



**FINANCIAL TRANSACTION REVIEW:**  
Few results identified for further study

A REPORT BY TALBOT, KORVOLA & WARWICK, LLP  
FOR THE CITY AUDITOR  
August 2006



Office of the City Auditor  
Portland, Oregon





CITY OF  
**PORTLAND, OREGON**

OFFICE OF THE CITY AUDITOR  
Audit Services Division

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August 10, 2006

TO: Mayor Tom Potter  
Commissioner Sam Adams  
Commissioner Randy Leonard  
Commissioner Dan Saltzman  
Commissioner Erik Sten  
Tim Grewe, Chief Administrative Officer  
Marty Scott, City Controller

SUBJECT: Financial Transaction Review: Few results identified for further study,  
Report #334, a report by Talbot, Korvola & Warwick, LLP for the City Auditor

Attached is Report #334, which contains the results of transaction testing in the Office of Management and Finance, conducted by the outside accounting firm Talbot, Korvola & Warwick, LLP (TKW). The City Auditor contracted with TKW to conduct the transaction testing, and their results are contained in this report.

Analyzing the City's financial transactions for irregularities is an important part of financial transparency and stewardship over public funds. We asked TKW to analyze all transactions in the City's main financial database for the period from July 1, 2005 through March 31, 2006. In total, the firm analyzed more than 1.1 million financial transactions. They found that less than 0.02% of those transactions warranted further review. Our staff and staff from the City Controller's Office in the Office of Management and Finance reviewed the concerns. Most were explained and required no further review. A small number of transactions raised concerns that are being resolved through OMF. The City Controller's analysis and results are attached, followed by TKW's report.

Other issues brought to light by the transaction testing may be considered for future study.

We appreciate TKW's work to complete this independent review.

  
GARY BLACKMER  
City Auditor

Attachment





# CITY OF PORTLAND

OFFICE OF MANAGEMENT AND FINANCE

Tom Potter, Mayor  
Timothy Grewe, Chief Administrative Officer

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August 1, 2006

Gary Blackmer  
City Auditor  
1221 SW 4<sup>th</sup> Avenue, Room 140  
Portland, Oregon 97204

Dear Gary,

Thank you for sharing the results of transaction testing in the Office of Management and Finance conducted by Talbot Korvola and Warwick (TKW). The Accounting Division of the Bureau of Financial Services has researched the issues identified by TKW with the following results:

### **Weekend Postings**

TKW noted 99 transactions that were posted on weekends. On further analysis, Accounting Division staff determined that most of the transactions were prepared and submitted electronically during normal working hours and posted to the general ledger during normal processing which is scheduled for Friday nights. Two accounts payable entries and nine payroll entries actually did occur on the weekend but all transactions have been reviewed and appear to be appropriate.

### **Related Party Transactions**

TKW identified 42 instances where employees were listed as vendors either because addresses or telephone numbers in the employee payroll files matched those in the accounts payable vendor files. On further analysis, Accounting Division staff identified two instances in which a City employee supplied goods or services to the City while a City employee and several instances where a family or household member supplied goods or services to the City. In both instances where a City employee supplied goods or services the affected bureaus have adjusted their practices to prevent similar occurrences in the future. There is no rule which specifically prohibits an employee's family or household member from selling goods or services to the City so no further action has been taken on this issue.

### **Duplicate Testing**

TKW identified 27 potential duplicate payments. On further analysis Accounting Division staff determined that 3 of these payments in the amounts of \$3,744.80, \$3,846.40 and \$400.82 were in fact duplicate payments. The City has requested reimbursement for all three invoices from the vendors and the Accounting Division will work with the affected bureaus to insure controls are in place to prevent similar occurrences in the future.

Accounting Division  
Marty Scott, Controller

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**Benford's Law**

TKW conducted a Benford analysis to identify possible irregularities by analyzing the frequency of digit and number occurrences. A spike at 500 in the first three digits suggested the possibility that bureau staff were splitting payments to circumvent the \$5,000 limit on the use of Limited Purchase Orders (LPO) on 10 transactions. On further analysis Accounting Division staff determined that two of these transactions were an attempt to circumvent the LPO limits. The affected bureaus have been notified and have agreed to avoid this practice in the future.

For your convenience I have attached a more detailed summary of our analysis. I'd like to thank Drummond Kahn and his staff for their assistance and support during our analysis.

Sincerely,

A handwritten signature in cursive script that reads "Marty Scott".

Marty Scott  
Controller

## RESULTS OF RESEARCH ON TKW IDENTIFIED TRANSACTIONS

June 27, 2006

### Duplicate Payments

TKW staff generated from accounts payable data a listing of 11 potential duplicate payments. Accounting Division staff analyzed these transactions and concluded that three of the eleven were in fact duplicate payments. The amounts were \$3,744.80, \$3,846.40 and 400.82. Two vendors were involved; the City has an ongoing business relationship with both, therefore reimbursement is underway and the risk of loss is minimal. For the details and causes see the attached Excel spreadsheet titled "Duplicate".

Also in the TKW listing are several large pairs of payments for \$166,119.45 and \$189,089.00 that might appear at first blush to be duplicate payments. However, these were invoices that were entered incorrectly into accounts payable, identified as such at the time, and cancelled prior to signing or release of the check from our office. They were at no time at risk as duplicate payments.

### Weekend Entries

TKW generated a listing of approximately one hundred entries that were posted to GL on a weekend date. These transactions originate from four different source systems:

1. **Budgetary Controller (BC):** These transactions are journal entries. They comprise the vast majority of the listed transactions. *None of these were entered on the weekend.* BC transactions are submitted electronically to Accounting, reviewed and uploaded via flat files to the IBIS mainframe. From there they are reviewed and approved on-line and are ready to be posted to GL. The date used by TKW was the posting date. It does not reflect the entry date into the system nor the date the author submitted the journal entry. Posting typically takes place via overnight mainframe job streams. These job streams normally run Friday nights but could due to processing delays in BTS have a weekend posting date.
2. **Accounts Receivable (AR):** Same explanation as with Budgetary Controller.
3. **Accounts Payable (AP):** Unlike # 1 and #2 above AP entries are done online and therefore might be done on a weekend. Included in the TKW data are two AP entries on the weekend. I have reviewed both transactions and see nothing noteworthy or problematic. It must be kept in mind that the actual checks cannot be run on the weekends, therefore the printing matching and reviewing and signing of the checks occurs during the week by staff other than those entering the invoices.

4. **Payroll (PR):** Nine entries were posted on the weekend; all on Dec 31, 2005. The Payroll Supervisor, Norma Romero, reviewed and approves of them. They are for calendar year end process - retirees, terminations and adjustments.

### **Potential Related-Party Transactions**

TKW staff analyzed IBIS payroll and accounts payable data and produced two listings of potential related party transactions: one, an employee and a vendor having matching addresses and the other with matching phone numbers. The identified risk is that an employee or a member of an employee's family is also a vendor supplying goods or services to the city.

The listing of matching addresses contained 28 matches; the phone matches totaled 14. Two were common to both, for a net total of 42 potential related-party situations.

We analyzed the 42 matches and categorized them as follows:

1. **Not Goods or Services:** Payment to employee or employee's household was non-goods or services: refunds, employee reimbursements, payments unrelated to person's employment. No issue of related party transaction. Count: 19
2. **Other:** These include address or phone number problems. Count: 4
3. **IC / Employee Adjacent Times:** Individual was at different and discreet time periods an employee and an independent contractor. Count: 7
4. **Family Member:** Payment was for goods or services supplied by a family or household member of an employee but the employee was not the vendor. Count: 10
5. **Employee Vendor Same Time:** An employee provided goods or services to the city in apparent violation of City Code 5.33.070. Count: 2

The attached Excel spreadsheet titled "Potential Related Party" has tabs "RP Address" and "RP Phone" which contain the 42 listings with the results of our research. Also attached is a PDF file titled "PRP Backup" which contains backup documentation corresponding to the 42 instances listed on the Excel spreadsheet. Numbers in the upper right hand corner correspond with the numbers on the Excel spreadsheet. Note that on spreadsheet Independent contractor identified as "IC".

We found two situations in which a City employee supplied goods or services to the City at the same time they were an employee. The results of our research is detailed in the



attached spreadsheet. Remedial action to end these relationships in one case is complete. In the other it is underway.

We feel several instances categorized as “Family” could prove to be problematic. There is no rule that specifically prohibits an employee’s family or members of a household from selling goods or services to the City, but there are cases in which either PCC 8.3.070 or HR Administrative Rule 11.02 could have been violated. We have detailed the research we have performed in the spreadsheet/ If further information is needed please advise.

### **Potential LPO Violations**

TKW conducted a “Benford” analysis designed to identify possible errors, potential fraud, or other irregularities by analyzing the frequency of digit and number occurrences. The results are a listing of unexpected “spikes”. Among these is a spike at 500 in the first three digits. John Hutzler from the Auditors office felt this might be a symptom of potential splitting of payment to circumvent PCC 5.33.055, which limits the bureaus’ Limited Purchase Order (LPO) purchasing authority to \$5,000 per purchase. John reviewed the transactions and sent us a file with ten potential splitting instances.

We have researched these and conclude that two are inappropriate splitting transactions (see the attached spreadsheet). The bureaus have been notified. On an ongoing basis, accounts payable staff monitor for these situations, but often these cases are difficult to detect. Via training and Web documentation, bureaus have been informed of the LPO limits and that they should not split payments to get around the rule.





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June 2006

Mr. Gary Blackmer, City Auditor  
1221 S.W. 4<sup>th</sup> Avenue, Room 310  
Portland, Oregon 97204

We have completed our transaction testing and analysis of the City of Portland's financial transactions. This report contains our detailed analysis and conclusions based on our review.

Our tests of 1.1 million financial transactions occurring from July 1, 2005 through March 31, 2006, identified less than .02% of transactions that warranted further review. Each of these transactions has been brought to the attention to of the City Auditor. Based on the volume of transactions processed by the City during the time frame tested, it appears the number of transactions requiring additional review is low.

We wish to express our appreciation to City personnel we spoke with for their cooperation and assistance during this analysis.

A handwritten signature in cursive script that reads 'Talbot, Korvola &amp; Warwick, LLP'.

**Talbot, Korvola & Warwick, LLP**





# Transaction Testing and Analysis

## Introduction

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## Introduction

At the request of the City of Portland's Audit Services Division, **Talbot, Korvola & Warwick, LLP (TKW)** conducted transaction testing and analysis of the City's financial transactions to identify anomalies, irregularities, and/or risks in the transactions. Specific areas assessed included:

- Accounts Payable
- Accounts Receivable
- Payroll
- Contract Payments

## Scope and Methodology

Our analysis focused on determining the occurrence of transactions that corresponded to selected test parameters including:

- Duplicate payments
- Payments greater than certain limits
- Changes in salary
- Duplicate account numbers, duplicate addresses, or duplicate insurance or benefit claims
- Gaps in check numbers
- Benford's Law analysis

Financial information for the period July 1, 2005 through March 31, 2006, was requested and provided by the City of Portland's Bureau of Financial Services. Information included General Ledger transaction detail derived from the City's data warehouse system (CARS), employee names and addresses, and vendor names and addresses.

Using the detailed financial information, **TKW** applied IDEA (Interactive Data Extraction and Analysis) software



to extract data and perform various analyses. IDEA allows financial transactions to be analyzed to identify specific characteristics including:

- Analyzing employee master files for attributes indicating potential “ghost” employees.
- Comparing files at two points in time, e.g. the payroll at the beginning and end of the month to identify changes in salary for each employee.
- Identifying items which satisfy specific characteristics, such as payments more than \$10,000 or transactions before a given date.
- Identifying duplicate items - duplicate account numbers, duplicate addresses, or duplicate insurance or benefit claims.
- Searching for gaps in numeric or date sequence - looking for gaps in check numbers.
- Comparing vendor and employee addresses in search of potentially fraudulent payments.
- Analyzing items by postal code or alphanumeric product code or fixed assets by date of acquisition.

The use of automated extract software such as IDEA is commonly used in financial audits to assist auditors in performing substantive analytical procedures and identifying various trends and exceptions. Because of the capabilities of the software, it is frequently used for large volume organizations similar to the City of Portland. Financial information obtained from the City was imported into IDEA, specific tests/comparisons were defined, and 1.1 million records were analyzed.

## **Benford’s Law**

An additional test - Benford’s Law - was also performed. Benford’s Law provides a method to identify possible errors, potential fraud, or other irregularities. It is used to





determine the normal level of number duplication in data sets, which in turn, makes it possible to identify abnormal digit and number occurrence.

Accountants and auditors apply Benford's law to financial data to discover number-pattern anomalies. For large data sets, auditors use highly focused tests that center on finding deviations in various subsets. Because of the City's high volume of transactions, the use of Benford's Law is extremely beneficial.





## Transaction Testing and Analysis

### Results

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## Results

General Ledger data was obtained and tested through IDEA. Over 1.1 million transactions were identified for the period reviewed and categorized by type (Accounts Receivable, Accounts Payable, Purchasing, etc.). Various tests were performed including:

- Identifying weekend postings to the General Ledger
- Comparing employee addresses and vendor addresses
- Comparing employee and vendor phone numbers
- Determining the existence of duplicate payments to vendors
- Applying Benford's Law to General Ledger detail
- Applying Benford's Law to Accounts Payable detail.

Our tests of these financial transactions identified less than .02% of transactions that warranted further review. Based on the volume of transactions processed by the City during the time frame tested, it appears the number of unusual transactions is low.

All transactions identified for additional review were summarized and provided to the Audit Services Division for further review.

The following details results based on the analysis.

### Weekend Postings

Based on the date the transaction was recorded for accounting purposes (not the date the subsystem posted the entry to the general ledger), **TKW** noted 99 transactions posted on weekends. Eighty-two of the entries were



specific to the budget process, nine were related to payroll, six to accounts receivable, and two to accounts payable.

### **Related Party Transactions**

Using Accounts Payable detail, a listing of employee addresses, and a listing of vendor addresses, **TKW** performed related party transaction testing. Joining the Accounts Payable information with the vendor list and comparing it to the employee list, identified several employees that appeared to have been transactions with the City. Some of the transactions may have been for expense reimbursements while others could not be initially determined based on the analysis.

An additional test was performed comparing vendor and employee phone numbers. Although this test is not considered as reliable because of the higher instance of input error with phone numbers, it did identify 40 instances where employee addresses or phone numbers matched those of a vendor.

### **Related Party Transactions**

Duplicate testing performed on the Accounts Payable register - specifically payment dates and invoice numbers - identified 27 potential duplicate payments. Of these, six items had invoice numbers that had been slightly modified when entered into the system, e.g.: 1234 v. 1234. or 5678A v. 5678-A. TKW also noted 11 items that were paid on different dates but with all other information the same (same amount, invoice number, etc.).



## Benford's Law

### General Ledger

Applying Benford's Law on the absolute value of each line item in the General Ledger detail (1.1 million transactions), the following resulted:

- 1<sup>st</sup> Digit  
More transactions than expected with the number "1" as their first digit were identified. The numbers "7", "8", and "9" were slightly less than expected.
- 1<sup>st</sup> Two Digits  
"10-15", "20", "25", "29", "30", "40", "60", and "75" were slightly higher than expected. A spike in "50" was also noted.
- 1<sup>st</sup> Three Digits  
The range between "100" and "150" has multiple occurrences over the expected amount. There were also spikes at "200", "290", "300", "400", "450", "500", "520", "550", "600", "650", "700", "750", "800", "900", "950", and "990-993".
- 2<sup>nd</sup> Digit  
More transactions than expected with "0" as their second digit were identified. The counts of "1", "6", and "7" as a second digit were slightly less than expected.

### Accounts Payable

Applying Benford's Law on the absolute value of each line item in the Accounts payable register resulted in the following:

- 1<sup>st</sup> Digit  
More transactions than expected with the number "1" as their first digit were identified. The numbers "7", "8", and "9" were slightly less than expected.
- 1<sup>st</sup> Two Digits  
"10-15", "20", "25", "29", "40", "60", "75", and "99" were slightly higher than expected. Spikes in "29" and "50" were also noted.



- 1<sup>st</sup> Three Digits  
The range between “100” and “150” has multiple occurrences over the expected amount. There were also spikes at “200”, “290”, “300”, “400”, “450”, “500”, “520”, “550”, “600”, “650”, “700”, “750”, “800”, “850”, “900”, “950”, and “990-993”.
- 2<sup>nd</sup> Digit  
More transactions than expected with “0” as their second digit were identified. The counts of “1”, “6”, and “7” as a second digit were slightly less than expected.





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*Financial Transaction Review:  
Few results identified for further study*

Report #334, August 2006

Contracted Service by: Talbot, Korvola & Warwick, LLP

Gary Blackmer, City Auditor  
Drummond Kahn, Director of Audit Services

**Other recent audit reports:**

*Street Paving: More proactive maintenance could preserve additional city streets within existing funding (#324B, July 2006)*

*Bureau of Technology Services: Customers see improved service, but improved communication would help (#314C, July 2006)*

*Portland Development Commission: Economic development efforts effective, but improvements needed to measure and manage future success (#322, June 2006)*

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