Audit Analytical Procedures:  
A Field Investigation*  

D. ERIC HIRST, University of Texas at Austin  
LISA KOONCE, University of Texas at Austin  

Abstract. Analytical procedures have become an increasingly important part of financial statement auditing over the last 10 years. First recommended for audits by the Auditing Standards Board in 1978, analytical procedures are mandated for planning and overall review purposes by Statement on Auditing Standards (SAS) No. 56. In response to increased concerns about audit efficiency and effectiveness, analytical procedures are increasingly being used in place of and as a supplement to substantive tests of details. Despite their increased use, little is known about how analytical procedures are performed in practice. The purpose of this study is to describe how auditors perform analytical procedures at the planning, substantive testing, and overall review stages of the audit. To accomplish this, we conducted a series of interviews with 36 audit professionals at various levels of experience and responsibility (i.e., seniors, managers, and partners) representing all the U.S. Big Six accounting firms. The contributions of our study are threefold. First, by contributing to a more complete understanding of how analytical procedures are performed, we provide the basis for accounting researchers to identify current analytical procedure problems/issues and, thus, perform more relevant research. Second, we provide the Auditing Standards Board members with relevant information about current practice for their deliberations on revised guidance for analytical procedures. Third, we provide educators with a characterization of analytical procedures as performed in practice, thereby facilitating their classroom coverage of this important topic.

Résumé. Depuis une dizaine d’années, les procédés analytiques jouent un rôle de plus en plus important dans la vérification des états financiers. D’abord recommandés en 1978 par l’Auditing Standards Board pour les vérifications, les procédés analytiques sont exigés par le Statement on Auditing Standards (SAS) n° 56 pour la planification et l’examen global. Compte tenu des préoccupations accrues que soulèvent l’efficience et l’efficacité de la vérification, l’on fait de plus en plus appel aux procédés analytiques en remplacement et en complément des procédés de corroboration détaillés. Malgré cette utilisation croissante, le mode d’application concrète des procédés analytiques est peu connu. Les auteurs se sont donné pour but de décrire comment les vérificateurs appliquent les procédés analytiques aux étapes de planification, d’application des procédés de corroboration et d’examen global de la vérification. Pour y parvenir, ils ont procédé à une série d’entrevues avec 36 experts de la vérification possédant divers degrés d’expérience et assumant divers niveaux de

* Accepted by Jean C. Bedard. We thank the auditors for speaking with us. We also thank Urton Anderson, Pat Hopkins, Mark Nelson, Fred Phillips, Steve Salterio, Bill Waller, two anonymous referees, and the participants at the 1995 Auditing Section Mid-Year Meeting, the 1995 AAA Annual Meeting, the University of Alberta Mini-Conference, and the University of Utah. Jeff Miller and Curt Rogers provided valuable research assistance. This project received financial support from the C. Aubrey Smith Center for Auditing Education and Research and the KPMG Peat Marwick Research Foundation. Their support is gratefully acknowledged.
Analytical procedures (APs) have become an increasingly important part of financial statement auditing over the last 10 years. First recommended for audits by the Auditing Standards Board in 1978, APs are now mandated for planning and overall review purposes by Statement on Auditing Standards (SAS) No. 56 (AICPA 1988). In addition, in response to increased concerns about audit efficiency and effectiveness, APs are being used in place of and as a supplement to substantive tests of details (Tabor and Willis 1985; Wright and Ashton 1989). In support of APs usefulness, Coglitore and Berryman (1988) present case evidence demonstrating that APs have the potential to be powerful tools for the detection of many errors and irregularities. Despite their increased use, little is known about how APs are performed in practice. The purpose of this study is to describe how auditors perform APs at the planning, substantive testing, and overall review stages of the audit.

To accomplish this, we conducted a series of interviews with 36 audit professionals at various levels of experience and responsibility (i.e., seniors, managers, and partners) representing all the Big Six accounting firms. To guide our investigation, we relied on SAS No. 56, which provides limited guidance regarding the performance of APs at the planning, substantive testing, and overall review stages of the audit. Within each of these stages, we further partitioned the performance of APs into five components: expectation development, explanation generation, information search and explanation evaluation, decision making, and documentation. That is, auditors performing APs initially develop expectations for a company’s financial statements and identify unexpected differences, subsequently generate or acquire potential explanations for observed unexpected differences, search for and evaluate information relevant to those explanations, make a decision about the appropriate course of action, and finally document their performance of the APs. The results from our interviews with the 36 auditors yielded a description of how APs are currently used in practice. Moreover, our results indicate that the emphasis placed on the five components of APs depends on whether the procedures are performed for planning, substantive testing, or overall review purposes.

There are several motivations for this study. First, changing technology within audit firms includes increased reliance on APs, as compared to 10 years
Audit Analytical Procedures: A Field Investigation

Audit firms argue that this increased reliance is due not only to the efficiency gains realized by performing APs (instead of traditional tests of details) but also to their effectiveness. In light of this increased reliance, it is important that we better understand how auditors now perform APs. Second, the Auditing Standards Board has formed a task force to re-examine the professional guidance on APs. Specifically, their charge is to determine whether SAS No. 56 provides sufficient guidance for auditors to effectively perform APs, particularly in the areas of expectation formation and substantive test APs. This study should facilitate the task force in their deliberations because it provides information regarding current practice. Third, the study was prompted by a need on the part of academic researchers for an updated description of APs as performed in practice. The last major descriptive investigation of APs was performed in the mid-1980’s (i.e., Biggs, Mock and Watkins 1989). Given the tremendous changes occurring during the last 10 years in the field of auditing, additional descriptive information regarding APs appears warranted. By contributing to a more complete understanding of how APs are performed, we furnish accounting researchers with a solid foundation on which to build conceptual models, design experiments, and design and test decision aids. Without an account of how APs are performed, researchers are often left to make "stabs in the dark" as to important research issues. Thus, this study should help maintain the relevance of audit research. The descriptive analysis will also help researchers take the logical approach of first identifying an APs problem/issue and then finding the appropriate theoretical framework for addressing the problem/issue. Finally, it also is important to inform audit educators as to current practice. Many of our study’s respondents felt that increased and improved classroom coverage of APs would have enhanced their grasp of this important audit procedure. By identifying aspects of analytical procedures that practicing auditors find difficult, we help educators determine where changes in their curricula would be most beneficial.

The rest of this paper is organized as follows. First, we describe the method used to gather our data. Next, we provide a description of how APs are performed at the planning, substantive testing, and overall review phases of the audit. Within each phase of the audit, we break the discussion into the five components of APs – expectation development, explanation generation, information search and explanation evaluation, decision making, and documentation. Following this, we comment on how our description ties with selected research. We also provide suggestions for future research and end with a summary and discussion.

Method
To develop our description of the current practice of APs, we conducted individual interviews with 36 practicing auditors. We spoke with between five and eight auditors at each of the Big Six firms in the United States. As shown in Table 1, we interviewed seniors, managers, and partners. The auditors were
from nine different offices, had experience in a variety of industries, and audit-
ed both small and large clients. Each interview lasted approximately two hours. For each interview, one author was responsible for asking questions while the other was responsible for taking notes.

For several reasons, we chose to use the interview method rather than a review of the firms' audit manuals to develop our description. First, audit man-
uals typically provide only general guidance on how to perform APs. Thus, they may not completely reflect how APs are performed in practice. Second, audit manuals do not contain information regarding auditors' perceptions of APs—information best captured via interviews.

TABLE 1
Demographic information

<table>
<thead>
<tr>
<th></th>
<th>Seniors</th>
<th>Managers</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm 1</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Firm 2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Firm 3</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Firm 4</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Firm 5</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Firm 6</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Average Experience (in years)</td>
<td>3.7</td>
<td>7.5</td>
<td>16.4</td>
</tr>
</tbody>
</table>

For each interview, we had a series of planned questions about the current practice of APs. The questions were developed through a review of our prior experiences, auditing standards, and academic literature. We had a number of colleagues review the interview questions for completeness and clarity. Questions were assembled in booklets (one per interview) that were used to gather the interview data. After several interviews had been conducted, we re-evaluated our interview questions. Based on this re-evaluation, we added several questions to address topics that surfaced during the initial interviews.

The booklets were designed to guide the interview process. That is, the initial questions obtained background information about the interviewee, including his or her audit experience and experience with APs. These questions were followed by more specific questions about the process of performing APs, including the development of expectations, generation of explanations, search for information about those explanations, evaluation of those explanations, render-
dering of decisions, and documenting the APs work at planning, substantive testing, and overall review stages. A series of wrap-up questions completed the interviews. The interviews were "semistructured." That is, when questions took us down an important path, we pursued them before returning to the planned interview materials. In addition, not every subject was asked every question. A sample of questions used during the interviews is provided in the Appendix.

We established a rapport with auditors by first discussing the purpose of the project in general terms. We then explained that the information gleaned
from the project was designed to help us improve our teaching and the relevance of our and others’ research. We also told auditors about ourselves, including prior experiences as public accountants. The auditors were assured that their responses would be held in strict confidence and that they should feel free to draw on their experiences with specific clients in answering our questions. Based on the number of detailed client-specific examples offered and the extent to which auditors were willing to comment favorably and unfavorably about their experiences with APs, we judged their responses to be particularly candid.

After each interview, we transcribed (i.e., typed) our notes. To facilitate integration of the approximately 180 pages of transcribed notes, one author summarized the transcribed notes to approximately 70 pages. In summarizing the raw data, particular attention was paid to potential differences in responses across firms and across experience levels. In addition, generalizing from the responses of individual auditors was avoided. The summarized responses formed the basis for the initial draft of the paper.

To ascertain that the conclusions in the paper were representationally faithful to the complete set of responses and that no errors were made in the summarization process, additional procedures were performed. First, after the first author summarized the responses, the second author read through the summaries to ensure they were consistent with the underlying data. Any differences in interpretation between the two authors were resolved via discussion. Second, an independent coder summarized the responses to each question in the interview booklet. These responses were compared to the authors’ summarized responses, and differences were resolved via discussion between one author and the coder. Third, one author counted the number of individual responses consistent with the summarized response, and a second independent coder confirmed these counts.

**Analytical procedures**

*Analytical procedures used in planning*

General

Of the 29 auditors asked about their goal in using APs at planning, 28 indicated that their goal is, first, to obtain an enhanced understanding of the client’s business so that both inherent and business risk can be assessed, and second, to develop or update the audit plan. These goals are consistent with SAS No. 56. Planning APs primarily involve looking for unexpected changes in financial statement accounts and relationships that influence risk assessments and the audit plan. Generally defined, the audit plan consists of the budgeted hours for the audit, the planned audit tests, and the audit staff assigned to various audit tasks. Often, the initial audit plan for the current year is based in part, or entirely, on the prior year’s audit plan. Consistent with SAS No. 56 which requires
APs at planning, we noted that, of 33 auditors asked, all responded that APs are used at this audit stage.

Twenty-five of 25 auditors indicated that planning APs are usually performed by the senior or manager. Managers take a more active role in the audit planning work when the engagement is high risk or if the senior is new to that position or to the client. However, even in those situations, the manager's involvement with APs at planning is primarily advisory to the senior who actually performs the planning work. Two audit managers from one firm noted that partners had become increasingly involved in the review of the audit planning work (in addition to the manager's regular review of this work). The idea is that audit efficiency can be enhanced if the audit partner reviews the audit plan up front. The audit partner, who generally has had a longer association with the client than any other member of the audit team and is most likely to be aware of the client's current activities, best knows where audit hours should be adjusted to most efficiently and effectively conduct the audit.

Twenty-two of 24 auditors noted that planning often is performed at the client's offices, because client inquiry is easier when the auditor is on-site. Moreover, planning at the client's offices is viewed as desirable because it helps maintain positive client relations. Fourteen of 15 auditors also noted that for most audits, the initial planning work takes place as early as the third quarter of a fiscal year. For SEC-reporting clients, the annual-audit planning frequently is done after, or in conjunction with, the 10Q review of the second quarter's financial statements. Planning occurs early in the fiscal year for larger (and SEC) clients primarily because audit firms increasingly are moving much substantive testing work from after year-end to during the year. This practice alleviates workload problems in the busy months of January through March and also facilitates meeting tight reporting deadlines imposed by many clients. Four of six auditors noted that, for smaller audits, planning APs often are performed at the auditor's, rather than the client's, office. In addition, three of three auditors stated that planning for smaller audits is likely to be performed much later in the fiscal year, sometimes immediately prior to the beginning of fieldwork.

Expectation development at planning
Of 16 auditors asked, 15 indicated they obtain the bulk of their knowledge directly from the client rather than from other sources, such as general business and industry publications. Auditors remain in contact with most clients throughout the year. In some cases, auditors keep up with the client's business by receiving copies of their internal reports and analyses. Often, this information includes divisional financial and nonfinancial analyses written by the client's operating personnel. Such information allows auditors to remain abreast of client activities and also to understand how the client manages its business. In fact, one auditor noted that the measures used by management to run and control their business (e.g., sales per square foot for a grocery store)
were exactly the measures he wanted to use to perform APs. Form 10Qs and registration statements for SEC clients also were noted to be useful sources of information about client activities.

Although most information about the client’s business is obtained directly from the client, other sources are sometimes used. Of 12 auditors citing the use of other sources, five indicated that they refer to the business press to garner information about clients, their competitors, and their operating environment. Two auditors described the importance of trade publications for purposes of keeping up with the client’s business. Five auditors noted the usefulness of their firm’s in-house publications that disseminate information on specific industries.

After updating their knowledge of the client, auditors perform a variety of procedures to identify unexpected differences in account balances and other financial relationships. The procedures performed at planning include (but are not limited to) account balance comparisons, trend analysis, ratio analysis, and comparisons of budget to actual. Of 30 auditors asked, 26 responded that the most common procedure at planning is fluctuation analysis, whereby current year unaudited account balances are compared to prior year audited account balances. This observation was somewhat surprising in light of other auditor behavior. As noted before, auditors spend considerable time gathering and evaluating financial and nonfinancial information about the client and its industry. However, when they develop their expectations for account balances or ratios, we observed that they tend not to rely heavily on such information. Twenty-five of 26 auditors indicated that APs at planning are generally performed account by account at the financial statement level for both the balance sheet and income statement. Performing planning APs with highly aggregated data is consistent with the guidance provided in SAS No. 56.

Developing explanations for unexpected differences at planning
After identifying an unexpected difference, the auditor will attempt to identify a potential explanation for it. Twenty-one of 27 auditors noted that the most common source of explanations at planning is the client. The remaining six auditors indicated that their most common source of planning explanations involves self-generation and/or other audit team members. Which of these sources is used appears to be a function not only of the client’s availability and competence but also of the auditor’s knowledge of the client’s business. When client personnel are readily available and the auditor considers them capable of providing reliable answers, the auditor typically will ask them why the unexpected difference occurred. Client personnel are viewed as being in the best position to know the cause of the unexpected difference.

Even when client personnel are available, 10 of 26 auditors asked indicated that sometimes they choose to self-generate potential explanations prior to client inquiry. Such self-generation of explanations occurs, however, only when the auditor has sufficient knowledge of the client’s business (either in
general or for that year's activities) to be able to generate plausible explanations for unexpected findings. When the auditor self-generates explanations, he or she nevertheless will ask the client about the unexpected differences before the audit plan is finalized.

Whether explanations are obtained from self-generation, the client, or other audit team members, nine of nine interviewees noted that they generate or expect to receive one or perhaps two explanations for an unexpected difference. In addition, we were told by 12 auditors (of 14 asked) that AP checklists and decision aids are never used at the planning (or any other) stage of the audit.

Information search and explanation evaluation at planning
Twenty of 20 auditors indicated that at planning they would generally perform little follow-up work to determine the validity of an explanation. Consequently, auditors do not view explanations obtained at planning as audit evidence per se. This perspective is taken because, as noted earlier, planning APs are typically conducted with highly aggregated data. That is, the reliability of inferences about the validity of account balances was noted to be low when the level of aggregation of data is high. Although auditors do not formally test the validity of explanations received from clients until substantive testing, auditors obtain explanations at planning because, consistent with the objectives of planning APs outlined in SAS No. 56, such explanations allow them to focus their substantive testing work.

Decision making at planning
After receiving and evaluating an explanation, the auditor must decide whether to make changes to the audit plan and, if so, determine the nature of those changes. In general, APs are not used to develop the audit plan but rather are used to direct revisions to the initial audit plan, which typically is generated from the prior year's plan. These changes can be in the form of increases or decreases in budgeted audit hours; modifications in the nature, extent, or timing of planned tests; or changes in staffing assigned to the various audit tasks.

Interestingly, a difference of opinions emerged as to why audit hours might be decreased at the planning stage. Specifically, of 16 auditors asked, six auditors noted that a decrease in planned hours could be due to the results of planning APs (i.e., no unexpected differences observed). Nine other auditors, in contrast, indicated that a decrease in audit hours could not occur because of the results of the APs alone, but would occur only if the client also had strong internal controls. To illustrate this point, several auditors from different firms referred to the fixed assets area. If internal controls over this area were strong and, consistent with the auditor's expectations, the fixed asset account balances were relatively unchanged over the past several years, subsequent substantive testing could, and would likely, be reduced.
Documenting APs at planning
In terms of documenting planning APs, six respondents indicated that docu-
mentation normally consists of a short description of why accounts changed
during the year. The documentation generally does not involve quantification
of the implications of explanations and may or may not be part of an audit plan-
ning memorandum. When the results of the APs are not described in the audit
planning memorandum, a separate workpaper or schedule is prepared to docu-
ment the prior year and current year account balances, the changes therein, and
the proposed explanation for the changes.

APs at planning: Summary
Our findings, summarized in Table 2, suggest the following. The auditor’s goal
in using APs at planning is to obtain an enhanced understanding of the client’s
business so that inherent and business risk can be assessed and the audit plan
developed or updated. At planning, the aim is to identify issues to address later
in the audit rather than to resolve those issues. Seniors and managers do most
of the APs for audit planning, although managers typically serve in an adviso-
ry role to the seniors. The bulk of the information used at audit planning origin-
ates from the audit client. When unexpected differences are observed at plan-
ning, potential explanations are obtained primarily through client inquiry.
Decision aids to generate account balance expectations and potential explana-
tions for unexpected differences are rarely, if ever, used at audit planning.
Unless decision aids are specifically tailored to the client’s business, they are
judged as too general to be of use for planning APs. During the planning stage,
auditors typically do not corroborate explanations received for unexpected
differences.

**TABLE 2**
Summary of main findings

<table>
<thead>
<tr>
<th>Planning</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>* The goal at planning is to obtain an enhanced understanding of the client’s business so that inherent risk and business risk can be assessed and so that the audit plan can be developed.</td>
<td></td>
</tr>
<tr>
<td>* Seniors and managers do the bulk of the audit planning, although managers typically act in an advisory role to the senior.</td>
<td></td>
</tr>
<tr>
<td>* A large part of the information used to perform planning APs is obtained from the client.</td>
<td></td>
</tr>
<tr>
<td>* Decision aids to generate account balances and potential explanations for unexpected differences are rarely used at planning (or at any stage of the audit).</td>
<td></td>
</tr>
<tr>
<td>* Client inquiry is the most common method for obtaining potential explanations for unexpected differences discovered at planning.</td>
<td></td>
</tr>
<tr>
<td>* During the planning stage, auditors typically do not corroborate explanations received for unexpected differences.</td>
<td></td>
</tr>
</tbody>
</table>
Substantive testing
- The goal at substantive testing is to determine the validity of an account balance or set of balances.
- Sophisticated techniques for generating account balance expectations typically are not used.
- Potential explanations for unexpected differences are primarily obtained from the client and through self-generation.
- Auditors either self-generate or expect to receive from the client non-error explanations for unexpected differences.
- When inquiring with the client, auditors usually ask accounting personnel.
- Auditors obtain corroboration for explanations at substantive testing.
- Auditors attempt to quantify the implications of explanations to determine their sufficiency in accounting for unexpected differences.
- Auditors consider the most difficult aspect of substantive testing APs is knowing when to stop investigating an unexpected difference.

Overall review
- The goal at overall review is to determine whether the adjusted financial statements make sense in light of the evidence collected during the audit.
- Because most of the audit fieldwork is complete, few unexpected differences are observed at this audit stage.
- To the extent that unexpected differences are investigated, little client assistance is typically necessary.
- Unexpected differences observed at overall review are usually attributed to classification issues.

Based on our interview data, we believe that, for APs at planning, the emphasis is on the expectation development and decision making stages. We believe that expectation development is emphasized because the objective of planning APs is to understand the client sufficiently so that risks can be identified and the audit plan developed. Decision making is key because, as noted before, the objective of planning APs is to determine the audit plan. Explanation development and evaluation, as well as information search (related to those explanations), appear less critical as the auditor's goal is not to determine the "correct" explanation for fluctuations.

These findings not only have implications for extant APs research but also suggest future research. For example, a substantial amount of prior research has investigated the implications of various decision aids and statistical methods on the auditor's performance of APs (e.g., Kinney 1978; Kinney and Salamon 1982; Knechel 1988a; 1988b; Wilson and Colbert 1989; Dzeng 1994). Our interviews suggest that decision aids and statistical methods are rarely used at planning or at any stage of the audit (Ameen and Strawser 1994). Although this does not suggest that prior research investigating decision aids and statistical methods was unwarranted, it does raise the question of why these aids and methods are not more widely used. Thus, future research also should determine the conditions under which auditors are likely to use such tools (e.g., Boatsman, Moeckel, and Pei 1995).
We noted during our interviews that the bulk of information used to perform planning APs originates from the client. Because this information is seldom corroborated at this stage of the audit—and often is gathered well before year-end—the possibility exists that, as the audit progresses, auditors will consider as factual uncorroborated client-provided information. Indeed, recent memory research suggests that individuals are prone to having their recollections modified when the passage of time allows the original memory to fade (e.g., Loftus 1991; Loftus and Ketcham 1991). Thus, an important avenue for research is to study the effect on auditor judgment of obtaining substantial amounts of uncorroborated information from the client early in the audit. It is possible that auditors are affected by such information in the same way that they are influenced by the presence of unaudited balances (i.e., Kinney and Uecker 1982; Biggs and Wild 1985; Heintz and White 1989).

Another important finding from our interviews is that self-generation of explanations at planning is not the norm—most auditors obtain planning explanations from the client. Although such a result may be troubling, particularly if the client furnishes the auditor with an incorrect explanation, prior research by Hirst (1994a) shows that auditors put less weight on client-provided explanations for unexpected differences than on identical explanations from independent sources. Notwithstanding Hirst’s results and the observation by our interviewees that client-provided explanations at planning are not treated as audit evidence, the risk still remains that auditors overweight client-provided explanations. Research by Bedard and Biggs (1991a) and Anderson and Koonce (1995) show that auditors may, in fact, overweight incorrect client-provided explanations. Future research should explore the types of quality-control mechanisms (e.g., the audit review process) that might mitigate this over-reliance problem.

While auditors most frequently obtain explanations from the client, auditors’ abilities to self-generate explanations nevertheless has been the focus of substantial prior research (e.g., Libby 1985; Libby and Frederick 1990; Marchant 1989; Heiman 1990; Anderson, Kaplan, and Reckers 1992; Church and Schneider 1993). It is important to keep in mind, though, that many of these studies used auditors’ abilities to generate explanations as a way to determine how auditors represent explanations in memory, rather than as a test of their ability to generate per se. Consequently, a profitable direction for future research is to determine how self-generation of explanations (as compared to client inquiry) affects subsequent audit judgments and decisions (e.g., Heiman-Hoffman, Moser, and Joseph 1995).

Our interviews also highlighted that auditors’ documentation of why account balances change from year to year consists of a brief description of only the most likely explanation for the change. That auditors document only one explanation for each account change is consistent with prior research (Koonce 1992). That auditors do not elaborate on those explanations to a great extent is in contrast with prior research that indicates fairly lengthy explana-
tions are documented at planning (Anderson and Koonce 1995). Future research could profitably explore whether requiring more elaborate documentation improves the effectiveness of audit planning.

Finally, prior research has noted that auditors are willing to increase audit effort (i.e., hours) after performing planning APs but that they are reluctant to reduce effort after planning (e.g., Biggs, Mock, and Watkins 1989; Cohen and Kida 1989). The auditors we interviewed noted that, in fact, they would reduce audit effort at planning. However, a number indicated that reduced testing would not be solely the consequence of planning AP test results but primarily the result of strong internal controls (Bedard 1989). This may explain why prior studies have found auditors reluctant to decrease planned audit hours based solely on AP test results. We were also told that changes in audit effort might not occur through changes in audit hours, but rather through changes in the type of work planned or audit staff assigned to the work. While most prior research has focused on audit hours, we believe additional insights can be gained if future research focuses on how planning APs influence the nature of the audit tests performed and the staff assigned to perform the audit work (Mock and Wright 1993).

Analytical procedures used as substantive tests

General

Seventeen of 19 auditors indicated that the goal of substantive testing APs is to determine the validity of an account balance or set of account balances. Fifteen of 19 auditors noted that, although tests of details and APs are the most common procedures for auditing the balance sheet, APs are the primary procedures for the income statement. Account complexity is an important factor dictating the experience level of the auditors who perform APs as substantive tests. Nine of 10 auditors noted that substantive testing APs are normally performed by seniors. However, if the area involves relatively straightforward accounts or relationships, staff auditors may perform APs. For example, staff auditors are routinely asked to analytically audit low-risk and low-difficulty accounts, such as rent or electricity expense.

Eighteen of 18 auditors indicated that because client inquiry and examination of supporting documentation frequently are necessary when substantive APs are performed, such procedures typically are performed at the client's office. On larger audits where timely year-end reporting is an issue, substantive APs are usually performed at interim, and additional analyses of financial data for the intervening months are conducted at year-end. In addition to allowing the audit team to perform an effective audit and meet reporting deadlines, this procedure reduces the audit firm's workload during the busy season.

Twenty-two of 23 auditors noted that the primary factor that determines whether substantive APs are performed is the strength of the client's control structure. That is, in contrast to audit planning where APs are performed regardless of the apparent strength of the control system, APs are performed for
substantive-testing purposes only when the client’s control structure is considered strong. In this case, APs are more likely to be performed because the perceived potential for financial statement error is low. In the absence of strong controls, auditors believe they will eventually have to perform tests of details to obtain adequate assurance regarding the account balance. Consequently, when controls are weak, substantive APs are thought to be ineffective.

Based on the responses of 31 auditors, once the decision is made to perform substantive APs, the extent to which such procedures are performed depends on several factors. Twenty auditors noted that when inherent risk is low (e.g., when few adjustments have been made in the past; client’s staff is competent; high quality explanations have been received from them in the past), more substantive APs will be employed. In contrast, if a particular engagement or audit assertion involves high inherent risk, few substantive APs are performed. Ten auditors commented that experience with the client also plays a role in determining the extent to which substantive APs are performed. Specifically, as the auditor’s understanding of the client and its industry is enhanced, APs are more likely to be used. Indeed, it was frequently stated that to perform APs effectively, it was critical for the auditor to have indepth knowledge of the client’s business. To illustrate, one auditor noted that, if the client started a new product line and the auditor knew little about this type of product, the auditor would generally not perform APs that involved the operations of this new product line.

Although 19 auditors indicated that client size often affects the extent to which substantive APs are performed, they also told us that client size is highly correlated with factors such as internal control strength, volume of transactions, physical location of records, and the complexity of the business. For example, larger companies are more likely to have strong control structures. Even though a smaller company may have strong internal controls, two of our respondents indicated they frequently perform tests of details for evidence-collection purposes for smaller clients. At such clients, supporting documents are easily available, and, given the smaller volume of transactions, it is generally easier to vouch transactions or balances than to perform APs. In fact, one manager told us that, if she could perform tests of details on an account relatively quickly, she would do so even if it took more time than APs. Moreover, smaller companies are less likely to have the necessary in-house expertise for successful performance of APs (i.e., client personnel who can provide accurate information about unexpected differences in account balances and ratios).

Two respondents noted that the stability of relationships over time affects the extent to which auditors employ and/or rely on substantive APs. When expected relationships are stable, APs are considered effective and are frequently used. In contrast, for high-growth companies, effective use of APs is more difficult to achieve. Not only are relationships among the financial and non-financial information unstable for such companies, but also auditors
expressed heightened concern about management's incentives to manipulate financial statement numbers.

Finally, two respondents noted that logistical issues also influence the extent to which substantive APs are performed. In particular, if the appropriate client personnel are not available to provide explanations (e.g., a foreign subsidiary is audited in the United States, but the operating personnel are located overseas), APs typically are not performed. Rather, a test of details approach is taken. In contrast, if the client's records are in a multitude of physical locations, APs may be the best way to perform an effective substantive test on a timely basis.

Expectation development at testing
Twenty of 28 auditors noted that more types of APs are used when they are being used as substantive tests than as planning procedures. These techniques include fluctuation analysis, trend analysis, ratio analysis, and regression analysis. Similar to audit planning, though, the most common procedure is fluctuation analysis where unaudited account balances are compared with the previous year's audited balance.

With the exception of those who use regression analysis, 27 of 27 auditors indicated that when they perform substantive APs, they develop imprecise expectations for account balances. Frequently, an auditor's expectation for an account balance is the prior year's audited balance. When auditors go beyond simply using the prior year's audited balance, they will typically only indicate the direction of change from the prior year's audited balance (i.e., increase or decrease) and make a rough estimate of magnitude (i.e., small, medium, or large change expected). The information used to develop the latter type of expectation originates from several sources, including client discussions held throughout the year. Such discussions occur, for example, during 10Q reviews and preliminary audit planning or through client lunch meetings or telephone calls. Thus, for substantive APs, auditors take into account business trends and information gleaned from discussions with client during the year.

Thirteen of 15 auditors indicated that the client's budgets also may be a source of information for expectations. However, they noted that the use of budgets for APs varies greatly and depends, in part, on their reliability. For example, if the budgets are established via a formal process, reviewed by top management, and used to identify budget variances for which individuals are held accountable, the client's budgets are more likely to be used.

Although APs used as substantive tests can be performed at all levels of aggregation (i.e., at the corporate, division, or product-line level), 17 of 21 auditors indicated that they typically are performed at a less aggregated level than APs performed at planning or overall review. A determining factor of whether aggregated data are used for APs is whether the data can be meaningfully interpreted. For example, one auditor noted that, for a financial services firm, an AP analysis on gross margins would not be meaningful if information
about savings accounts, car loans, mutual funds, and leasing services is aggregated. Because these products have different margins and are affected differently by changes in economic factors, aggregate measures of performance are not useful. A product-line analysis would be used instead.

Developing explanations for unexpected differences at testing

At substantive testing, auditors rely on the client, self-generation, current and prior year working papers, and/or other members of the audit team for potential explanations. Three of 11 managers indicated that at substantive testing, they would engage in client inquiry initially. Six managers noted that they would self-generate initially, and two managers indicated that other audit team members would be their initial source of explanations. In contrast, seven of 13 seniors indicated that they initially rely most heavily on client personnel for explanations. Of the remaining seniors, five noted that self-generation was their initial source of explanations, and one considered the workpapers as the initial source.

In cases where auditors self-generate explanations, 10 of 10 auditors said they generate only one or two explanations. These auditors indicated they perceive no benefit from generating more than one or two explanations, because in most instances only one explanation is operating. When self-generating explanations, auditors do not typically generate conflicting explanations (i.e., those whose effects are in opposite directions). However, if an auditor suspected that an unexpected difference was comprised of transactions or events increasing and decreasing the account balance, both possibilities would be investigated. Auditors expect to receive single explanations from clients, although receiving multiple explanations (again, usually no more than two) is not unusual if the client is unsure of the exact cause of a fluctuation.

Twelve of 13 auditors indicated that they either generate or expect to receive from the client nonerror explanations when performing substantive testing APs. Interestingly, one auditor told us that early in his career, he self-generated and expected clients to provide error explanations. Now, his experience indicates that nonerrors are more prevalent than errors, and he generates and expects to receive nonerror explanations for unexpected differences.

Eight of eight auditors noted that, even though they self-generate explanations during substantive testing APs, they inquire with the client anyway. Doing so is necessary to confirm the self-generated explanation and also to be able to document their discussion with the client in the audit workpapers. When auditors self-generate an explanation prior to client inquiry, they are careful to frame their questions so that they do not provide the client with any potential explanations. That is, auditors are careful to avoid asking questions, such as "Was the reason for the unexpected difference that you increased your prices during the year?" Rather, open-ended questions are asked, such as "I noticed that sales seem high this year. What caused that?"
When asking the client for explanations, 17 of 18 auditors indicated they usually ask accounting personnel, although there is increased emphasis at some firms to ask nonaccounting personnel. Indeed, nine auditors indicated that they often begin by asking questions of accounting personnel and then later corroborate answers with information obtained from nonaccounting personnel. This is consistent with SAS No. 56, which encourages auditors to obtain data from client personnel independent of those responsible for the amount being audited. One auditor noted that nonaccounting personnel are extremely useful for judging the future of the company. That is, he observed that their excitement (or lack thereof) about the company is helpful when evaluating the future of the company. This auditor also noted, though, that one problem with inquiring with nonaccounting personnel is that they provide such a large amount of information in response to inquiries that it takes significant effort and ability to filter it for its relevance to the question. Although inquiry of nonaccounting personnel is not a universal procedure, seven auditors expressed the opinion that they would like to speak with nonaccounting personnel more often. One factor that compensates for the lack of direct contact with nonaccounting managers is that, at larger clients, the auditors often are able to review internal reporting packages prepared by these individuals. As noted earlier, these packages often contain analyses useful to the auditor’s APs work.

In terms of the level of client personnel to which the auditor directs AP inquiries, six of seven seniors indicated that they tend to ask accounting clerks and operations personnel for explanations. In contrast, eight of nine managers and partners noted that they tend to ask controllers, chief financial officers, and other upper management personnel. In deciding who to ask first, the auditors indicated they consider factors such as the source’s access to relevant information and their competence. For a particular source, the level of these attributes is learned over time and through experience with the client. Three auditors noted that they inquire about unexpected differences by providing the client with a schedule documenting the accounts and ratios for which unexpected differences have been observed and request that they provide explanations for those fluctuations. One auditor indicated that to enhance the quality of the explanations received via this technique, he requests that explanations be doublechecked by a second employee of the client.

On some engagements, access to client staff is restricted. In such instances, auditors are asked to direct all their queries through a single client representative. Auditors report that this procedure has good and bad features. Although it streamlines the evidence gathering process, responses to queries come secondhand and may be misinterpreted. In addition, the procedure precludes the auditor from asking immediate follow-up questions and from observing the manner in which the respondent answers the inquiry (e.g., body language, tone of voice). Ten auditors indicated that the manner in which the client responds is an important cue when judging the validity of the response. If client personnel do not have an immediate and convincing explanation (e.g., they hesitate or
hedge in their response), auditors indicate that they are more skeptical about
the client's response than if the client's explanation comes quickly and convinc-
ingly. One auditor noted that she observed audit personnel tailoring their
responses to the experience level of the auditor inquiring of them.

Information search and explanation evaluation at testing
At the testing stage, 17 of 19 auditors indicated that their objective is to deter-
mine the validity of an account balance. To evaluate the validity of explana-
tions received during substantive testing APs, 18 of 18 auditors note that they
obtain corroborating evidence for explanations. Based on the responses of 19
auditors, the amount and type of corroborating information is not constant, but
rather varies with the presence or absence of other factors. Seven auditors
noted that if the area is not one of critical audit importance, less corroboration
may be sought. For example, corroboration is less likely to be obtained for an
unexpected difference in a low-risk, low-exposure account (e.g., prepaid insur-
ance) than for a high-risk, high-exposure account (e.g., lease commitments).
Five auditors noted that if the client's explanation for an unexpected difference
makes sense to them, less corroboration would be obtained. To illustrate, one
auditor noted that because in a particular year several major holidays fell on
Mondays, he was not too concerned about an unexpected increase in sales for
his client, a grocery-store chain. The auditor strongly suspected that the timing
of the holidays explained the increase in weekend sales and started his analy-
sis based on that assumption. Eight auditors indicated that they would reduce
the amount of corroboration for an explanation as long as they had an indepth
knowledge of the business and trusted the client. Six auditors indicated that the
strength of controls also affects the degree to which corroboration is obtained.
That is, as control strength increases, less corroboration is necessary. When
the risk of strategic accruals is high (e.g., a company is near violation of its debt
covenants; company performance is deteriorating; or a number of fourth-quar-
ter accruals have been made), more corroboration would be sought.
Interestingly, four of five managers said they were more concerned about the
risk of strategic accruals when earnings were unexpectedly high versus unex-
pectedly low. Five of seven seniors indicated that they were equally concerned
about the risk of strategic accruals in these two situations. Because of this
asymmetry in behavior toward unexpected differences in earnings, the audit
managers stated that they would want more corroboration for explanations that
relate to unexpected increases in earnings.

The perceived quality of corroborating information depends on its source.
Three of three seniors indicated that a third party source is considered superi-
or, environmental facts are considered next best, and internal data sources are
considered weakest. However, among internal sources, client personnel inde-
dependent of the financial reporting staff are considered more reliable sources
than the financial reporting staff. When internal controls are strong, the relia-
bility of internally generated corroborating information is enhanced. These comments are consistent with the guidance of SAS No. 56.

Regardless of the number of explanations initially generated or received, 18 of 18 auditors noted that they primarily search for information that corroborates explanations received from the client or others. They also noted that they do not normally seek information that contradicts or refutes explanations, unless information comes to their attention indicating an explanation may not be valid. When 10 auditors were asked how they react when a client-provided explanation proves incorrect, three noted that often the reason for the incorrect explanation lies in a miscommunication between the auditor and the client. That is, either the auditor asked a poor question or the client’s answer was incorrectly interpreted. In these instances, they would not change their assessments of the client’s competence or integrity. Four auditors noted, though, that if they felt that the client was being intentionally misleading or just did not know the answer, then they may re-evaluate their assessment of the client’s integrity and/or competence and may not return to the same person for a new explanation. Indeed, a test of details approach may be adopted to obtain assurance as to the validity of the account balance.

Decision making at testing
We asked auditors how they decide that an explanation for a material unexpected difference is acceptable. Seventeen of 17 responses to this question indicated that professional judgment determined the acceptability of an explanation. Interestingly, many auditors indicated that professional judgment was synonymous with a “warm, fuzzy feeling.” When pressed on what this phrase meant, one auditor noted that it was a function of the strength of the control environment, concreteness of the explanation, size of the unexpected difference, and the consistency of the explanation with other changes. Most respondents (11 of 11) indicated they felt comfortable stopping an investigation of an unexpected difference when a substantial portion of the fluctuation had been explained. Sixteen of 16 auditors indicated that the greatest comfort came from being able to explain the unexpected difference by quantifying the implications of the explanation. For the most part, the auditors said that they try to quantify the fluctuation to a point where it is substantially below materiality.

Thirteen of 17 auditors noted that the most difficult aspect of substantive APs was determining the acceptability of an explanation for an unexpected difference. However, experience appears to affect the auditor’s ability to determine that an explanation “makes sense.” That is, more experienced auditors report that determining the validity of an explanation becomes easier as their general business, industry, and client knowledge increases with audit experience. Less experienced auditors note that it is difficult to know when to stop investigating an unexpected difference.

Twelve of 12 auditors noted that when they investigate unexpected differences, they most often conclude that a nonerror or environmental cause
explains the fluctuation. Indeed, they noted that a material error was present in less than 20 percent of the cases. Such a statement should not be surprising because 10 auditors indicated that, if they thought there was material error, they would not perform substantive APs. In cases where a financial statement error is suspected as the cause of an unexpected difference, auditors proceed with tests of details to validate the existence of that error. Clients seldom adjust accounts until details of the hypothesized error are presented to them.

Documenting APs at testing
Twenty-two of 22 auditors indicated that a common documentation format used at the testing stage is to (i) compare the unaudited balance with the expected balance; (ii) calculate the change; (iii) provide an explanation for the change if it exceeds a combination of percentage change and dollar magnitude; (iv) document the source of the explanation, explain the implications of the explanation, and present corroborating information; and (v) render a conclusion. As previously noted, auditors quantify (if possible) and document the extent to which the explanation explains the unexpected difference. The amount quantified/explained is usually in the 70 to 80 percent range. Theoretically, a material amount never remains unexplained. However, auditors indicated to us that when they review substantive testing APs, a frequent observation is that auditors either fail to quantify the implications of an explanation or a sufficient amount of the unexpected difference. Where a material amount is unexplained, it is necessary for additional evidence to be collected until the unexplained fluctuation is immaterial. Finally, we noted that auditors are encouraged to relate documented explanations to other audit work already in the workpapers. Such cross-referencing serves as additional corroboration for the AP test results. However, two audit managers and one partner noted that less experienced staff often fail to relate AP explanations to other work contained in the audit workpapers.

When asked whether their documentation of substantive APs is tailored to the preferences of the reviewer, three of four auditors indicated that this can occur. One auditor noted that when documenting his explanations, he often thought about whether they would “get through review.” The others made similar observations, commenting that if they knew that a reviewer preferred long, detailed explanations, they would tend to document such explanations.

In general, for substantive testing APs audit work, the only explanations included in workpapers are those relied on for explaining the unexpected difference. Primarily for legal liability reasons, auditors do not document eliminated explanations. Sixteen of 17 auditors indicated that false starts (i.e., explanations that proved to be incorrect and were eliminated) typically are not documented in the workpapers. However, information about recurring problems with false starts (e.g., consistently poor explanations provided by the client) might be included in the internal control workpapers or the planning workpapers for next year. If the false start was not a recurring problem (e.g., there
was a problem in the way the auditor asked the question and the client misunderstood it), such information would not be documented anywhere.

APs at substantive testing: Summary
Our findings, summarized in Table 2, suggest the following. At the substantive stage of the audit, the auditor’s goal in using APs is to determine the validity of an account balance or set of balances. Sophisticated techniques for generating account balance expectations are not often used when auditors perform substantive APs. Rather, auditors tend to rely either on the prior year’s audited account balance or that balance plus some adjustment for direction and magnitude. Potential explanations for unexpected differences are primarily obtained from the client and through self-generation. When asking the client for explanations, auditors usually ask accounting personnel. Auditors either self-generate or expect to receive from the client a nonerror explanation for unexpected differences. In contrast to audit planning, corroboration is obtained for an explanation and, if possible, the auditor attempts to quantify the implications of the explanation to determine its sufficiency in accounting for the unexpected difference. Auditors judge the most difficult aspect of substantive testing APs as knowing when to stop investigating an unexpected difference. Although auditors indicate that they get better at this task with experience, even experienced auditors note that they have difficulty feeling highly confident when evaluating explanations.

Based on our interviews, we believe that the emphasis at substantive testing is on the explanation development/evaluation and information search aspects of APs. Explanation development and evaluation as well as information search (related to those explanations) are critical as the auditor’s goal is to determine the “correct” cause of fluctuations. Thus, iteration through the components of APs is prevalent during substantive testing. That is, auditors performing substantive APs iterate through explanation development and evaluation as necessary until they are able to satisfactorily explain the unexpected difference. In contrast, auditors performing planning APs tend to rely on the first or second explanation received for purposes of planning the audit.

We believe that these findings suggest topics for future research. As noted by McDaniel and Simmons (1995), there is little research on APs used as substantive tests. During our interviews, we were told that the most difficult part of performing APs was determining when to stop investigating an unexpected difference. Based on comments received from our interviewees, it appears that general business, industry, and client knowledge all positively influence the auditor’s ability to determine the acceptability of an explanation for a fluctuation. Prior research by Bonner and Lewis (1990) demonstrates that various types of knowledge and abilities correlate with performance in a variety of audit tasks. We believe that future research should explore whether and how these distinct types of knowledge affect auditors’ abilities to evaluate explanations during substantive APs.
Our respondents also told us that quantifying the implications of an explanation helps them determine its validity. Although recent research by Anderson and Koonce (1996) confirms this finding, it also qualifies it. Specifically, Anderson and Koonce note that quantification assists the auditor in determining the validity of an explanation, but only when the client's explanation is incorrect. When the client's explanation is correct, performance under a non-quantification approach is as good as that under a quantification approach. Because little research exists on quantification (both in and out of auditing), we believe that research should explore how and when quantification influences auditors' performance of substantive APs and why a quantification approach causes auditors to feel more comfortable with explanations. Research also should investigate the costs of quantification, including those associated with judgment errors made during the quantification process. Along these lines, research could explore the effects of decision aids or other mechanisms that might prevent or mitigate the effects of such judgment errors.

Based on our interviews, we noted that most substantive procedures are performed at the client's premises with a significant amount of face-to-face client-auditor interaction. We also noted that, when interacting with client personnel, auditors use verbal and nonverbal cues to assess the reliability of information obtained. To date, audit research on source reliability has been conducted in experimental laboratory settings, using pencil-and-paper tasks (e.g., Hirst 1994a, 1994b). The logistical advantages of such methods are obvious. However, such methods limit or preclude the study of many potentially important factors in the evaluation of source reliability. The use of audio and video tape to study factors, such as physical demeanor and verbal and nonverbal gestures, provides an opportunity to determine how auditors react to these factors. As the cost of computer-based audio and video decreases and the ease of creating multimedia materials increases, such studies become feasible. We believe such studies are warranted because our data suggest that such factors play an important role in substantive APs.

We learned during our interviews that the amount and type of corroboration obtained for explanations at testing is not constant. Rather, it varies depending on factors such as the importance of the area under investigation and the strength of the client's controls. Although some prior research indicates that auditors will use corroborating information if it is provided to them (e.g., Church 1991; Koonce, Anderson, and Marchant 1995), little research has investigated how auditors will search for such information (see Kaplan and Reckers 1989; Knechel and Messier 1990 for exceptions). Moreover, research has not examined how auditors decide how much corroboration to obtain. Given the importance of such information when auditors perform substantive APs, research in these areas is justified.

Finally, several auditors in our study noted that they might change the way they document their substantive testing APs depending on the preferences of the reviewer of their work. Although his research was performed within the
planning, rather than the substantive testing, domain, Peecher (forthcoming) reports that auditors' search for explanations of unexpected differences is not influenced by the preferences of the reviewer. Because Peecher did not investigate whether auditors' documentation of their APs work was affected by reviewer preferences, future research could profitably explore this issue. On a more general note, future research could investigate the relationship between the types of issues considered by auditors when they perform versus document their APs work. It is possible that there is little correspondence between what is considered during performance of APs and what is noted in the workpapers (Gibbins 1984).

**Analytical procedures at the overall review stage**

**General**

Of the 25 auditors asked about their goal in using APs at the overall review stage, 21 indicated that their goal is to determine whether the adjusted financial statements make sense in light of the evidence collected during the audit. Indeed, one partner told us that his goal in using APs at overall review was similar to that at planning. That is, at planning, his primary goal is to identify all critical audit areas and to ensure that adequate audit attention is devoted to these areas. At overall review, his goal is similar in that he is trying to determine whether all critical issues have been addressed during the audit and adequate audit evidence has been obtained to support the financial statements. Because professional standards (SAS No. 56) require APs at the overall review stage of the audit, we were not surprised to learn that, of 24 auditors asked, all indicated that APs are used at overall review.

Six of seven auditors noted that overall review APs are generally performed at the end of fieldwork. By the time these procedures are performed, the audit fieldwork is either complete, or substantially complete and the bulk of the audit work has been reviewed in detail by the audit senior and/or manager. Thus, at this stage, auditors expect few unexpected differences. Of 17 auditors asked, 16 indicated that overall review APs are typically performed at the client's offices, although six noted that sometimes such procedures are performed at the auditor's office. Ten (of 10) seniors indicated the initial performance of overall review APs is usually completed by seniors. The respondents did note, however, that there can be variation in who initially performs the overall review APs. For example, if the audit senior is busy finalizing the audit fieldwork, the audit manager may conduct the initial overall review. Nine (of nine) managers and partners indicated that before they review the senior's work, they will independently perform their own APs.

**Expectation development at overall review**

Twenty-four of 24 auditors indicated that overall review APs generally are performed at the level to which the audit report is addressed (usually the consolidated level), but they may also be conducted at other levels (e.g., the division
When performing overall review APs, auditors usually compare the current (adjusted) to previous year financial statement account balances looking for unexpected differences. To do this, auditors use their updated knowledge of the client and its industry, along with knowledge of general economic trends and knowledge of accounting to assess the reasonableness of changes in account balances (or the lack thereof).

One important aspect of overall review APs that differentiates them from planning and substantive testing APs is that auditors are often doing more than just looking for unexpected differences. Twenty-six of 26 auditors indicated they also are looking at the financial statements to ensure that they make sense taken as a whole. For example, one auditor noted that, if long-term debt increased during the year, she would expect to see a concomitant increase in an asset (e.g., property, plant, and equipment) and also an increase in interest expense. As part of looking at the financial statements taken as a whole, our respondents noted that they are attempting to assimilate the explanations and other evidence collected during the audit to ensure they are congruent with the auditor's updated knowledge of the business and the adjusted financial statements.

Developing explanations for unexpected differences at overall review

As previously noted, although unexpected differences are observed at the overall review stage of the audit, these are the exception rather than the rule. That is, most unexpected differences have been noted and resolved previously during the audit. Consequently, explanation development plays a relatively minor role at the overall review stage. However, when unexpected differences are observed, six of nine auditors indicated that their first source of explanations is self-generation or other audit team members. Client inquiry at this stage plays a significantly lesser role than it does at the planning or substantive testing stages because auditors are trying to manage their image in the eyes of the client. That is, if they discover something unusual at this late stage, they are reluctant to tarnish their reputation by asking the client questions. However, if it is apparent that there remain unanswered questions about the validity of the financial statements, then client inquiry will take place. As with other stages of the audit, decision aids and checklists are seldom used for APs at overall review.

Six of eight auditors noted that when they seek explanations for unexpected differences discovered at overall review, they tend to generate reclassification explanations (e.g., long-term debt should be reclassified as short-term; "other" expenses should be reclassified as selling, general, and administrative). By virtue of their experience, they know that, at the overall review stage, reclassification of accounts clarifies many unexpected differences. These auditors noted that it is relatively infrequent that an error is the cause of an unexpected difference observed at overall review.
Information search and explanation evaluation at overall review
Because unexpected differences at the overall review stage are the exception rather than the rule, information search and evaluation are not frequently performed. However, similar to substantive testing, auditors seek corroborative information for potential explanations until they feel comfortable about the reason for the unexpected difference. As previously noted, reclassification issues are common at the overall review stage. Consequently, we were told that corroborating information for these types of “disclosure” issues is usually found in the auditor’s permanent files (e.g., debt contracts) or prior years’ working papers.

Decision making and documentation at overall review
Decision making at the overall review stage is similar to that at the substantive testing stage. Twenty-six of 26 auditors told us that the major difference is that, at the overall review stage, the focus of the decisions is the financial statements and related explanations taken as a whole (rather than individually). When explanations that are congruent with each other and with the auditor’s knowledge of the business have been reviewed, the auditor then makes a judgment as to the validity of the financial statements as a whole.

The documentation of overall review APs generally is brief. Three auditors indicated that the typical documentation at overall review consists of a short explanation for the changes (or lack thereof) for each financial statement account balance. As applicable, these explanations are tied to the audit fieldwork and other account balances. Sometimes, the documentation may be part of an overall review memorandum.

APs at overall review: Summary
Our findings, summarized in Table 2, suggest the following. The auditor’s goal in using APs at overall review is to determine whether the adjusted financial statements make sense in light of the evidence collected during the audit. Because most audit fieldwork is complete, few unexpected differences are observed at this stage. Consequently, little explanation development, information search and explanation evaluation occur. When unexpected differences are observed, auditors rarely inquire with the client as they typically already have the information to explain the fluctuation. Often, unexpected differences at this audit stage are due to classification issues.

Based on our interviews, the emphasis of overall review APs appears to be on expectation development. We believe that expectation development is emphasized because the objective of overall review APs is to ensure the adjusted financial statements make sense in light of the evidence collected during the audit. Explanation development and evaluation, as well as information search (related to those explanations), appear less critical at overall review, because auditors seldom note unexpected differences at this stage. Because audit fieldwork is typically complete by the time the overall review APs are performed,
auditors already know why the financial statement components changed (or did not change) from the prior year.

We believe that these findings not only have implications for extant APs research but also suggest future research. As for substantive testing APs, little research exists on APs used at overall review. One observation made during our interviews was that auditors note that their objective at overall review is to determine whether the financial statements make sense as a whole. Thus, it seems reasonable to assume that when making this determination, auditors examine and evaluate patterns and relationships among the financial statement components. This type of configural processing has been noted to occur when auditors perform planning APs (Brown and Solomon 1991; Bedard and Biggs 1991b) but has not been documented for overall review APs. Because one auditor noted that his goal at overall review was similar to that at planning, it appears likely that auditors would process information at overall review similar to that at planning. However, research should verify this possibility. As experience-related knowledge differences are noted to affect auditor performance of APs (e.g., Bonner 1990), research should explore the extent to which experience influences the extent to which auditors engage in configural processing at overall review.

During our interviews, we learned that reclassification explanations are common for unexpected differences observed at overall review. These explanations do not appear to be commonly generated at planning, however. Future research could investigate the types of explanations auditors consider more or less likely at various audit stages. It is possible that an auditor's memory for explanations (as well as other information) is not only organized by client and industry (Bonner and Pennington 1991; Bedard and Graham 1994) but also by the stage of the audit.

**Conclusions**

The purpose of this paper was to describe how auditors perform APs at the planning, substantive testing, and overall review stages of the audit. To do this, we conducted a field study that culminated in a description of how APs are used in practice. Interestingly, our results show that how analytical procedures are performed depends on whether they are being performed for planning, substantive testing, or overall review purposes. That is, the emphasis placed on expectation development, explanation generation, information search and explanation evaluation, decision making, and documentation depends on the purpose of the APs.

We believe that the contributions of our study are threefold. First, by contributing to a more complete understanding of how APs are performed, we provide the basis for accounting researchers to take the logical approach of identifying a current analytical procedures problem/issue and then finding the appropriate theoretical framework for addressing it. Second, our descriptive work can provide standard setters with a better understanding of how APs are being
performed, thereby facilitating the standard setting process—particularly now as the Auditing Standards Board is deliberating the suitability of the guidance found in SAS No. 56. Third, we provide educators with a characterization of APs procedures as performed in practice, thereby facilitating classroom coverage of this topic.

Although we believe our study makes important contributions, there are, of course, limitations. First, the interviewees in our study were basing their comments on their retrospections. It is possible that the interviewees’ comments were biased. This bias could be in terms of the auditors’ unintentional inability to recall all relevant instances when responding to a question. This potential bias also could be in their intentional filtering of responses to convey a certain perspective. Although we cannot rule out these potential threats, we believe that several aspects of our interview procedure should have mitigated them. Specifically, we assured each auditor that their responses would be held in strict confidence. Moreover, we established a rapport with each auditor before the interview began. The number of detailed client-specific examples provided us and the extent to which the auditors were willing to comment favorably and unfavorably about their experiences with APs indicated that the auditors’ responses were particularly candid.

Another possible limitation pertains to the generalizability of our study’s results. It is difficult to generalize our findings to larger populations because the samples drawn are small and nonrandom. Moreover, we did not ask every auditor every question in our interview booklets. For these reasons, it also is difficult to make strong conclusions about firm or experience effects (or the lack thereof). Consequently, we believe that future research should use the findings from our study as a starting point for more systematic investigations—investigations that might reveal firm or experience effects, should they exist. Finally, it is important to keep in mind that we interviewed only U.S. Big Six auditors. The performance of APs in other countries, such as Canada, or at smaller firms may be different than we have portrayed here. Studies of the practice of analytical procedures in other countries would enrich our understanding of this important topic.

Appendix
Sample Set of Questions
Finding Explanations for Unexpected Differences
- Once you observe a material unexpected difference, what do you do next?
- How do you try to find out the explanation for a material unexpected difference when you observe one? Examples?
  - Client Inquiry
  - Decision Aids
  - Checklists
  - Self-Generation
  - Other Audit Team Members
Prior Year Workpapers

Current Year Workpapers

- Do you typically come up with one or more than one explanation for an unexpected difference?
- One at a time versus generate several and then investigate them?
- If several, how do you decide which one to test first? Time? Ease of investigating?
- At this stage, are you expecting an error or a nonerror cause for the unexpected difference?
- How often is the “correct” explanation or explanations in the initial set of explanations that you consider?
- When, if ever, do you ask the client for an explanation?
- Who do you normally ask?
- How do you decide on the appropriate person to ask?
- Do you ever know what client personnel is going to tell you prior to inquiring with them?
- Do you only know generally the kind of explanation (i.e., error versus nonerror) they will give you, or do you actually know the specific explanation before you inquire with them?
- If an explanation comes from client personnel, what kinds of factors affect how you view that information?

Endnotes

1 In Canada, the CICA Handbook (CICA 1992) indicates that APs can be effective in identifying possible financial statement misstatements and may be applied at the planning, testing, and overall review stages of the audit (CICA Handbook, para. 5300.31). Thus, the decision to use APs at any stage of the audit in Canada is a matter of auditor judgment, although it is recognized that it will be difficult to achieve certain audit objectives without relying to some extent on APs.

2 Disaggregating APs into these component parts is largely consistent with Koonce’s (1993) characterization of APs.

3 We adopted this strategy for three reasons. First, not all our questions were relevant to all auditors. For example, we did not ask partners how they generate expectations for account balances during substantive APs because they do not normally perform this procedure. Second, after obtaining similar responses to a particular question from a number of auditors (at all levels and firms), we chose to not continue asking that same question of others. Rather, we spent our interview time on other questions. Despite this procedure, we were nevertheless successful in getting responses from auditors at all levels and firms. That is, for all questions for which we report numerical data, at least one senior (manager) [partner] responded to 92 percent (94 percent) [48 percent] of our questions, respectively. In addition, for all questions for which we report numerical data, the number of firms responding was, on average, 5.2 (out of six firms). Third, as the purpose of our study was to improve our understanding of current practice, we intentionally did not want to limit ourselves to our pre-established interview questions. To the extent that an auditor made observations not dealt with in our questions, we explored those observations even though doing so might mean that we would not be able to
ask all pre-established questions. Given our objectives, we believe that the benefits of this procedure outweighed the costs.

4 We noted only one difference in how APs are used across the six firms. This difference is described in endnote 5. The differences across the three levels of auditor experience are described throughout the paper.

5 Regression techniques were routinely employed in only one of the firms we interviewed. For this firm, regression was used primarily for substantively testing income statement, rather than balance sheet, accounts. Importantly, even for this firm, regression analysis was not used for all audits. When regression analysis was used, however, this firm selected the independent variables for the regression model via discussions within the audit team and also with client personnel. Because three years of monthly data were necessary to reliably perform the regression analysis, the independent variables were usually held constant from year to year.

6 As noted earlier, if control strength is below a minimum level, APs would not be performed. Thus, increases in control strength in this context would apply only to situations where controls were strong enough such that substantive APs were being performed.

7 The remaining four auditors indicated that the most difficult aspect of substantive APs was (1) identifying the most appropriate procedure to perform (1 auditor); (2) developing the expectation (2 auditors); and (3) documenting an explanation (1 auditor).

References


Church, B. An Examination of the Effect that Commitment to a Hypothesis has on Auditors’ Evaluations of Confirming and Disconfirming Evidence. *Contemporary Accounting Research* (Spring 1991), 513–534.


D. Frederick. Experience and the Ability to Explain Audit Findings. *Journal of Accounting Research* (Autumn 1990), 348-367.


