 of AS 1105 are made, we recommend the following:

1. Clarifying the type of data or level of disaggregation intended by the term “individual items.” The proposed definition could be misinterpreted due to the varying forms of data obtained for analysis by the auditor. For example, individual items related to the revenue of a retail company may be interpreted as individual sales by a customer at the point-of-sale, individual entries made to the subledger by store or by day, or individual journal entries posting daily aggregated sales from the subledger to the general ledger. Each of the transactions tested in these examples could be considered “individual items” rather than SAPs performed using aggregated sales (e.g., by month or product line).

We recommend amending the proposed note at AS 1105.13(b)(2) to include considerations that the auditor may use to define the appropriate level of “individual item” for the procedure being performed, consistent with AS 1105.22-27. These considerations could include the objective of the audit procedure, the nature of the audit procedure to be applied and the evidence necessary to meet the objective of the audit procedure.

2. Clarifying that SAPs may also be performed at the individual item level. As illustrated in the examples above, SAPs may be designed with expectations at the individual item level (e.g., individual lease contract) but may not be considered to be a test of details. The current proposed language implies that such situations may be rare, but the availability of disaggregated data has increased the use of such procedures. Therefore, we recommend making the following edits to the note in the proposed amendments to AS 1105.13:

Note: A test of details involves performing audit procedures with respect to individual items included in an account or disclosure, whereas analytical procedures generally do not involve evaluating individual items included in an account or disclosure, unless those items are part of the auditor’s investigation of significant differences from expected amounts [FN 7A excluded].

We also suggest making the following conforming edits to the proposed amendments to AS 1105.21:

~~.21 Analytical procedures consist of evaluations of financial information made by an analysis of plausible relationships among both financial and nonfinancial data that can be external or company-produced. The plausible relationships may be evaluated at different levels of disaggregation to provide the desired level of assurance [FN X]. Analytical procedures also encompass the investigation of significant differences from expected amounts. ~~Unlike tests of details, analytical procedures generally do not involve evaluating individual items included in an account or disclosure, unless those items are part of the auditor's investigation of significant differences from expected amounts.~~[FN 11 excluded]~~

FN X: Automated tools and techniques may enable the auditor to set expectations of the plausible relationship at a more disaggregated level, such as at the individual item level.

Reliability of information provided by the company

The proposed requirements in AS 1105.10A blur the definition of external information received and maintained by the company and information produced by the company and have the potential to confuse auditors designing procedures to test each type of information. AS 1105.08 describes the evidence obtained from external sources as more reliable than evidence obtained from internal sources, which is why designing procedures to obtain and test the reliability of such information is important. After external information has been received, it is often recorded into the company's information system where it is moved, processed and changed to the point where it is no longer considered external information but rather information produced by the company and subject to transactional processes and controls. We believe it is important to clarify the difference between the two types of information and the expectations of auditors to test the reliability of both sources of information.

For example, AS 1105.10 requires auditors to test the accuracy and completeness of information produced by the company. However, testing the accuracy of external information received by the company may be difficult because the information originates from a third party. Instead, the auditor would likely focus on the evaluation of the completeness of the data obtained or the source and nature of the information as described in recent PCAOB Staff guidance¹. Additional procedures to test how the data is maintained and protected from unauthorized changes is also important so that the auditor can rely on the information as external evidence.

Refer to our response to question 9 in the Appendix for recommendations to clarify the proposed requirements of AS 1105.10A.

Investigating items identified by technology-assisted analyses

We agree that the standards should be modified to address the auditor's responsibilities when technology-assisted analyses return a high number of items for investigation. As a result of the improved coverage of the procedure, it is becoming more common for auditors to identify a larger

¹ *Staff Guidance – Insight for Auditors: Evaluating Relevance and Reliability of Audit Evidence Obtained From External Sources*, October 2021

number of items that do not initially meet their expectations. The considerations proposed as the new paragraph AS 2301.37A are a helpful start, but additional guidance is needed to help auditors respond appropriately to the identified items that may or may not result in a material misstatement or deficiency. We suggest incorporating elements of the International Auditing and Assurance Standards Board's recent Technology Frequently Asked Questions (February 2023) to enhance these considerations, such as:

- ▶ The ability for the auditor to perform further testing on a portion of identified items when there is a reasonable basis on which to draw conclusions about the population or sub-population of identified items. The discussion of the PCAOB's proposed amendment contains an example of an auditor taking a risk-based approach to the analysis of raw material purchases by testing all items for which the risk of material misstatement was assessed as higher and only certain items for which the risk was assessed as lower. We suggest incorporating this concept or example into the standard itself.
- ▶ The extent of testing expected, if any, over the population of items that are not indicative of a material misstatement or control deficiency. We believe that technology-assisted analyses can provide evidence about the items that fall within our financial or non-financial criteria (i.e., do not represent a risk of material misstatement or control deficiency) because those items have been subjected to a procedure to determine that they are less likely to be materially misstated. Because these items have been tested and found not to represent a risk of material misstatement, we believe the proposed requirements in AS 2301.37A would not be applicable. This concept is similar to the "scanning" procedure described in the American Institute of Certified Public Accountants (AICPA) clarified statement on auditing standards (AU-C) 500.A61.
- ▶ The ability for the auditor to refine the original analysis because it may have been inappropriately defined or to adjust or narrow the parameters to further analyze the items identified by the analysis.

The Appendix contains our responses and recommendations to selected questions the PCAOB asked in the proposing release.

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We would be pleased to discuss our comments with members of the PCAOB or its staff at your convenience.

Very truly yours,



Appendix

Q1. Does the description of auditors' use of technology-assisted analysis in designing and performing audit procedures accurately depict the current audit practice? If not, what clarifications should be made? Are there other aspects of auditors' use of technology-assisted analysis that we should consider?

Use of data analytics

While we agree with the general description of the use of technology-assisted analyses in the proposing release, we believe the final standard should acknowledge that data analytics are used to understand the company's flow of transactions, especially given the increase in the number and complexity of information systems and related data at many companies. We note that, while AS 2201.37 states that walkthroughs will frequently be the most effective way of obtaining this understanding, data can be used to corroborate walkthrough procedures to obtain a more complete and objective understanding of the process.

In addition, it might be difficult to obtain a complete and accurate understanding of complex, highly automated processes without using technology-assisted analyses to examine the underlying data. For example, auditors have begun to use technology-assisted analyses, such as process mining software or related techniques, to better understand the process and identify processing alternatives in a class of transactions that would be difficult to identify through inquiry, observation, inspection or re-performance of controls. This data-driven understanding can be used to more accurately identify risks of material misstatement and design more appropriate procedures to address those risks.

Given the pace of change, we believe it is critical that the final amendments be sufficiently flexible to support the use of new and emerging technology and audit techniques that may be developed in the future. Many of the technology-assisted analyses currently used and referenced in the proposing release are automated versions of traditional audit procedures, such as matching invoices to shipping documents.

While these uses of technology can increase the effectiveness of the procedures, we note that the proposal does not address an auditor's use of technology-assisted analysis to evaluate relationships in the data (e.g., the relationship of revenue, trade receivables and cash journal entries) or perform new procedures (e.g., testing controls using IT application event data) or an auditor's use of other emerging technologies (e.g., blockchain, artificial intelligence).

We believe the standards need to be principles-based to be sufficiently flexible to support the uses of technology-assisted analysis described above and the use of emerging technologies in the future.

Reason for using data analytics

The section *Reasons to Improve Auditing Standards* in the proposal cited comments about the potential for "bad actors" to use data analytics to "weaken audit quality to save money." While this concern should not be ignored, it is generally contrary to what we have experienced since we began using data analytics-driven audit procedures. Our use of data analytics is primarily driven by our desire to improve quality and investor expectations to use technology in response to the growing complexity of a company's IT applications and availability of data.

Based on our experiences, data analytics can enhance quality and help us better identify and respond to risks of material misstatement but has not reduced costs for the vast majority of our engagements, as discussed in our response to question 16.

Q3. In addition to the proposed amendments, what other requirements may need to be included in PCAOB standards to address use of technology-assisted analysis in audits?

We believe it is important to consider the benefits of technology-assisted analysis as part of the ongoing standard-setting project on SAPs (AS 2305). Data analytics are often used to perform SAPs, but as described in the proposing release, new and emerging tools and the availability of more disaggregated data can lead to SAPs that provide higher-quality audit evidence.

As described in our cover letter, disaggregated data allows us to design SAPs with precise expectations for individual items (e.g., individual lease contracts), increasing the level of evidence obtained. When designed appropriately, SAPs can be responsive to significant risks of material misstatement, so we recommend updating AS 2305.09 to acknowledge that SAPs alone may be sufficient when designed to specifically address significant risks of material misstatement.

Q7. Would the proposed amendments, that specify considerations for the auditor's investigation of items that meet criteria established by the auditor when designing or performing substantive procedures, improve the identification and assessment of the risks of material misstatement and the design and implementation of appropriate responses to the assessed risks?

While we believe that the considerations in the proposed amendments would improve the responses to assessed risks, further clarifications are needed as described in the main body of this letter.

In addition, the AICPA *Guide to Data Analytics* 4.10 provides a framework that includes an evaluation of whether the procedure has been appropriately planned and performed and, if not, directs the auditor to refine and reperform it prior to evaluating the items identified for further investigation. Given the variability inherent in large populations of data, including a similar consideration in the proposed amendment would help auditors refine the analysis before investigating items that do not affect their risk assessment or planned response.

Q9. Are the proposed amendments that specify requirements for the auditor to perform procedures to evaluate the reliability of external information maintained by the company in electronic form that the auditor uses as audit evidence clear and appropriate? If not, what changes should be made to the amendments?

We appreciate the intention of the proposed amendments to validate the reliability of external information used as audit evidence. However, we believe some of the proposed language may not clarify the difference between maintaining the reliability of the external information received by the company and what the company does with that information after it is received.

For external information to be relied upon as audit evidence, the company should have processes to determine whether a complete file is received, it is maintained as received and is protected from unauthorized changes. However, when the external information begins to be processed or recorded, it is then subject to the company's transactional processes and controls, supported by appropriate IT general controls (i.e., subject to AS 1105.10). To clarify the difference between the uses of the external information, we recommend the following changes be made to AS 1105.10A:

The company may provide the auditor information that the company received from one or more external sources and maintained in its information systems in electronic form. [FN 3B excluded] When using such information as audit evidence, the auditor should evaluate whether the information is reliable for purposes of the audit by performing procedures to:

- a. Obtain an understanding of the source of the information and the company's procedures by which such information is received ~~and, recorded, maintained, and processed~~ in the company's information systems, and
- b. Test the reliability of the information, or test the controls (including, where applicable, information technology general controls ~~and automated application controls~~) over the company's procedures discussed in subpart (a) of this paragraph ~~or test the company's procedures discussed in subpart (a) of this paragraph.~~

Q10. Are the proposed amendments that emphasize the importance of controls over information technology for the reliability of audit evidence clear and appropriate? If not, what changes should be made?

We are supportive of the proposed amendments that emphasize the importance of understanding the source of the external information received and maintained by the company and agree that testing controls can be an effective method to validate that the information was received completely and not modified while being maintained in the company's information systems. However, the updates made to AS 1105.08, 1105.10A and AS 1105.15 imply that the reliability of the information can only be supported by effective controls. We recommend that auditors have the flexibility to test the reliability of the external information directly, consistent with the procedures performed over information produced by the company in AS 1105.10 and used in SAPs in AS 2305.16. Refer to question 9 for our recommended changes to the proposed language in AS 1105.10A to provide this flexibility.

Q11. When the auditor uses information produced by the company and external information maintained by the company in electronic form, should PCAOB standards require internal controls over such information to be tested and determined to be effective for such information to be considered reliable audit evidence?

No. We do not believe that the PCAOB standards should require internal controls over information produced by the company and external information maintained by the company in electronic form, because the auditor may be able to conclude that the information is reliable based on the performance of other audit procedures, such as directly testing the accuracy and completeness of the information in scenarios where internal controls are ineffective or not tested.

Further, the proposed requirements also would limit the auditor's flexibility to choose a testing approach for audits of financial statements only (i.e., non-integrated audit) and for instances where direct and dual-purpose testing are more appropriate to verify the accuracy and completeness of the information.

Q16. Are there additional potential costs that should be considered? If so, what are they?

We agree with the proposing release that the increased use of technology-assisted analysis may allow the auditor to perform engagements with fewer resources, due to automation of labor-intensive, repetitive tasks, and may significantly improve audit quality. However, we observed that the analysis in the proposing release did not explicitly consider other potential costs, such as the resources needed to execute the proposal's new requirement to test the controls over the external information maintained by the company and the resources needed to investigate items identified by the technology-assisted analysis. This investigation often requires the involvement of experienced engagement executives to interpret the behavior of data and its relationship with other financial and non-financial information. We believe considering these resource needs is important. That is, the use of technology-assisted analysis has not significantly reduced our cost of executing audit procedures. In some cases, costs have increased significantly due to the reasons mentioned above.

Our experience is also contrary to the assertion in the proposal that the fixed and variable costs for adopting data analytics is "relatively modest." In addition to the resourcing costs mentioned above, our technology and infrastructure costs have continued to increase as company financial reporting processes and related IT applications have become increasingly complex and the volume of data from these systems have expanded. Rapid technological advancements by issuers in areas such as cloud computing and process automation require continual investment by auditors to keep pace. Substantial investments are required not only for the initial building of data analytic tools and their related IT supply chains, but also for its successful implementation, support, regular updates, and related training.

Q23. How much time following SEC approval would audit firms need to implement the proposed requirements?

We believe that requiring compliance two years after SEC approval would be appropriate if the requirements are approved as proposed. For instance, to meet the new requirements in paragraph AS 1105.10A, sufficient time would be required for companies to validate that controls related to the external information they maintain are in place.

In addition, audit firms would need time to update their methodology and make relevant changes to firm tools and technology.

Q24. Would requiring compliance for fiscal years beginning after the year of SEC approval present challenges for auditors? If so, what are those challenges, and how should they be addressed?

As explained in our response to question 23, we believe that requiring compliance two fiscal years after SEC approval would be more appropriate if the proposal is approved as is.