Avoiding Costly Errors in Your Spreadsheets

What method do you use to produce "contractual documents? In the 2002 *CFMA Information Technology Survey for the Construction Industry,* 55% of the respondents said they use Microsoft Word/Excel. In 2004, that jumped to 85% (90% overall among H&H contractors and 93% among H&H contractors with $26 million to $100 million in revenues).

Notable, too: 35% of respondents use Excel as their estimating tool (44% overall among general contractors [GCs] and 58% among GCs with $5 million to $10 million in revenues). Clearly, Excel is a workhorse among construction firms.

Caution: A recent article in *Computerworld*

PwC's Practical Five-Step Program for Evaluating Spreadsheet Controls

Step 1: Inventory all spreadsheets used to support significant financial processes. Identify how the spreadsheets support all significant accounts and financial statement disclosures, along with their relationships to relevant financial statement assertions. Include the name of the spreadsheet, a brief description of the spreadsheet, the financial amounts calculated, the department responsible for the "development" of the spreadsheet, and any other departments that utilize the spreadsheet.

Key: Evaluate all departments using spreadsheets, including financial reporting, cost accounting, tax, actuarial, and operations. This step is critical to ensure that spreadsheets in use within the organization are defined and evaluated.

Step 2: Evaluate the use and complexity of each spreadsheet. This involves determining a spreadsheet's category of uses (operational, analytical, and financial) and then assigning and documenting a level of complexity (low, moderate, or high).

Categories for uses:

● *Operational:* These spreadsheets are used to facilitate the tracking and monitoring of workflow that support operational processes, such as listing of open claims, unpaid invoices, and information that would have been retained in paper file folders.

● *Clarification:* These spreadsheets are used to monitor and control financial transactions, making sure they are captured accurately and completely.

● *Analytical/management information:* These spreadsheets are used to support analytical review and management decisionmaking, and to evaluate the reasonableness of financial amounts.

● *Financial:* These spreadsheets are used to determine financial statement transaction amounts or balances that are populated into the general ledger and financial statements.

Categories of complexity:

● *Low:* Spreadsheets that serve as an electronic logging and information tracking system.

● *Moderate:* Spreadsheets that perform simple calculations, such as using formulas to total certain fields or to multiply cells. These often translate or reformat information for analytical review and analysis, recording journal entries, or making a financial statement disclosure.

● *High:* These support complex calculations, valuations, and modeling tools, and are characterized by macros and multiple supporting spreadsheets where cells and spreadsheets are linked. They might be considered applications in their own right.

Key: These spreadsheets are often used to determine transaction amounts or as the basis for journal entries into the general ledger or financial statement disclosures.

Step 3: Determine the necessary level of controls for each spreadsheet. Control concepts to review in this process either (1) protect the data in spreadsheets or (2) ensure that spreadsheets are physically secure.

reports: "Anecdotal evidence suggest that 20% to 40% of spreadsheets have errors." These errors can be costly: As reported in the PricewaterhouseCoopers' (PwC) white paper, *The Use of Spreadsheets: Considerations for Section 404 of the Sarbanes-Oxley Act,* a utilities company took a $24-million charge to earnings after a spreadsheet error—a simple mistake in cutting and pasting—resulted in an erroneous bid for the purchase of hedging contracts at a higher price than it wanted to pay.

What should contractors do to ensure spreadsheet data integrity? Establish stringent controls for your spreadsheets. PwC counsels: "These controls might limit which employees may view and update the spreadsheet, limit the recalculation of key spreadsheet metrics, and review and test calculations embedded in spreadsheets." This advice comes from the aforementioned white paper*,* which emphasizes the need for publicly traded companies to certify the accuracy and reliability of

Protecting the data controls include:

● *Change control:* Maintain a controlled process for requesting changes to a spreadsheet, making changes and then testing the spreadsheet, and obtaining formal sign-off that the change is functioning as intended.

● *Version control:* Ensure that only current and approved versions of spreadsheets are used by creating naming conventions and directory structures.

● *Access control* (e.g., create, read, update, delete): Limit access at the file level to a spreadsheet on a central server and assign appropriate rights. To restrict access, controllers can also password-protect files.

● *Input control:* Make sure that reconciliation occurs. This step ensures that data are input completely and accurately either manually or systematically through downloads.

● *Embedded formula security and integrity:* Implement a process to ensure that data embedded in spreadsheets are current and secure. Make sure cells are locked or protected to prevent inadvertent or intentional changes to standing data. Then, store these spreadsheets in protected directories.

● *Logic inspection:* Have someone other than the user or developer inspect the logic. And formally document this review.

● *Overall analytics:* Use analytics to find errors in spreadsheet calculations.

Ensuring the physical security of data includes:

● *Documentation:* Ensure that there is an appropriate level of documentation and that it is up to date. *Key point:* This explains the business objectives and specific functions of the spreadsheet.

● *Back-ups:* Implement a process to back-up spread-

sheets on a regular basis.

● *Archiving:* Maintain historical files no longer available for update in a segregated drive, and lock them as read-only.

● *Segregation of duties:* Define roles, authorities, responsibilities, and procedures for such issues as ownership, sign-off, and usage.

Step 4: **Evaluate existing "as is" controls for each spreadsheet.** Compare the existing controls against a checklist of necessary controls, based on your examination of spreadsheet use and complexity. Any gaps between existing and necessary controls are remediation items. You can use various manual processes to test controls. *Examples:*

● Maintain two copies of a spreadsheet, with changes made to both spreadsheets by separate individuals. Compare the results.

● Use cell protection to restrict access to a spreadsheet. Further, colleagues can test a sample of cells to ensure that they are password protected.

● Employ standard naming conventions to ensure the use of the current spreadsheet version. Then, inspect a sample spreadsheet to confirm that it follows the standard naming convention.

Key: If the standard naming convention includes the date and time of modification, management must test to determine if that name corresponds to the modification data.

Step 5: **Develop an action plan for remediating control deficiencies.** Develop action plans for each identified control gap. Key stages in these plans are assigning responsibility for actions in each plan, establishing remediation dates, and prioritizing remediation efforts.

(Source: PricewaterhouseCoopers)

spreadsheet-based data. The tips are equally valuable for private companies that are not required to certify their financial statements.

In the sidebar, "PwC's Practical Five-Step Program for Evaluating Spreadsheet Controls," *CBMR* provides an overview of PwC's approach to evaluate the controls that exist for your spreadsheets. This approach considers the following types of spreadsheet errors that can affect information:

● **Input errors:** Errors that arise from flawed data entry, inaccurate referencing, or cutting and pasting.

● **Logic errors:** Errors in which inappropriate formulas are created, thereby generating improper results.

● **Interface errors:** Errors from the import or export of data with other systems.

● **Other errors:** These include incorrect cell ranges or referenced cells, or improperly linked spreadsheets.

Observes PwC: "Spreadsheets vary according to complexity and usage. From the standpoint of controls, it is important to separate these complexity and usage issues because the control requirements may be different for a complex spreadsheet used by one person with specific expertise than for a spreadsheet used and modified by many people."

Your spreadsheet data end up in your financial statements. Although your company may not have to respond to the Sarbanes-Oxley Act Section 404 requirements regarding financial reporting, you do have bankers and sureties who scrutinize your financial statements. Most respondents (74%) to the CFMA survey report that they generate their financial statements through their accounting software.

Still, the survey compilers noted that "a surprising percentage (13%) continue to produce spreadsheets manually." If your company falls into this category, PwC's approach should help you establish spreadsheet controls to ensure your financial information is accurate and reliable.

PwC's action plan also considers eight factors that affect the risk—the accuracy and dependability—of spreadsheet information:

1. Complexity of the spreadsheet and calculations.

2. Purpose and use of the spreadsheet.

3. Number of spreadsheet users.

4. Type of potential input, logic, and interface errors.

5. Size of the spreadsheet.

6. Degree of understanding and documentation of the spreadsheet requirements by the developer.

7. Uses of the spreadsheet output.

8. Frequency and extent of changes and modifications to the spreadsheet.

For more information: PwC's 10-page white paper, *The Use of Spreadsheets: Considerations for Section 404 of the Sarbanes-Oxley Act,* may be downloaded from www.cfodirect.com/cfopublic.nsf/aOpenContent?OpenAgent&content ❑