

**Improving Financial Reporting Through Effective IT Controls:
Evidence from the SOX 404 Audit**

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Abstract

Information technology (IT) impacts virtually every aspect of data processing and financial reporting, and internal control (IC) weaknesses in a company's IT structure can have broad implications. Some of these implications have been uncovered with the new reporting requirements of the Sarbanes-Oxley (SOX) Act of 2002. This study examines 189 companies that reported IT control deficiencies in the first two years of the SOX 404 requirements (2004–2005). Twenty-one percent of the companies that reported an IC deficiency (908) reported an IT deficiency. Eight of the top ten accounting errors identified in this study are significantly more prevalent in companies with IT deficiencies. Evidence from this study suggests that companies can improve overall financial reporting and significantly reduce the number of accounting errors by eliminating IT control deficiencies. This study also suggests that companies with IT control deficiencies are smaller, pay higher audit and total auditor fees, and are typically audited by smaller accounting firms.

Keywords: information technology; internal control deficiencies; material weaknesses; accounting errors; Sarbanes-Oxley Act of 2002.

Data Availability: Data are available upon request from the first author.

I. INTRODUCTION

Statement of Auditing Standard (SAS) No. 94 affirms that the nature and character of an entity's use of technology in its information system affects the entity's overall IC structure. However, a minimal amount of information existed prior to the Sarbanes-Oxley Act of 2002 (SOX) to develop an understanding of the impact of IT control deficiencies on financial reporting. Recent management and audit reports filed with the Securities and Exchange Commission (SEC) by accelerated SOX companies now provide a rich body of data to measure this impact. SOX focuses on internal controls, which includes IT controls, to foster the preparation of reliable financial statements. Section 404 of SOX requires companies to identify, report, and resolve IC material weaknesses. Thus, IT deficiencies never reported before are now in the spotlight and are targeted for evaluation and improvement.

This paper examines the impact of IT control deficiencies on the financial reporting process and on the overall corporate-wide IC structure, focusing on accounting errors described in the annual report of companies that reported an IT control deficiency in either 2004 or 2005. Currently, no available analysis of the data exists to identify the relationship of IT controls on accounting errors.

Results indicate that IC deficiencies and accounting errors occur more often in companies when IT deficiencies exist. When compared to companies that do not report IT deficiencies, companies with IT deficiencies pay higher audit fees and total audit fees, while employing smaller audit firms. In addition, companies that report IT deficiencies are smaller, based on revenues, than companies that do not report IT deficiencies.

This study also reveals evidence to support the impact of IT deficiencies on financial reporting. Companies that eliminate their IT control deficiency in their second year of reporting reduce the number of accounting errors reported. Companies that report IT deficiencies in the second year of SOX compliance, but not in their first year, experience significant increases in the number of accounting errors. Companies that reported IT deficiencies in both years did not significantly improve the number of accounting errors. Companies that eliminated their IT deficiencies saw the greatest reduction in the year of improvement in accounting errors related to segment disclosures, revenue recognition, inventory, and balance sheet accounts, such as loans, receivables, investments, and cash.

In addition, approximately one-fourth of companies reporting IT deficiencies represent the computer industry. This study also suggests that IT control deficiencies are more prevalent in mid-sized companies. Therefore, non-accelerated filers could benefit from this study before their initial SOX 404 reporting requirements beginning July 15, 2006.

The first part of this paper discusses SOX legislation and the reporting and auditing requirements companies face when complying with SOX. The second part examines IC and IT implementation guidelines and evaluates auditing guidelines for internal controls. A discussion of the impact of IT on accounting errors and financial reporting follows, and the last section describes the methodology and sample used in our study. The paper ends with the results of the study and a conclusion.

II. SARBANES-OXLEY ACT OF 2002 AND INTERNAL CONTROLS

Beginning in 1977, with the passage of the Foreign Corrupt Practices Act, public companies have been required to maintain adequate internal controls (Turner et al. 2005). Internal controls are processes designed to provide reasonable assurance that management achieves effectiveness and efficiency of operations, reliability of financial reporting, and compliance with applicable laws and regulations (COSO 1994). Although, internal controls have played a major role in financial reporting for many years, recent accounting scandals at major corporations revealed serious weaknesses in internal controls that inhibited reliable financial reporting. As a result, SOX made internal controls a legislative issue by requiring management to assess and report the effectiveness of the company's internal controls.

Congress implemented SOX to foster the preparation of reliable financial statements. Section 404(a) of the act requires public companies to include in their annual report a statement of management's responsibility for establishing and maintaining adequate internal controls and procedures for financial reporting, along with an assessment of the effectiveness of the company's IC structure (United States Congress 2002).¹ Section 404(b) requires company auditors to attest to and issue a report on the assessments made by management.

In addition to the report on the assessment of the effectiveness of the company's IC processes, SOX requires signing officers to identify any material weaknesses in IC and to report the plans needed to remedy the deficiencies giving cause to the weaknesses. A material weakness is a significant control deficiency that results in more than a likelihood that the control deficiency will result in a material misstatement in the

¹ See the PCAOB Auditing Standard No. 2 for a detailed definition of "internal control over financial reporting."

financial statements (PCAOB, 2004). As defined in PCAOB AS2, an IC deficiency occurs when the design or operation of the control does not prevent misstatements in the financial statements. A significant deficiency is a control deficiency, or a combination of control deficiencies, that prevents the company from issuing financial statements in accordance with Generally Accepted Accounting Principles (GAAP), giving rise to the likelihood that a misstatement in the company's financial statements will not be prevented or detected. This study focuses specifically on IT related control deficiencies and their related affect on financial reporting.

III. ACCOUNTING ERRORS, FINANCIAL REPORTING AND INTERNAL CONTROLS

If the additional SOX requirements for the assessment and reporting of IC exist to improve financial reporting, their provisions indicate a direct relationship between accounting errors and IC deficiencies. If companies improve their IC structures, a related improvement should also exist in the type and amount of accounting errors reported. The accounting errors and GAAP departures (accounting errors) noted in this study follow the definition of an accounting error as reported in Accounting Principles Board Opinion (APB) No. 20.² This statement defines errors as items resulting “from mathematical mistakes, mistakes in the application of accounting principles, or the oversight or misuse of facts that existed at the time the financial statements were prepared” (paragraph 13).

² Statement of Financial Accounting Standards (FAS) 154, *Accounting Changes and Error Corrections* supersedes APB No. 20 and provides the most recent definition of the term “accounting error.” Paragraph 2(h) defines an error as “an error in recognition, measurement, presentation, or disclosure in financial statements resulting from mathematical mistakes, mistakes in the application of GAAP, or oversight or misuse of facts that existed at the time the financial statements were prepared. However, FAS 154 went into effect for fiscal years beginning after December 15, 2005, which would not pertain to our population of companies reporting for the years ended 2004 and 2005.

Icerman and Hillison (1990) examined and identified a functional relationship of accounting errors (also defined by APB No. 20) with internal controls prior to the SOX 404 requirements. Since companies were not required to report IC weaknesses at this time, these authors examined five financial statement accounts of 49 companies for three years by examining the related audit work papers. In every case, the authors found, on average, more accounting errors reported in weak IC systems than in strong IC systems. Their study notes a direct relationship between the reported level of IC and the mean accounting error rate per account.

Studies post-SOX have found similar links between weak internal controls and financial reporting. Doyle et al. (2007) studied 1,210 firms reporting a material weakness from 2002-2005 and found that IC weaknesses, specifically general company-level control weaknesses, are associated with lower accrual quality. Ashbaugh-Skaife et al. (2007) report similar findings and reported that IC weaknesses lead to unintentional errors that create noise in accruals. Krishnan and Gnanakumar (2007) reported a higher number of financial restatements in companies that report weaknesses in internal controls.

Prior studies examine the characteristics and number of accounting errors and the relationship of IC with financial reporting, but few provide empirical support for the relationship between internal controls and specific accounting errors.³

IV. INFORMATION TECHNOLOGY AND INTERNAL CONTROLS

³ For additional studies on the characteristics of accounting errors see (DeFond and Jiambalvo 1991, Ham et al. 1985, Hylas and Ashton 1982, Kreutzfeldt and Wallace 1986, and Willingham and Wright 1985).

According to the AICPA's SAS No. 3, issued in 1974, the objectives of accounting controls are the same in both a manual system and an IT system. However, the type of data processing used by a company influences the IC methods and objectives (AICPA 1974). SAS No. 48 superseded SAS No. 3 in 1984 requiring the auditor to consider the processing methods used by the client when planning an audit. Auditors specifically need to evaluate the entity's extent and complexity of computer processing activities (AICPA 1984). SAS No. 94 adds additional requirements for IT controls and requires the auditor to consider how an entity's use of IT can affect controls relevant to the audit – primarily the use of IT to initiate, record, process, and report transactions or other financial data (AICPA 2001). This standard specifically notes that the nature and character of an entity's use of IT in its information system affects the entity's overall IC structure (AICPA 2001).

With very little emphasis placed on IT controls, companies prior to SOX incurred limited audits of IT controls. Thus, minimal information exists to develop an understanding of the impact of IT control deficiencies on financial reporting (Canada et al. 2006). However, SOX clearly includes IT controls as a major player in the overall control structural framework of the organization. Companies now adhering to the SOX requirements and the PCAOB auditing standards must disclose significant IT control deficiencies.

PCAOB AS2 deals directly with the audit of internal controls stating, "The nature and characteristics of a company's use of information technology in its information system affects the company's internal controls over financial reporting." The standard also states that the auditor should evaluate the nature and complexity of the systems,

including the IT used by the company to process data (PCAOB 2004). It has become readily apparent that IT governance and controls must align with corporate strategy to achieve reliable financial reporting as required by SOX.

Since IT plays an integral role in a company's internal control system, the presence of IT can either increase or mitigate risks, making IT a very important aspect of effective IC (Canada et al. 2006). In light of the importance of IT governance in the business and compliance environment, IT control procedures have attracted board level attention. Approximately two-thirds of the boards of Fortune 500 companies approve IT strategies (Damianides 2005). The PCAOB supports this importance in AS2 (paragraph 50) by noting that IT general controls could have a pervasive effect on the achievement of many of the overall objectives of the control criteria. Although the SOX provisions include information on all IC weaknesses, including IT controls, very little information exists to document the significance of the role of IT in reliable financial reporting, leaving IT compliance confusing at most.

The most commonly used guidance for IC governance is the framework of The Committee of Sponsoring Organizations of the Treadway Commission (COSO). However, COSO provides only minimal guidance for the design and implementation of IT internal controls (ITGI 2006). COSO groups IT control activities into general and application controls. General controls, which apply to all aspects of a computerized system, help insure proper operations. Application controls include functions within the software application that control the processing of transaction and storage of data. Systems rely heavily on both types of controls to insure reliable and timely financial reporting (COSO 1994), and both are equally important for SOX assessment of IC.

Since SOX does not provide specific details concerning IT controls, and COSO provides only limited guidance, managers are often plagued with vague requirements for tightening internal controls. Reporting IT weaknesses is a particularly tough area for all industries because guidelines for determining the appropriate level of work are unclear (Blum 2005; Fisher 2005). Most managers and auditors have utilized Control Objectives for Information and Related Technology (COBIT) for guidance to evaluate IT controls for SOX compliance (Blum 2005)⁴.

The IT Governance Institutes publishes and maintains COBIT to provide businesses a framework to develop effective IT controls. Based on business processes, the COBIT framework centers on four high-level domains of IT controls: planning and organization, acquisition and implementation, delivery and support, and monitoring (ITGI 2006). COBIT only provides guidance on these high-level control objectives, leaving managers with the responsibility for determining how to best assess the effectiveness of IT controls for the SOX 404 audit. These required assessments are forcing many companies to identify and resolve IT control deficiencies that have never before been reported, leading to an improved focus on internal controls (Smith 2004; Wendell 2005).

Initially, some predicted that as many as 30 to 40 percent of companies experiencing internal control deficiencies would report deficiencies due to IT, with the problem being more common in mid sized companies (Hoffman 2005).⁵ However,

⁴ Blum (2005) recommends “COBIT Security Baseline: An Information Security Survival Kit” and “IT control Objectives for Sarbanes-Oxley” (ISACA 2000) available at www.isaca.org for guidance.

⁵ Hoffman (2005) cites this prediction from Van Decker, an analyst at a research firm in Stamford, Conn.

another report cited by Hoffman (2005) claims that only 3.5 percent of the companies reporting material weaknesses in 2004 specifically mentioned IT controls.⁶

Other studies based on actual SOX 404 audit reports identify the impact of IT control deficiencies on financial reporting. Some of the most common IT control deficiencies identified by major audit firms include:

- lack of access controls,
- excessive access to systems and databases,
- improper change management,
- inadequate segregation of duties, and
- lack of a self-assessment process (Tseu 2005, 19).

Worthen (2005) also identifies similar IT control deficiencies in a top five list as follows:

- failure to segregate duties within applications, and failure to set up new accounts and terminate old ones in a timely manner,
- lack of proper oversight for making application changes,
- inadequate review of audit logs,
- failure to identify abnormal transactions in a timely manner, and
- lack of understanding of key system configurations.

A recent study of the SOX 404 requirements by Li et al. (2007) examines the factors that influence IT control quality among companies reporting IT control deficiencies in 2005. Their study reports a direct relationship between the increased quality of IT controls and external factors such as longer tenured CIOs, more IT-experienced managers, higher percentages of independent directors, and more IT-experienced audit committee members. Their study also reveals that clients of Big Four and IT-specialized auditors are less likely to have material IT deficiencies. However, IT control compliance and improved IT quality does come with a significant price. According to Canada et al. (2007), companies with IT control deficiencies are paying

⁶ Hoffman (2005) cites these findings from *Compliance Week*.

significantly higher audit fees compared to companies with either no reported material weaknesses or only non-IT related deficiencies.

As of this research, no analysis exists to support or refute the relationship of IT controls and accounting errors. This research specifically examines the relationship between IT control deficiencies and accounting errors.

V. SAMPLE AND METHODOLOGY

This study examines the 908 publicly traded companies, identified by Audit Analytics, which reported at least one IC deficiency during the first two years of the SOX 404 compliance reporting period, 2004 and 2005. During this period, accelerated filers (companies with a market cap greater than \$75m) were required to comply with SOX . Thus, this study does not include smaller non-accelerated filers. Table 1 provides the 27 types of accounting errors identified by Audit Analytics, ranked by the number and percentage of occurrences in this overall population. Appendix 1 describes the types of accounting errors identified by Audit Analytics.

INSERT TABLE 1 HERE

Table 2 provides the 17 IC deficiencies identified by Audit Analytics, ranked by the number and percentage of occurrences in this overall population.⁷ Appendix 2 provides a description of these IC deficiencies identified by Audit Analytics.

⁷ Ge and McVay (2005) also identify five of the top eight IC deficiencies reported in Table 2 as some of the most common deficiencies reported. These deficiencies include revenue recognition policies or procedures, segregation of duties, year-end reporting, accounting policies, and account reconciliation.

INSERT TABLE 2 HERE

This research segregates the 908 companies into two separate categories. The first category includes 189 companies that reported IT as a type of IC deficiency (IT deficient companies). The second category includes 719 companies that did not report IT as an IC deficiency (non-IT deficient companies).

The first part of this study compares industry segment characteristics of IT deficient companies with non-IT deficient companies. The study then identifies whether IT deficient companies report more occurrences of accounting errors and other IC deficiencies than non-IT deficient companies. This phase also examines any significant differences between audit fees, total fees, and revenues between IT and non-IT deficient companies using t-tests for the equality of means.

Next, this study identifies the types of accounting errors most commonly occurring in IT and non-IT deficient companies and identifies the top ten most commonly occurring accounting errors reported among IT deficient companies. Next, the study utilizes cross tabs and the chi-square analysis to identify any significant differences in these accounting errors as reported by IT deficient companies compared to non-IT deficient companies. The study then implements logistic regression to validate whether the chi-square results hold in a multivariate setting.

The next part of this study identifies whether the number of accounting errors and number of IC deficiencies increase or decrease significantly for those companies whose levels of IT deficiencies improve, regress, or remain the same over the 2004 and 2005

reporting period in this population. This analysis utilizes a paired sample t-test comparison to determine significant changes.

The final phase of this study focuses on the related decrease or increase in occurrences of the specific types of accounting errors reported among IT deficient companies whose levels of IT deficiencies changed during the 2004 and 2005 reporting period. This phase of the study analyzes the numeric and percentage changes among the various levels of IT deficient companies in this population (improved, regressed, or stayed the same).

VI. RESULTS

An examination of the IC deficiencies reported in the SOX 404 audit report for each of the 908 companies reveals 3,115 reported IC deficiencies, representing an average of 3.4 per company. Table 2 summarizes these IC deficiencies, based on the 17 categories reported in the Audit Analytics database. Over six percent of the total deficiencies reported related to IT software and security access issues, ranking IT as the fifth most commonly occurring IC deficiency.

Segregating the 908 companies into those reporting an IT deficiency and those reporting no IT deficiencies generates 189 IT deficient and 719 non-IT deficient companies. Approximately 21 percent of the companies in this population reported at least one IT deficiency. Table 3 provides a summary of the types of industries where IT deficiencies most commonly occur (based on an analysis of SIC codes). The computer industry represents the largest industry segment most frequently reporting IT deficiencies. More than 24 percent of the IT deficient companies represent the computer

industry. This industry reported IT deficiencies twice as often as the services industry, the second largest industry representing almost 11 percent of the IT deficient companies. Utilities follow closely as the third largest industry segment representing almost ten percent of the IT deficient companies.

INSERT TABLE 3 HERE

Table 4 summarizes the comparisons of accounting errors and IC deficiencies between IT and non-IT deficient companies. The analysis reveals that companies with IT deficiencies report significantly more accounting errors and more IC deficiencies (both with p values less than .001) than companies reporting no IT deficiencies (averages per company of 4.7 to 2.7, 4.2 to 3.0, and 4.9 to 1.8 respectively). These findings support results reported by Icerman and Hillison (1990) where the average number of accounting errors was greater in weak IC systems than in strong systems. However, the findings in this study confirm this relationship specifically with weak IT controls. The relationships identified in this study signify the importance of strong IT controls and the significant impact of ineffective IT controls on financial reporting. These findings also confirm the importance of IT controls on the impact of the overall IC structure of a company as noted by SAS No. 94.

INSERT TABLE 4 HERE

Table 4 also summarizes three characteristics of IT deficient companies. A comparison of the revenues of IT deficient companies with non-IT deficient companies reveals that companies with IT deficiencies have significantly smaller revenues ($p=.026$) than companies without IT deficiencies. IT deficient companies report mean revenues of \$1.3 million while non-IT deficient companies report mean revenues of \$2.8 million. Even though companies reporting IT deficiencies may be smaller (as indicated by revenue), they pay significantly higher audit fees ($p=.016$) and total auditor fees ($p=.025$) than companies reporting no IT deficiencies. These higher audit fees are not necessarily attributable to the size of the company's auditing firm. Only 63 percent of the IT deficient companies in this population use Big Four audit firms, while almost 83 percent of the non-IT deficient companies use Big Four audit firms. This implies that companies with IT deficiencies pay more for audit and total auditor fees, even though they have a tendency to hire smaller firms. These findings confirm previous studies where the hours and fees increased for IT audit assessments (Daigle et al. 2005) along with increases in the percentage and overall audit fees of companies with significant IT deficiencies (Canada et al. 2005).

Table 5 summarizes the accounting errors occurring most often in IT deficient companies as compared to non-IT deficient companies. The 189 IT deficient firms reported 891 total accounting errors, an average of 4.7 accounting errors per company. On the other hand, the 719 non-IT deficient firms reported 1,939 total accounting errors, an average of only 2.6 per company.⁸

⁸ The total accounting failures exceeds the number of companies reporting material weaknesses because each company may report multiple failures in one material weakness.

INSERT TABLE 5 HERE

In this population, revenue recognition issues, inventory and cost of sales issues, accounts receivable issues, and liabilities and accrual failures account for more than 50 percent of the accounting errors reported by companies with IT deficiencies. Table 5 identifies the top ten most common accounting errors in this population. This analysis confirms the top four “account-specific material weaknesses” identified by Ge and McVay (2005) in a prior study of companies reporting material weaknesses from 2002 to 2004. Based on a chi-square analysis with a significance level less than .001, eight of the top ten most common accounting failures occur significantly more often in IT deficient companies than non-IT deficient companies.⁹ The asterisk notation in Table 5 identifies these eight accounting failures. The result, once again, emphasizes the negative impact inefficient IT controls have on financial reporting and identifies the specific types of errors most likely to occur in companies with IT deficiencies.

An additional analysis of the top ten most commonly occurring accounting errors utilizing logistic regression validates the above findings in a multi-variate setting. Using IT and non-IT deficient companies as the dependent variable, the correlation matrix in Table 6 reveals significant correlations between the top ten accounting errors used as independent variables. However, no variance inflation factors above 2.5 exist among the independent variables, indicating no cause for concern of multicollinearity.¹⁰

⁹ The only accounting errors from the top ten list that occur more often in non-IT deficient companies include the tax expense and lease contingency issues. However, the difference is not significant in the chi square tests or in the regression that follows for either of these failures.

¹⁰ Allison (1999) suggests the threshold for multicollinearity be reduced from 10 to 2.5 when using logistic regression as noted in this analysis.

INSERT TABLE 6 HERE

In comparison with the univariate chi-square tests, the logistic regression provided in Table 7 identifies very similar relationships between the top ten most commonly occurring accounting errors in IT deficient companies compared to non-IT deficient companies. Based on the logistic regression, seven of the same top-ten variables have significant relationships with IT deficient companies based on a Wald statistic less than .05, and one of the same variables has a marginally significant relationship with a Wald statistic of .06. In general, eight of the top-ten accounting errors (variables) do have a significant relationship with the likelihood of reporting IT as a control deficiency when these failures exist.¹¹ The overall model is significant at the less than .001 level with a Nagelkerke R square statistic of .24. The Hosmer-Lemeshow statistic is not less than .05 so the model adequately fits the data. These results validate the univariate chi-square findings and confirm the impact of IT deficiencies on accounting errors in the financial reporting process.

INSERT TABLE 7 HERE

The next phase of this study examines whether the occurrence of accounting errors increase or decrease significantly for those companies whose levels of IT deficiencies either improve, regress, or remain the same over the 2004 and 2005 reporting

¹¹ The logistic regression reveals the odds of reporting IT deficiencies if the statistically significant accounting rule application failure occurs. For example, the odds of a company reporting an IT deficiency are .375 times ($\text{Exp}(B)$) the odds of not reporting an IT deficiency for a company reporting revenue recognition as an accounting rule application failure in this model.

period. Of the 189 IT deficient companies in our dataset, 77 reported IT deficiencies in 2004 but not in 2005. Sixty-eight companies reported IT deficiencies in 2005 but did not report IT deficiencies in 2004. Twenty-two companies reported IT deficiencies in both 2004 and 2005. Table 8 provides a paired t-test of these companies comparing the level of company improvement or regression in IT deficiencies.

INSERT TABLE 8 HERE

Companies that improved (eliminated) their IT control deficiency in the second year experienced a significant ($p < .001$) reduction in the number of accounting errors. The number of accounting errors *fell* from a mean of 3.78 to 1.56. Companies that did not report an IT deficiency in the first year, but reported an IT deficiency in the second year (regressed) experienced significant ($p < .001$) *increases* in the number of accounting errors. The mean increased from less than one to more than four per company. The companies that did not eliminate their IT deficiency, that is, they reported an IT control deficiency in both years, did not significantly improve the number of accounting errors ($p = .339$). Companies still reported a mean of 6.32 accounting errors per company.

This analysis provides evidence that companies may substantially improve financial reporting by specifically improving IT control deficiencies. However, based on this sample, improvement of the controls other than IT does not significantly improve the number of accounting errors reported. Overall, the evidence once again suggests that improvement in IT control deficiencies can improve financial reporting.

The final phase of this study specifically identifies the type and level of improvement or regression that occurred among the top-ten accounting errors based on

the company's level of IT deficiency improvement. Table 9 identifies the numeric and percentage changes among the top-ten accounting errors as reported by the IT deficient companies. Companies reporting improved levels of IT control deficiencies from 2004 to 2005 experienced *reductions* in the number of accounting errors by at least 50 percent in nine of the top-ten reported failures. The largest decreases occurred in financial statement footnote issues, including foreign company conversion to US GAAP and segment disclosures (81 percent), and in revenue recognition issues (70 percent). Comparatively, companies reporting regressed levels of IT control deficiencies for this period experienced similar *increases* in the number of accounting errors by at least 50 percent in all of the reported top-ten failures. The largest increases occurred in liability and accrual issues (89 percent) and in inventory and cost of sales issues (88 percent). Results for companies reporting IT deficiencies both years were, once again, mixed, ranging from a 50 percent decrease in consolidation and foreign currency issues to a 57 percent increase in segment disclosure issues. These results provide additional evidence of how improving existing IT control deficiencies can improve financial reporting in very specific areas.

INSERT TABLE 9 HERE

VII. CONCLUSION

IT governance plays a vital role in financial reporting. This study reveals that approximately 21 percent of accelerated filers reporting at least one control deficiency in the first two years of the SOX 404 compliance period reported IT control deficiencies. The computer industry represents the largest segment of the companies reporting IT

deficiencies with approximately 20 percent of the total IT deficient companies in this category. The services industry follows as the second largest segment representing 11 percent of the IT deficient companies.

Evidence from this study suggests that companies with IT control deficiencies report significantly more IC deficiencies (other than IT) than non-IT companies. This reaffirms the widespread impact that deficient IT controls can have on the overall IC structure of the business. This study also demonstrates the impact IT control deficiencies can have on financial reporting. Companies with IT deficiencies report significantly more accounting errors than companies not reporting IT control deficiencies.

This analysis also reveals specific characteristics of IT deficient companies. Companies with IT deficiencies pay higher audit fees and higher total auditor fees even though the IT deficient companies tend to be smaller (based on total revenues). In addition, the IT deficient companies are paying higher fees while most of them employ smaller auditing firms (other than Big Four) than companies without IT deficiencies. It is evident that smaller companies are paying a higher price for poor IT controls monetarily as well as through the cost of poor financial reporting.

In IT deficient companies, more than 50 percent of the accounting errors occur in four areas: revenue recognition, inventory and cost of sales issues, accounts receivable issues, and liabilities and accrual issues. In addition, eight of the top-ten most commonly occurring accounting errors identified in this study occur significantly more often in IT deficient companies than non-IT deficient companies. These results also confirm the negative impact that IT deficiencies can have upon specific types of accounting errors in the financial reporting process.

Comparing companies in 2004 and 2005 that reported IT deficiencies in at least one of the years further reveals the impact of IT controls on financial reporting. Seventy-seven companies improved (eliminated) their IT deficiencies from 2004 to 2005 and significantly improved the number of accounting errors reported. Conversely, the 68 companies that did not have IT deficiencies in 2004, but reported them in 2005, reported a significantly higher number accounting errors. Twenty-two companies reported IT deficiencies in both years with no improvement in the number of accounting errors.

A dramatic improvement occurred in the accounting errors reported in companies that eliminated or improved their IT control deficiencies. These companies *reduced* the occurrence of nine of the top-ten accounting failures reported by more than 50 percent. For example, financial statement footnote segment disclosures improved 81 percent, while revenue recognition issues improved by 70 percent. Companies that regressed in their IT control deficiencies also experienced dramatic changes in the opposite direction with more than a 50 percent *increase* in all of the top ten accounting application failures. The main accounting failures reported by the regressing companies include issues related to tax expense, liabilities, inventory, and foreign subsidiaries, with increases of 95, 89, 88 and 85 percent respectively.

Accelerated filers provide the basis for this study and therefore, may benefit from the results when analyzing the IT control structures of their companies for future audits and operations. However, non-accelerated filers may also benefit from the results and improve their IT control structures and financial reporting prior to their first SOX 404 audit report requirements. Since the IT deficient companies in this study tend to be smaller companies (based on revenues), these IT deficiencies may be more prevalent in

non-accelerated filers. In a press release on August 9, 2006, the SEC estimated that approximately 44 percent of domestic public companies are non-accelerated filers. Thus, a substantial number of public companies have not been subject to the SOX 404 audit requirements as of the completion of this study (SEC 2006). The debate over the SOX 404 audit requirements for these smaller companies has been ongoing since the enactment of SOX in 2002. The SEC provided the extension to smaller companies in light of their limited financial resources available to fund the SOX 404 compliance, their less sophisticated control structure, and the pending changes to PCAOB AS2. This study suggests that smaller companies can improve their financial reporting by focusing on IT control deficiencies. Since non-accelerated filers have a calendar year between their initial evaluation of IC and their first SOX 404 audit, focusing on the elimination of IT deficiencies could help reduce the impact of increased audit fees in 2008 by improving their financial reporting process.

As with any research design, there are inherent limitations in our study. Our study consists of accelerated filers for SOX compliance. Inclusion of the smaller companies, non-accelerated filers, in this study may have produced different results. Our research focuses on companies that reported IT deficiencies and the impact of these IT deficiencies on financial reporting. An analysis of IC deficiencies other than IT may have provided similar, or different, results.

We have studied companies that reported IC weaknesses, especially those companies with IT deficiencies, in the first two years of SOX compliance. Further research is needed to determine if companies that continue to report IT deficiencies in subsequent years support our results. Furthermore, future research can expand this study

to analyze other types of IC deficiencies that may result in accounting errors and the overall poor quality of financial reporting.

Our study reveals some of the importance issues associated with IT in the financial reporting process. Managers must continue to evaluate the impact of IT on their overall system of internal controls. Auditors must stay abreast of IT developments and weigh the risk IT places on financial reporting. As technology evolves and new systems develop, the role of IT in financial reporting systems is destined to escalate. Studies, like ours, can help managers and auditors identify IT problems that affect financial reporting and take remedial steps to correct these weaknesses.

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TABLE 1
Accounting Errors Reported
(N=908 Companies Reporting 2,830 Failures)

Accounting Errors	Number of Accounting Errors	Percentage of Accounting Errors
Tax expense benefit deferral and other FAS109 issues	299	10.57
Revenue recognition issues	286	10.11
Liabilities, payables, reserves and accrual estimate failures	250	8.83
Inventory, vendor and cost of sales issues	244	8.62
Accounts, loans receivable, investments and cash issues	231	8.16
PPE intangible or fixed asset value issues	168	5.94
Lease FAS5 legal contingency commitment issues	141	4.98
Foreign related party affiliated and/or subsidiary issues	128	4.52
Financial statement US GAAP segment disclosure	108	3.82
Deferred stock based or executive compensation issues	105	3.71
Depreciation, depletion or amortization issues	97	3.43
Acquisition, merger, disposal or recognition	95	3.36
Lease, leasehold and other FAS13 issues	88	3.11
Financial derivatives hedging FAS133 issues	84	2.97
Capitalization of expenditures issues	83	2.93
Consolidation Fin46 or off balance sheet, foreign currency	80	2.83
Cash Flow Statement FAS95 classification errors	67	2.37
Inter-company investment with subsidiary issues	66	2.33
Debt quasi debt warrants equity security issues	60	2.12
Income statement classification margin and EPS	38	1.34
Expense recording issues	37	1.31
Gain or loss recognition	28	.99
Unspecified, unidentified, inapplicable FASB GAAP	25	.88
Balance sheet classification of assets	13	.46
Debt equity	8	.28
Defective or unreliable accounting reporting records	<u>1</u>	<u>.04</u>
Total	2,830	100.00

TABLE 2
Internal Control Deficiencies Reported
(N=908 Companies Reporting 3,115 Deficiencies)

Internal Control Deficiencies	Number of Deficiencies Reported	Percentage of Deficiencies Reported
Accounting documentation policy and or procedures	861	27.64
Material and or numerous auditor year end adjustments	509	16.34
Restatement or non reliance of company filings	459	14.74
Accounting personnel resources (competency training)	447	14.35
Information technology software security access issues	189	6.07
Segregation of duties / design of controls (personnel)	188	6.04
Restatement of previous 404 disclosures	141	4.53
Untimely or inadequate account reconciliations	133	4.27
Senior management competency tone reliability issues	48	1.54
Ethical or compliance issues with personnel	41	1.32
Scope disclaimer of opinion or other limitations	32	1.03
Insufficient or non existent internal audit function	19	.61
Management board audit committee investigations	18	.58
Ineffective or understaffed audit committee	14	.45
SEC or other regulatory investigations and or inquiries	6	.19
Ineffective regulatory compliance issues	6	.19
Inadequate disclosure controls (timely, accuracy, completion)	<u>4</u>	<u>.13</u>
Total	3,115	100.00

TABLE 3
IT Deficiencies Reported by Industry Segments

Industry Segments	Number of IT Deficient Companies per Industry Segment	Percentage of IT Deficient Companies per Industry Segment
Computers	46	24.34
Services	20	10.58
Utilities	18	9.52
Retail	16	8.47
Banks and Insurance	16	8.47
Miscellaneous Equipment	12	6.35
Industrial Equipment	10	5.29
Drugs and Medical Equipment	8	4.23
Refining and Extracting	8	4.23
Textiles, Printing, and Publishing	7	3.70
Rubber, Leather, and Metal	6	3.17
Electrical Equipment	6	3.17
Chemicals	5	2.65
Real Estate	5	2.65
Mining and Construction	2	1.06
Food	2	1.06
Transportation	<u>2</u>	<u>1.06</u>
Total	189	100.00

Industry Classifications are compiled using the following SIC codes: Computers 3570-3579, 3670-3679, 7370-7389; Services 7000-7369, 7390-8999; Utilities 4800-4999; Retail 5000-5999; Banks and Insurance 6000-6499; Miscellaneous Equipment 3700-3839, 3852-3999; Industrial Equipment 3500-3569, 3580-3659; Drugs and Medical Equipment 2830-2839, 3840-3851; Refining and Extracting 1300-1399, 2900-2999; Textiles, Printing, and Publishing 2200-2799; Rubber, Leather, and Metal 3000-3499; Electrical Equipment 3660-3669; Chemicals 2800-2829, 2840-2899; Real Estate 6500-6799; Mining and Construction 1000-1299, 1400-1999; Food 2000-2199; and Transportation 4000-4799. These classifications closely follow those reported by Ge and McVay (2005, 143).

TABLE 4
Statistical Comparisons of IT and Non-IT Deficient Companies
for Years Ended 2004 and 2005

	Companies Reporting IT Internal Control Deficiencies (Dollars in Millions)			Companies Not Reporting IT Internal Control Deficiencies (Dollars in Millions)			t-Test for Equality of Means		
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	Mean Difference	t-Value	p-Value
Number of Accounting Errors	189	4.67	3.098	719	2.70	1.854	1.97	8.35	.000**
Number of Internal Control Deficiencies other than IT Deficiencies	189	4.20	1.778	719	2.97	1.147	2.23	16.41	.000**
Audit Fees	184	\$6.25	\$18.77	708	\$2.85	\$ 6.56	\$3.40	2.42	.016*
Total Audit Fees	184	\$6.80	\$19.41	708	\$3.50	\$ 8.4	\$3.30	2.25	.025*
Revenues	171	\$1.3	\$ 4.44	687	\$ 2.8	\$15.17	-\$1.5	-2.23	.026*

**Significant at the .01 level.

*Significant at the.05 level.

TABLE 5
Categories of Accounting Errors

Categories of Accounting Errors	Firms Reporting IT Deficiencies (N=189)		Firms Reporting No IT Deficiencies (N=719)	
	No. of Acctg Errors	% of Acctg Errors	No. of Acctg Errors	% of Acctg Errors
Revenue recognition issues	112	12.57*	174	8.97
Inventory vendor and cost of sales issues	93	10.44*	151	7.79
Accounts loans receivable investments cash	89	9.99*	142	7.32
Liabilities payables reserves and accruals	88	9.88*	162	8.35
Tax expense benefit deferral other FAS109	64	7.18	235	12.12
PPE intangible or fixed asset value issues	60	6.73*	108	5.57
Foreign related party affiliate and subsidiary	48	5.39*	80	4.13
Fin stmt fntte US GAAP segment disclosure	40	4.49*	68	3.51
Lease FAS5 legal contingency commitment	34	3.82	107	5.52
Consolidation FIN46 Off BS foreign currency	31	3.48*	49	2.53
Inter-company investment subsidiary issues	31	3.48	35	1.81
Capitalization of expenditures issues	28	3.14	55	2.84
Acquisition merger disposal or reorganization	25	2.81	70	3.61
Debt quasi debt warrants equity BCF security	20	2.24	40	2.06
Deferred stock based or executive comp issues	19	2.13	86	4.44
Leasehold and other FAS13 Issues	19	2.13	69	3.56
Depreciation depletion or amortization issues	18	2.02	79	4.07
Financial derivatives hedging FAS133 issues	18	2.02	66	3.40
Expense recording issues	13	1.46	24	1.24
Income statement classification margin EPS	10	1.12	28	1.44
Unspecified unidentified inapp FASB GAAP	8	.90	17	.88
Gain or loss recognition	7	.79	21	1.08
Cashflow statement FAS95 classification error	7	.79	60	3.09
Balance sheet classification of assets	6	.67	7	.36
Debt equity	2	.22	6	.31
Defective or unreliable acctg reporting records	<u>1</u>	<u>.11</u>	<u>0</u>	<u>.00</u>
Total	891	100.00	1,939	100.00

*Statistical analysis of the top-ten most common reported accounting errors using the chi-square test indicates significance at the less than .001 level for eight of the top ten failures.

TABLE 6
Spearman's Correlation Matrix

	Rev recog issues	Inv vendor cost of sales	Accts loans rec invtmt	Liab paybles reserves accrual est	Tax exp ben def FAS 109	PPE intang fixed asset value	Foreign related party aff/sub	FS notes US GAAP seg disc	Lease FAS5 legal conting comm	Consol FIN46 Off BS foreign curr trans
Revenue recognition issues	1.000	.332**	.382**	.224**	-.011	.129**	.134**	.110**	-.049	.040
Inventory vendor and cost of sales	.332**	1.000	.239**	.244**	.019	.108**	.169**	.092**	-.020	.048
Accounts loans receivable investments	.382**	.239**	1.000	.325**	.032	.204**	.178**	.137**	-.048	.050
Liabilities payables reserves and accruals	.224*	.244**	.325**	1.000	.067*	.303**	.090**	.116**	.124**	.113**
Tax expense benefit deferral FAS109	-.011	.019	.032	.067*	1.000	.101**	.060	.061	-.042	.138**
PPE intangible or fixed asset value issues	.129**	.108**	.204**	.303**	.101**	1.000	.060	.088**	.085**	.072*
Foreign related party affiliated subsidiary	.134**	.169**	.178**	.090**	.060	.060	1.000	.037	-.016	.209**
Fin Stmt footnote US GAAP segment disclosure	.110**	.092**	.137**	.116**	.061	.088**	.037	1.000	-.045	.018
Lease FAS105 legal contingency commitment	-.049	-.020	-.048	.124**	-.042	.085**	-.016	-.045	1.000	.038
Consolidation FIN46 Off BS foreign currency trans	.040	.048	.050	.113**	.138**	.072*	.209**	.018	.038	1.000

**Correlation is significant at the .01 level (2-tailed).

*Correlation is significant at the .05 level (2-tailed).

TABLE 7
Logistic Regression for the
Probability of IT Control Deficiencies

Top Ten Accounting Errors For Companies with IT Deficiencies	Exp. Sign	B	Exp(B)	S.E.	Wald	Sig.
Revenue recognition issues	-	-.981	.375	.197	24.891	.000
Inventory vendor and cost of sales issues	-	-.709	.492	.195	13.199	.000
Accounts loans receivable investments cash	-	-.475	.622	.209	5.187	.023
Liabilities payables reserves accrual estimate failures	-	-.377	.686	.206	3.347	.067
Tax expense benefit deferral other FAS109	+	.272	1.313	.204	1.783	.182
PPE intangible or fixed asset value issues	-	-.493	.611	.226	4.770	.029
Foreign related party affiliated or subsidiary	-	-.494	.610	.237	4.340	.037
Fin Stmt footnote US GAAP segment disclosures	-	-.614	.541	.254	5.831	.016
Lease FAS5 legal contingency commitment issues	+	-.220	.803	.255	.744	.388
Consolidation FIN46 or Off BS foreign currency	-	-.812	.444	.293	7.684	.006
Constant		2.330	10.274	.462	25.452	.000

TABLE 8
Level of Company Improvement for Companies with
IT Deficiencies in 2004 and 2005

Paired t-Test of Company Improvement						
	2004 Mean	2005 Mean	Mean Difference	Standard Deviation	t- Value	p- Value
Companies Reporting IT Deficiencies in 2004 but Not in 2005 (Improved) (n=77)						
Number of Accounting Errors	3.78	1.56	2.22	3.716	5.245	.000**
Companies Reporting No IT Deficiencies in 2004 But Did in 2005 (Regressed) (n=68)						
Number of Accounting Errors	.84	4.29	-3.45	3.174	-8.979	.000**
Companies Reporting IT Deficiencies in Both 2004 and 2005 (Stayed the Same) (n=22)						
Number of Accounting Errors	7.14	6.32	.82	3.924	.978	.339

**Significant at the .01 level.

*Significant at the .05 level.

Table 9
Comparison of Top Ten Accounting Errors
Based on Level of Company IT Deficiency Improvement

	Companies Reporting IT Deficiencies in 2004 but Not in 2005 (Improved) (n=77)			Companies Reporting No IT Deficiencies in 2004 but did in 2005 (Regressed) (n=68)			Companies Reporting IT Deficiencies in Both 2004 and 2005 (Stayed the Same) (n=22)		
	2004	2005	%	2004	2005	%	2004	2005	%
Accounting Errors									
Revenue recognition issues	61	18	70%	11	36	-69%	15	11	27%
Inventory, vendor and cost of sales issues	49	17	65%	4	33	-88%	14	11	21%
Account - loans, receivables, investment, cash	49	15	69%	7	28	-75%	13	12	8%
Liabilities, payables, reserves, accruals, and other est failures	42	18	57%	4	35	-89%	13	11	15%
Tax expense benefit, deferral, and other FAS 109 issues	33	15	55%	1	20	-95%	12	11	8%
PPE intangible or fixed asset value issues	32	12	63%	4	20	-80%	12	8	33%
Foreign related party affiliate and/or subsidiary issues	26	12	54%	2	13	-85%	8	9	-13%
Fin Stmt footnote US GAAP segment disclosure	16	3	81%	6	19	-68%	7	3	57%
Lease FAS 5 legal contingency commitment issues	20	8	60%	4	8	-50%	9	6	33%
Consolidation Fin 46 or off BS, foreign currency issues	12	11	8%	2	10	-80%	6	9	-50%

APPENDIX 1
Audit Analytics
Accounting Errors (GAAP Application Failures)

Acc - Accounts/loans receivable, investments & cash issues

Consists of internal control deficiencies in approach, theory or calculations with respect to cash, cash equivalents, accounts receivable, short-term investments, certain long-term investments, notes, loans collectible, allowance for uncollectibles, notes receivables and/or related reserves.

Acc - Acquisition, merger, disposal or reorganization issues

Consists primarily of internal control deficiencies in approach, theory or calculation associated with the merger, acquisitions, reorganization or disposal issues for registrants. The internal control issues in this area can vary from incorrect application of GAAP to calculate the proper intangible assets levels associated with acquisitions to failure to record the proper reserves for disposal or reorganization. Accounting rules in this area are considered complex and non-routine. This category is often attributed to failures by personnel in understanding certain issues associated with acquisitions or disposals.

Acc - Balance sheet classification of asset issues

Consists of internal control deficiencies in approach, theory or calculation associated with how assets were classified on the balance sheet. Primarily this category is made up of misclassified assets as short term versus long term or whether certain assets were properly considered cash equivalents versus short-term investments.

Acc - Capitalization of expenditures issues

Consists of internal control deficiencies in approach, theory or calculation associated with the capitalization of expenditures. These can include expenditures capitalized for inventory, construction, intangible asset, R&D, software or product development and other purposes. Whether capitalizing expenditures in inventory, leaseholds, buildings or product/software development, the proper methodology can be difficult and demanding on an internal control system.

Acc - Cash flow statement (FAS 95) classification errors

Consists of internal control deficiencies in approach, theory or calculation that manifested themselves in cash flow statements (FAS 95) that are not consistent with GAAP. These misclassifications can affect cash flow from operations, financing, investment, non-cash and other areas. Difficulties with respect to internal control systems over proper disclosure associated with cash flow statements typically occur with non-routine transactions.

Acc - Consolidation, (Fin46r/Off BS) & foreign currency translation issues

Consists of internal control deficiencies in approach, theory or calculation with respect to the consolidation of subsidiaries including variable interest entities and off balance sheet arrangements. This can include mistakes in how joint ventures, off balance sheet entities

were recorded or disclosed. This category also identifies issues associated with foreign currency translations, minority interests, eliminations or other issues associated with consolidations.

Acc – Debt, quasi-debt, warrants & equity (BCF) security issues

Consists of internal control deficiencies in approach, theory or calculation associated with the recording of financing/bank/securities debt or equity section accounts. Control issues in this area often arise because of incorrect recording of beneficial conversion features in debt/quasi debt or equity securities. They can also occur with the calculation of premiums/discounts on debt securities or the proper valuation of certain non-traded equity securities.

Acc - Debt and/or equity classification issues

Consists mainly of internal control deficiencies in approach, theory or calculation associated with the proper classification of debt instruments as short term or long term. This area can also refer to reclassifications between equity and debt accounts or within equity accounts.

Acc - Deferred, stock-based or executive comp issues

Consists of internal control deficiencies in approach, theory or calculation associated with the recording of deferred or executive compensation. The majority of these errors are associated with the valuation of options or similar derivative securities and their recording on the books. Sometimes this issue arises when personnel are paid with shares or options instead of cash. This category also includes other forms of internal control deficiencies associated with executive compensation arrangements.

Acc - Depreciation, depletion or amortization issues

Consists of internal control deficiencies in approach, theory or calculation associated with depreciation of assets, amortization of assets and/or amortization of debt premiums or discounts. This category can also include deficiencies associated with depletion of reserves or amortization of other fixed assets.

Acc - Expense recording (payroll, SG&A) issues

Consists of internal control deficiencies in approach, theory or calculation associated with the expensing of assets or understatement of liabilities. These issues can arise from any number areas including failure to record certain expenses, write off certain assets or acknowledge certain liabilities. This category is used primarily for miscellaneous occurrences of expensable items including payroll and SG&A issues.

Acc - Fin Stmt, footnote, US GAAP , segment disclosure issues

This represents failures or inadequacies in internal controls related to review of preparation of financial statements, footnotes and/or related additions to financial statements. This can also include issues with conversion of foreign company financial statements to US SEC/US GAAP/FASB Standards. It also includes internal control deficiencies associated with segment recording and related annual report disclosures.

Acc - Financial derivatives/hedging (FAS 133) accounting issues

Consists of internal control deficiencies in approach, theory or calculation of derivative instruments. These can include the valuation of financial instruments such as hedges on currency swings, interest rate swaps, purchases of foreign goods, guarantees and other. Often this category is checked when registrants fail to follow the FAS 133 rules for proper documentation or application of its principles.

Acc - Foreign, related party, affiliated and/or subsidiary issues

Consists primarily of internal control deficiencies associated with disclosures about related, alliance, affiliated and/or subsidiary entities. This can also refer to accounting issues detected at foreign subsidiaries. This box is checked mostly in conjunction with other categories to indicate that an issue has been raised in association with a failure at a subsidiary (often foreign sub) that has been deemed to be material to the overall financial condition of the company.

Acc - Gain or loss recognition issues

Consists of internal control deficiencies in approach, theory or calculation with respect to the recording of gains or losses from the sales of assets, interests, entities or liabilities. Mistakes in these areas often result from problems with calculating the proper basis for disposing of an asset or the proper amount to record as sales revenue. Generally, this category relates to issues associated with non-routine or significant transactions.

Acc - Income statement classification, margin and EPS issues

Consists primarily of internal control deficiencies associated with a registrants disclosure of financial/operational ratios or margins and earnings per share calculation issues. Also included are circumstances where income statement items are misclassified between say gross margin and selling general and administrative expenses. This may also deal with issues associated with exceptional items.

Acc - Intercompany/Investment w/ sub/affil issues

Consists primarily of internal control deficiencies in approach, theory or calculation related to intercompany or affiliate balances, investment valuations or transactions. It is often the case that problems arise when intercompany balances are not reconciled and accounted for on a timely basis.

Acc - Inventory, vendor and cost of sales issues

Consists of internal control deficiencies in approach, theory or calculation associated with transactions affecting inventory, vendor relationships (including rebates) and/or cost of sales. The proper recording of inventory can be a complex area of accounting requiring many estimates. The issues can range from simple valuation calculations to estimates of completion on construction projects.

Acc - Lease, FAS 5, legal, contingency & commit issues

Consists primarily of internal control deficiencies associated with FAS 5 type contingencies and commitments. This description also deals with issues associated with the disclosure or accrual of legal exposures by registrants and issues associated leases and

lease commitments. One significant area of impact has been internal control deficiencies associated with determining the proper accounting or determination of operating vs. capitalized leases.

Acc - Lease, leasehold & FAS 13 (98) (subcategory) issues

The category is checked when a lease, leasehold or related issue has been identified with internal or financial reporting controls. This represents a subcategory of the Lease, FAS 5 category.

Acc - Liabilities, payables, reserves and accrual estimate failures

Consists of internal control deficiencies associated with the accrual or identification of liabilities on the balance sheet. These could range from failures to record pension obligations, to problems with establishing the correct amount of payables, accruals or other reserves. From an internal control perspective, issues in this area most often occur because of cut-off failures in recording liabilities and matching them to related revenue or inventory accounts.

Acc - PPE , intangible or fixed asset (value/diminution) issues

Consists of internal control deficiencies in calculation, approach or theory that have taken place in the recording of PPE, fixed, intangible, goodwill or long term assets. It also applies to contra liabilities that are required to be valued or assessed for diminution. Generally, issues associated with long term development projects and goodwill associated with acquisitions are included in this category.

Acc - Revenue recognition issues

Consists of internal control deficiencies in approach, understanding or calculation associated with the recognition of revenue. Many of these restatements originate from a failure to properly interpret sales contracts for hidden rebates, returns, barter or resale arrangements. They can also occur because of misapplied credits or debits associated with customer accounts. This account is generally checked without regard to other accounts they impact, such as accounts receivable.

Acc - Tax expense/benefit/deferral/other (FAS 109) issues

Consists of internal control deficiencies in approach, understanding or calculation associated with various forms of tax obligations or benefits. Many of these restatements relate to foreign tax, local taxes or tax planning issues. Some deal with failures associated with sales taxes, etc. The accounts impacted can include expense, deferral or allowances. With the change in goodwill accounting, a number of issues have arisen with the failure of companies to change the level of permanent differences in their FAS 109 calculations.

Acc - Unspecified/unidentified/inapplicable FASB/GAAP issues

This flag is identified when the 404 or 302 disclosures are lacking in sufficient information to identify what accounts or areas of financial reporting are being impacted by disclosure controls or internal control deficiencies. It may also indicate that a GAAP/FASB effect is not applicable. This flag may not be checked in circumstances where a recent section 404 report or restatement can provide the missing information.

Other - Defective or unreliable accounting/reporting records

Consists of disclosures by a registrant that a scope limitation exists with respect to the company's ability to rely on accounting or internal control records. Typically, no restatement is announced because the amount, if any, cannot be determined.

APPENDIX 2
Audit Analytics
Internal Control Deficiencies

IC - Accounting documentation, policy and/or procedures

Represents material weaknesses deriving from internal control systems that do not contain adequate documentation, policies or other means of justifying account balances. These issues may also include failures to ensure that accounts are recorded based on GAAP, SAB, FASB and/or the appropriate accounting methodology are followed. They may also include failures in policies or procedures designed to gather the correct information on a timely basis or problems with the y/e close process. It also includes failures to employ proper procedures over journal entries, non-routine transactions and other common procedural failures.

IC - Accounting personnel resources, competency/training

Consists of problems with accounting personnel resources, competency, training, experience and/or adequacy in any way. To meet these criteria, such an indication would have to be contained in the filing or in the remediation plan.

IC - Ethical or compliance issues with personnel

Consists of problems with personnel in the areas of compliance with policies, maintenance of ethical standards, fraud and intentional acts that lead to (or could lead to) misstated account balances or financial reports.

IC - Inadequate disclosure controls (timely, accuracy, complete)

Represents material weaknesses related to the adequacy of information flow that should result in a required disclosure.

IC - Ineffective or understaffed audit committee

Represents circumstances where an audit committee may not have the personnel, expert, experience and/or resources to perform their duties to the extent required by Sarbanes Oxley or their charter.

IC - Ineffective regulatory compliance issues

Consists of internal control deficiencies associated with failures to meet regulatory requirements other than taxes.

IC - Information technology, software, security & access issues

Deficiencies in this category include deficient program controls, software programs/implementation, segregation of duties associated with personnel having access to computer accounting or financial reporting records and related problems with oversight/access to electronic data/programs

IC - Insufficient or non-existent internal audit function

Indicates circumstances where a company has stated that its internal audit function was

insufficient in identifying and/or advising in the correction of internal control deficiencies. It cannot also identify circumstances where a registrant has identified a failure to have an internal audit department at all, as a ICFR failure.

IC - Management/Board/Audit Committee investigation(s)

Consists of internal control reports indicating that an internal investigation is underway relative to accounting and/or financial reporting matters. This item is demographic in nature.

IC - Material and/or numerous auditor /YE adjustments

Represents circumstances where one of the explanations for a material weakness opinion was the number and/or size of year-end adjustments including those proposed by the auditor. These adjustments also consider footnote and related errors that need to be corrected by the auditor at year-end. Too many, or auditor initiated year-end adjustments are consider prima facie evidence of a potential material weakness in financial reporting.

IC - Remediation of material weakness identified

Refers to disclosures that indicate that material weakness or internal control weaknesses have been remediated.

IC - Restatement or nonreliance of company filings

Consists of material weakness opinions deriving from problems that led to restatements. Restatements are often evidentiary of prim-facie internal control deficiencies.

IC - Restatement of previous 404 disclosures

Represents circumstances where a company has had to restate its 404 opinion because of some event (most likely a restatement of financials) that has occurred subsequently to filing

IC - Scope (disclaimer of opinion) or other limitations

A material weakness opinion may derive from assertions from the company or auditor that the company had not completed its own review of internal controls and therefore these controls could not be audited. These limitations could come about for any number of reasons.

IC - SEC or other regulatory investigations and/or inquiries

An SEC or related investigation into the company affairs is often evidentiary of accounting or financial reporting issues that point to internal control deficiencies. This category seeks to identify circumstances where registrants have indicated in their 404 assertion that an SEC investigation or inquiry is underway.

IC - Segregations of duties/ design of controls (personnel)

This category covers internal control deficiencies associated with the design and use of personnel within an organization. It primarily deals with segregation of duty issues, such as clerks having access to both the cash receipts and the bank reconciliation. It may also deal with more sophisticated design of control issues relating to executives having the

ability to change customer records, etc.

IC - Senior management competency, tone, reliability issues

This category has been established to identify circumstances where internal control weaknesses are attributed directly to potentially improper or negligent conduct of the current or former senior management of the company. This does not necessarily mean that the assertion is correct, just that such language exists in the filing.

IC - Untimely or inadequate account reconciliations

In reviewing internal control assertions or opinions it is often the case that inadequate account reconciliations are identified as the reason for material or numerous adjustments. This category seeks to specifically identify such circumstances.