



Richmond Office of the City Auditor

Office of the Inspector General

Fighting government waste, fraud and abuse

Umesh Dalal, CPA, CIA, CIG
Richmond City Auditor/Inspector General

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Michael N. Herring
Commonwealth Attorney

The Office of the Inspector General (OIG) has completed an investigation of the Commonwealth Attorney's Office vacation and sick leave balances. The Commonwealth Attorney's Office expressed concern regarding the overall accuracy and completeness of its vacation and sick leave records. They suspected that leave transactions recorded in the leave system software, known as "APEX", were not accurately calculated and/or had been altered improperly. The Commonwealth Attorney's Office requested that the City Auditor's Office conduct an independent investigation to determine the accuracy of its vacation and sick leave balances and investigate the root cause of any noted discrepancies in the agency's leave system. Specifically, the investigation focused on the vacation and leave records of one specified individual whose leave records had been changed. This letter informs you of the results of the investigation.

The conduct of the following three employees was evaluated during this investigation:

Employee 1: Processed payroll

Employee 2: Supervisor to Employee 1

Employee 3: Employee is the APEX System Administrator

Legal Requirements:

In accordance with the Code of Virginia, §15.2-2511.2, the City Auditor is required to investigate all allegations of fraud, waste, and abuse. Also, the City Code section 2-231 requires the Office of the Inspector General to conduct investigations of alleged wrongdoing.

Background:

In January 2012, the City implemented the payroll module of its new computer system known as RAPIDS. To input the initial data, the City staff requested updated leave balances from all the agencies, including the Commonwealth Attorney’s Office. In January 2013, upon receiving a request from Employee 2, Employee 1 made an adjustment to the system parameters to be consistent with RAPIDS records. At that time, Employee 1 identified discrepancies of 173 used vacation and sick leave hours in the absences reported in APEX for Employee 2, who is Employee 1’s supervisor. These hours were deleted from the APEX system and gave Employee 2 greater vacation and sick leave balances. The discrepancies are presented in the following table:

Period	Vacation	Sick
02/08/2010 - 10/08/2010	93	46
02/25/2011 - 04/08/2011	10	
03/28/2012 - 03/30/2012	24	
Total:	127	46

The above hours were restored in the system at the end of January 2013 as the available documentation was provided by Employee 2 who supported this action. The investigators found additional, independent supporting documentation for at least 76% of deleted vacation and 26% of deleted sick leave hours. The restoring of the above hours created a deficit of 85.5 hours in the available vacation leave, and the available sick leave reduced to 8.5 hours for Employee 2. At that time, it became apparent that most of the leave slips for the period prior to January 2011 were destroyed. Employee 2 claimed that 44 hours of vacation and 25 hours of sick leave as documented to have been used in 2009 should be deleted giving Employee 2 an additional leave balance. It should be noted that Employee 2 made no claim about actual use of the leave in 2009 or provided proof of being at work on the disputed days. Employee 2’s request was based on the mere fact that leave cannot be substantiated by actual, available physical documentation. It should be noted that if these used hours, which are supported by independent system records, are removed from the leave balance records, then Employee 2 would benefit by having more available hours of sick and vacation leave.

Methodology:

The investigators obtained and examined the following:

- Vacation and sick leave records from APEX for all current employees from February 2009 through April 19, 2013
- Copies of approved leave sheets from January 2011 through April 19, 2013
- Emails for specified employees
- Copy of the Commonwealth Attorney's Office Leave Policy
- Copy of certified leave records submitted to the City of Richmond's Finance Department for the purpose of data entry into the City's payroll system (RAPIDS)
- Reports of Employee 2's Leave History dated January 16, 2013; August 15, 2012; June 15, 2012; June 2, 2011; and October 19, 2010.

In addition, the investigators interviewed relevant members of the Commonwealth Attorney's staff and a representative of the software vendor. The investigator relied on information provided by the Commonwealth Attorney's Office during this investigation.

Findings:

The APEX system security access information and audit logs were unavailable

- Information about the access levels (rights to create, update, or delete transactions from the APEX system) for each individual was not available. The security access records provide evidence of the user access levels ranging from "read-only" access to having rights to create, update, and delete transactions.
- The audit trail, a historical record of user entries to APEX for creating, editing or deleting transactions, was only available from October 19, 2009 through January 10, 2010, and has now been turned on since January 4, 2013. This represented only partial records as the transactions under review were being recorded from February 2009 through the present. The entries that had been removed from APEX were dated during the period when the audit trail was not turned on.

The APEX system appears to be accurately keeping and computing data

- Employee 3, administrator for the APEX system, indicated the possibility of system or operator error. The investigator reviewed a sample of 426 vacation and sick leave transactions from 10 employees, other than Employee 2, during calendar 2012 and found that approximately 98% of the transactions in APEX either agreed to an approved paper leave slip or to some other support documentation.
- In addition to Employee 2, the investigators selected 10 individuals to verify:
 - The arithmetic accuracy of APEX records to calculate total leave earned
 - Leave used
 - Running leave availability totals
 - Changes in accrual rates due to employees reaching their fifth employee anniversary
 - Year-end adjustments to limit the carryover of available vacation hours to the maximum specified in the Commonwealth Attorney’s Leave Policy.

In all 11 instances, the investigators found no computational errors or evidence to support the explanations of software errors, erroneous addition, or an inexplicable discrepancy of 173 hours attributable to APEX. Finally, no specific examples of inexplicable computational or software errors were provided.

Only Employee 2 would have benefited from the discrepancies

The Investigators’ analysis revealed the following:

Period	Vacation	Sick	Date of Leave History Report on which the hours appeared	Date of APEX Report on which used leave hours no longer appear
02/8/2010 - 10/08/2010	93	46	10/19/10	02/24/12
02/25/2011-04/08/2011	10		06/02/11	02/24/12
03/28/2012-03/30/2012	24		06/05/12	08/15/12

When Employee 1 tried to change the vacation accrual dates to synchronize with RAPIDS pursuant to Employee 2's request, Employee 1 noticed that the vacation availability hours for Employee 2 were changed. Employee 1 contacted the vendor for assistance to determine the root cause of the missing used hours. The vendor affirmed that:

- changing the date of the accrual would not affect used leave entries;
- used leave entries that were no longer present were manually deleted.

Investigators found that Employee 2's actual use of the deleted leave hours was included in the October 19, 2010 leave report (the first complete report available). If the leave hours were not deleted, Employee 2 would have been prevented from using sick and vacation leave.

This issue is discussed as follows:

- During the week of August 15, 2011, Employee 2 had 25.4 hours (assuming no hours had been deleted) of vacation available. However, Employee 2 requested 40 hours of vacation against these available hours which would have created a deficit. The record shows that 93 hours of vacation and 46 hours of sick leave taken during the period from February 8, 2010 through October 8, 2010 were deleted. Therefore, the fact that the hours were deleted benefited and allowed Employee 2 to take the entire vacation requested.
- If the 93 hours of vacation were deleted around August 2011, that deletion would have generated an adequate positive balance to take 40 hours of vacation for the week beginning August 15, 2011 as well as subsequent vacation requests exceeding Employee 2's accruals. The next deficit of four hours would have been generated on September 14, 2012. Employee 2 needed eight hours of vacation on that day. If 10 more hours were deleted prior to the request, the deletion would have benefited Employee 2 and thereby allowed Employee 2 to take the desired vacation hours.
- For the week of October 10, 2012, when Employee 2 needed 24 hours of vacation, Employee 2 would have had a vacation balance of 19.3 hours if the

foregoing assumptions for the timing of deletion hold true. Obviously, Employee 2 could not have taken 24 hours of vacation. The deletion of 24 hours for the period from March 28, 2012 through March 30, 2012, benefitted and allowed Employee 2 to take the desired vacation. These leave hours were subsequently restored.

- Employee 2 needed 16 hours of sick leave for October 3, 2011 and October 4, 2011. Employee 2 had a sick leave balance of 10.5 hours. Taking 16 hours of sick leave would have resulted in a negative sick leave balance. If the deletion of 46 hours of sick leave for the period from February 8, 2010 through October 8, 2010 occurred prior to that request, it would have benefitted Employee 2, and thereby allowed Employee 2 to take the desired sick leave. These leave hours were subsequently restored (Attachment A).

Nothing in this memorandum indicates who deleted the foregoing hours. However, it is clear that deleting these leave hours benefitted Employee 2 by providing available vacation and sick leave hours which otherwise would not have been possible.

Employee 2 used vacation leave far in excess of vacation earned

For the period from October 19, 2010 through October 12, 2012, Employee 2 used 439 hours of vacation. However, Employee 2 had a leave balance of 32 hours on October 19, 2010 and earned only 299.30 hours of vacation during that period. Clearly, Employee 2's use of vacation far exceeded available vacation hours.

Using excessive leave would have been noticed by Employee 1 if some of the leaves were not deleted

The investigators reviewed the processing of requested leave, which exceeded available leave balances, and found that the system would accept the leave request, but APEX will indicate a negative balance by turning the color of the balance text to red. This demonstrates that the processing of any leave exceeding the available balance most likely would have caught Employee 1's attention immediately. At that time, Employee 1 may not have processed the leave

requests. However, if the leave hours were deleted prior to the submission of the leave request to Employee 1, then Employee 1 would not detect the deficit.

Employee 3 had relevant information to resolve the dispute, but it was not shared with management

Review of Employee 2's e-mails indicated that on January 17, 2013 a report generated from the APEX system was transmitted to Employee 3's e-mail account. This report included fields such as date of the transaction, hours of leave, type of leave, who approved the request, if the absence was scheduled or unscheduled, etc. This report clearly documented that Employee 2's leave was approved for the 2009 used leave hours which Employee 2 is disputing. These absences were approved by the Commonwealth Attorney. Employee 3 did not share the report with superiors who were investigating Employee 2's claim.

Concluding Remarks:

Only three employees, Employee 1, 2, and 3, had the access to the APEX system. All of them had ability to add, delete, or alter leave hours.

Employee 1:

This employee processes payroll and has no perceived benefit from deleting Employee 2's leave hours. In addition, numerous errors in processing payroll could have adversely affected Employee 1's continued employment. Employee 1 was the employee that noticed and informed management about the errors in Employee 2's leave balances.

In addition, for Employee 1 to manipulate the system data between 2010 and 2012, Employee 1 needed to have foreknowledge that the validity of the hours would be questioned in 2013 due to the request from Employee 2 to alter a system parameter in APEX to be compatible with RAPIDS. This was not possible.

Employee 3:

From numerous e-mail correspondences between Employee 3 and Employee 2, it is apparent that these employees have a friendly relationship. During the investigation, Employee 3 stated the following:

- Employee 3 had set up Employee 2's account on the APEX system as evidenced by "create" and "write" entries noted on the audit log using Employee 2's user identification. This indicates that Employee 2 had rights to modify and add data entries.
- Employee 3 was not sure if the access provided to Employee 2 would allow Employee 2 to add or delete transactions. However, the investigators observed one deletion entry dated December 9, 2009 on the audit log which revealed that Employee 2's user identification had apparent deletion rights.
- In January 2013, Employee 3 used Employee 2's log-on ID and created a report from the APEX system which clearly documented that the 2009 leave hours disputed by Employee 2 were approved by Employee 2's supervisor. Using Employee 2's e-mail account, Employee 3 e-mailed this report from Employee 2's computer to Employee 3's own computer. Employee 3 did not forward the report or its contents to superiors. Had Employee 3 shared the contents of this report, it would have given information to the Commonwealth Attorney to make an appropriate decision prior to approaching the City Auditor's Office.

Employee 2:

This employee benefitted from the deleted leave hours. Review of the audit log indicates that Employee 2 had system rights to add, modify, or delete transactions.

During the interview, Employee 2 does not confirm or deny actually taking leave corresponding to the disputed hours in 2009. Employee 2 claims that, since the Commonwealth Attorney's Office cannot prove that the hours were used, Employee 2 is entitled to the benefit of these hours. Also, the number of hours deleted in 2010, 2011, and 2012 corresponds to the dates when Employee 2 needed more hours than the available leave balances would allow.

If you have any questions, please contact me at Extension 5640.

Sincerely,

A handwritten signature in blue ink, appearing to read "Umesh Dalal", with a stylized flourish at the end.

Umesh Dalal, CPA, CIA, CIG
City Auditor/Inspector General

Attachment

Attachment A Analysis of Impact of Deleted Hours

Analysis of Vacation						Analysis of Sick					
Date	Type	Used	Earned	Available Balance per 4/17/13 APEX Without the Deleted Hours	Available Balance from 10/19/10 Leave Report With Deleted Hours	Date	Type	Used	Earned	Available Balance per 4/17/13 APEX Without Deleted Hours	Available Balance as from 10/19/10 Leave Report With Deleted Hours
					32.00						15.50
2010-11-15	Vacation		10.00	42.00	42.00	2010-10-26	Sick Leave	3.00		12.50	12.50
2010-11-24	Vacation	4.00		38.00	38.00	2010-11-16	Sick Leave		8.00	20.50	20.50
2010-12-10 to 2010-12-13	Vacation	16.00		22.00	22.00	2010-11-29	Sick Leave	8.00		12.50	12.50
2010-12-15	Vacation		10.00	32.00	32.00	2010-12-06	Sick Leave	3.00		9.50	9.50
2010-12-17	Vacation	3.00		29.00	29.00	2010-12-16	Sick Leave		8.00	17.50	17.50
2011-01-07	Vacation	8.00		21.00	21.00	2011-01-10	Sick Leave	3.00		14.50	14.50
2011-01-15	Vacation		13.30	34.30	34.30	2011-01-15	Sick Leave		8.00	22.50	22.50
2011-02-15	Vacation		13.30	47.60	47.60	2011-01-24	Sick Leave	5.00		17.50	17.50
2011-02-23	Vacation	1.00		46.60	46.60	2011-02-02	Sick Leave	8.00		9.50	9.50
2011-02-25	Vacation	2.00		44.60	44.60	2011-02-15	Sick Leave		8.00	17.50	17.50
2011-03-15	Vacation		13.30	57.90	57.90	2011-03-15	Sick Leave		8.00	25.50	25.50
2011-03-25	Vacation	2.00		55.90	55.90	2011-04-11	Sick Leave	8.00		17.50	17.50
2011-03-29	Vacation	3.00		52.90	52.90	2011-04-15	Sick Leave		8.00	25.50	25.50
2011-03-30	Vacation	1.00		51.90	51.90	2011-04-19	Sick Leave	8.00		17.50	17.50
2011-04-08	Vacation	8.00		43.90	43.90	2011-04-27	Sick Leave	4.00		13.50	13.50
2011-04-15	Vacation		13.30	57.20	57.20	2011-05-15	Sick Leave		8.00	21.50	21.50
2011-04-27	Vacation	4.00		53.20	53.20	2011-05-20	Sick Leave	3.00		18.50	18.50
2011-05-10	Vacation	3.00		50.20	50.20	2011-06-08	Sick Leave	2.00		16.50	16.50
2011-05-12	Vacation	3.00		47.20	47.20	2011-06-15	Sick Leave		8.00	24.50	24.50

Analysis of Vacation						Analysis of Sick					
Date	Type	Used	Earned	Available Balance per 4/17/13 APEX Without the Deleted Hours	Available Balance from 10/19/10 Leave Report With Deleted Hours	Date	Type	Used	Earned	Available Balance per 4/17/13 APEX Without Deleted Hours	Available Balance from 10/19/10 Leave Report With Deleted Hours
2011-05-15	Vacation		13.30	60.50	60.50	2011-06-21	Sick Leave	8.00		16.50	16.50
2011-05-18	Vacation	8.00		52.50	52.50	2011-07-15	Sick Leave		8.00	24.50	24.50
2011-05-26 to 2011-05-27	Vacation	16.00		36.50	36.50	2011-07-20	Sick Leave	8.00		16.50	16.50
2011-06-09 to 2011-06-10	Vacation	9.00		27.50	27.50	2011-07-25	Sick Leave	8.00		8.50	8.50
2011-06-15	Vacation		13.30	40.80	40.80	2011-08-02	Sick Leave	3.00		5.50	5.50
2011-06-29	Vacation	8.00		32.80	32.80	2011-08-10	Sick Leave	1.00		4.50	4.50
2011-06-30 to 2011-07-05	Vacation	24.00		8.80	8.80	2011-08-15	Sick Leave		8.00	12.50	12.50
2011-07-15	Vacation		13.30	22.10	22.10	2011-09-06	Sick Leave	8.00		4.50	4.50
2011-07-18	Vacation	8.00		14.10	14.10	2011-09-15	Sick Leave		8.00	12.50	12.50
2011-08-12	Vacation	2.00		12.10	12.10	2011-09-26	Sick Leave	2.00		10.50	10.50
2011-08-15	Vacation		13.30	25.40	25.40	2011-10-03 to 2011-10-04	Sick Leave	16.00	46.00*	-5.50	40.50
2011-08-15 to 2011-08-19	Vacation	40.00	93.00*	-14.60	78.40	2011-10-06	Sick Leave	2.00		-7.50	38.50
2011-09-15	Vacation		13.30	-1.30	91.70	2011-10-15	Sick Leave		8.00	0.50	46.50
2011-09-15	Vacation	5.00		-6.30	86.70	2011-10-21	Sick Leave	3.00		-2.50	43.50
2011-09-16 to 2011-09-19	Vacation	16.00		-22.30	70.70	2011-10-27	Sick Leave	2.00		-4.50	41.50
2011-09-28	Vacation	2.00		-24.30	68.70	2011-10-31	Sick Leave	8.00		-12.50	33.50
2011-09-29	Vacation	8.00		-32.30	60.70	2011-11-15	Sick Leave		8.00	-4.50	41.50
2011-10-15	Vacation		13.30	-19.00	74.00	2011-12-02	Sick Leave	8.00		-12.50	33.50
2011-11-15	Vacation		13.30	-5.70	87.30	2011-12-15	Sick Leave		8.00	-4.50	41.50
2011-11-18 to 2011-11-23	Vacation	28.00		-33.70	59.30	2012-01-15	Sick Leave		8.00	3.50	49.50

Analysis of Vacation						Analysis of Sick					
Date	Type	Used	Earned	Available Balance per 4/17/13 APEX Without the Deleted Hours	Available Balance from 10/19/10 Leave Report With Deleted Hours	Date	Type	Used	Earned	Available Balance per 4/17/13 APEX Without Deleted Hours	Available Balance from 10/19/10 Leave Report With Deleted Hours
2011-12-13	Vacation	2.00		-35.70	57.30	2012-01-19 to 2012-01-23	Sick Leave	16.00		-12.50	33.50
2011-12-15	Vacation		13.30	-22.40	70.60	2012-02-02	Sick Leave	0.50		-13.00	33.00
2011-12-16	Vacation	3.00		-25.40	67.60	2012-02-14	Sick Leave	2.00		-15.00	31.00
2011-12-27	Vacation	8.00		-33.40	59.60	2012-02-15	Sick Leave		8.00	-7.00	39.00
2012-01-15	Vacation		13.30	-20.10	72.90	2012-03-06	Sick Leave	1.00		-8.00	38.00
2012-01-27	Vacation	3.00		-23.10	69.90	2012-03-13 to 2012-03-14	Sick Leave	11.00		-19.00	27.00
2012-02-06	Vacation	4.00		-27.10	65.90	2012-03-15	Sick Leave		8.00	-11.00	35.00
2012-02-15	Vacation		13.30	-13.80	79.20	2012-04-15	Sick Leave		8.00	-3.00	43.00
2012-02-29	Vacation	2.00		-15.80	77.20	2012-04-16	Sick Leave	4.00		-7.00	39.00
2012-03-15	Vacation		13.30	-2.50	90.50	2012-05-07 to 2012-05-08	Sick Leave	16.00		-23.00	23.00
2012-03-22	Vacation	1.00		-3.50	89.50	2012-05-15	Sick Leave		8.00	-15.00	31.00
2012-03-28 to 2012-03-30	Vacation	24.00		-27.50	65.50	2012-06-06	Sick Leave	8.00		-23.00	23.00
2012-04-04	Vacation	1.00		-28.50	64.50	2012-06-15	Sick Leave		8.00	-15.00	31.00
2012-04-15	Vacation		13.30	-15.20	77.80	2012-07-10	Sick Leave	8.00		-23.00	23.00
2012-04-20	Vacation	8.00		-23.20	69.80	2012-07-15	Sick Leave		8.00	-15.00	31.00
2012-04-27	Vacation	8.00		-31.20	61.80	2012-07-16	Sick Leave	1.50		-16.50	29.50
2012-05-15	Vacation		13.30	-17.90	75.10	2012-08-02 to 2012-08-03	Sick Leave	14.00		-30.50	15.50
2012-05-17	Vacation	3.00		-20.90	72.10	2012-08-15	Sick Leave		8.00	-22.50	23.50
2012-05-18	Vacation	8.00		-28.90	64.10	2012-08-27	Sick Leave	8.00		-30.50	15.50
2012-06-11 to 2012-06-13	Vacation	24.00		-52.90	40.10	2012-09-13	Sick Leave	8.00		-38.50	7.50

Analysis of Vacation						Analysis of Sick					
Date	Type	Used	Earned	Available Balance per 4/17/13 APEX Without the Deleted Hours	Available Balance from 10/19/10 Leave Report With Deleted Hours	Date	Type	Used	Earned	Available Balance per 4/17/13 APEX Deleted Hours	Available Balance from 10/19/10 Leave Report With Deleted Hours
2012-06-15	Vacation		13.30	-39.60	53.40	2012-09-15	Sick Leave		8.00	-30.50	15.50
2012-06-27 to 2012-06-29	Vacation	24.00		-63.60	29.40	2012-10-15	Sick Leave		8.00	-22.50	23.50
2012-07-02 to 2012-07-03	Vacation	16.00		-79.60	13.40	2012-11-15	Sick Leave		8.00	-14.50	31.50
2012-07-15	Vacation		13.30	-66.30	26.70	2012-12-15	Sick Leave		8.00	-6.50	39.50
2012-07-27 to 2012-07-30	Vacation	16.00		-82.30	10.70	2013-01-15	Sick Leave		8.00	1.50	47.50
2012-08-15	Vacation		13.30	-69.00	24.00	2013-02-28	Sick Leave		8.00	9.50	55.50
2012-08-16 to 2012-08-17	Vacation	16.00		-85.00	8.00	2013-03-01	Sick Leave	8.00		1.50	47.50
2012-09-07	Vacation	4.00		-89.00	4.00	2013-03-19	Sick Leave	2.00		-0.50	45.50
2012-09-14	Vacation	8.00	10.00*	-97.00	6.00	2013-03-25	Sick Leave	4.50		-5.00	41.00
2012-09-15	Vacation		13.30	-83.70	19.30	2013-03-31	Sick Leave		8.00	3.00	49.00
2012-10-10 to 2012-10-12	Vacation	24.00	24.00*	-107.70	19.30						
2012-10-15	Vacation		13.30	-94.40	32.60						
2012-11-15	Vacation		13.30	-81.10	45.90						
2012-11-19 to 2012-11-21	Vacation	20.00		-101.10	25.90						
2012-11-30	Vacation	3.00		-104.10	22.90						
2012-12-15	Vacation		13.30	-90.80	36.20						
2013-01-15	Vacation		13.30	-77.50	49.50						
2013-01-17	Vacation	8.00		-85.50	41.50						
2013-01-28	Vacation			-85.50	41.50						
2013-02-28	Vacation		13.30	-72.20	54.80						
2013-03-31	Vacation		13.30	-58.90	68.10						

* Leave hours inserted by the investigators to demonstrate impact of the deleted hours.