UNIVERSITY OF MICHIGAN

REGENTS COMMUNICATION

Item for Information

Subject: Report of University Internal Audits
May and June 2009

Background:

This is the report of the Office of University Audits activities for the period **May through June 2009**. The summaries of audits contained in this report were previously reported to members of the Regents' Finance, Audit and Investment Committee and included in discussions at Committee meetings.

Included in this report:

- Summaries of each audit report issued during the period, including Management's Plan to enhance specific control processes discussed with the audit client and presented in the report.
- Summaries of follow-up review reports issued during the period, including the actions taken by Management. Follow-up reviews are designed to give assurance that Management's Plan for corrective action has been implemented and controls are working appropriately.
- A report on the status of follow-up reviews as of **June 30, 2009**.

If you have any questions or would like additional information, please contact me at 647-7500 or by e-mail at csenneff@umich.edu.

Respectfully submitted,

Carol F. Senneff

Carol F. Senneff, Executive Director
University Audits

ORIGINAL REPORTS

Campus

University of Michigan – Flint Office of Development and Alumni Relations and University Outreach
Issued May 15, 2009 # 2009-811

The Flint Chancellor requested a transitional audit of the Flint Institutional Advancement Office after the Vice Chancellor of Institutional Advancement retired in October 2008. During the planning phase of the audit, University Audits was informed that the office would be dividing into two units: Office of Development and Alumni Relations (Flint Development) and University Outreach (Outreach).

Flint Development
With the reorganization, the position of Vice Chancellor for Institutional Advancement will be replaced with an Executive Director of Development reporting to the Chancellor. A committee is conducting a search to fill this position. In the interim, the Chancellor and U-M Vice President for Development requested the services of an outside fund raising consultant to help provide oversight and guidance for the fundraising staff. The consultant assisted the major gift officers with developing prospect strategies, planning, and management.

Flint Development now consists of a development services team, three major gift officers, an annual giving officer, an alumni relations team, a corporate relations manager, and a foundation relations manager.

The Development/Alumni Constituency (DAC) System provides the authoritative source for alumni addresses, prospect management, and gift processing for the University. DAC is used by the Office of University Development (OUD), as well as development staff across the University. DAC has interfaces to the M-Pathways Student Administration, Human Resources Management, and Financial Systems. OUD has several resources available to assist schools, colleges, and regional campuses across the University. For example, the Development Research and Prospect Management unit assists fundraisers throughout the development community by identifying and clarifying the gift potential of prospective and current donors through biographical, philanthropic, and financial information, as well as by maintaining the prospect management system within DAC.

Outreach
Outreach now reports to the Office of the Provost. Outreach facilitates learning and engagement through collaboration and partnerships between the campus and community. Its operations are funded primarily through outside sources including foundations, trusts, corporations, private individuals, and state agencies.

Outreach is composed of the following:

1. **Center for Civic Engagement** assists faculty with student learning by developing the knowledge, skills, values, and motivation to become civically engaged for life through collaboration with community organizations and local schools.

2. **Center for Applied Environmental Research** partners with students, faculty, and external partners to guide citizens, communities, and organizations in land conservation, water resource protection, and trail and recreation development.

3. **LAUNCH** connects the resources of U-M Flint and the community to promote local talent, support regional networks, advance national trends, and explore international opportunities.

Outreach also coordinates the American Democracy Project, in partnership with the Office of the Provost, which is a movement on over 200 college campuses nationwide to create an intellectual and experiential understanding of civic engagement.

The objective of this audit was to assess whether Flint Development and Outreach have adequate control procedures and business practices in place to monitor the following:

- Core development processes
  - Researching potential donors
  - Annual giving
  - Acknowledgment of donors
  - Utilization of the prospect management system within DAC
  - Updating donor information
  - Addressing donor concerns/complaints
- Security and integrity of donor information
- Consistency with donor intent
- Payroll and select human resource functions
- Procurement
- Budget monitoring
- Cash handling
- Conflict of interest/commitment
- Collecting pledges

Control Issues Specific to Flint Development:

1. Relationship with University Development -The coordination between Flint Development and OUD could be improved. Flint Development is not fully utilizing available resources from OUD which decreases their efficiency and effectiveness. For example, Flint Development and OUD should coordinate efforts for using prospect research so that dedicated attention is placed on this important function.

   Management Plan - The Flint Executive Director of Development will meet with an OUD representative designated by the Vice President for Development to review potential coordination and effective use of resources. The two will develop a Memorandum of Understanding to be reviewed and approved by the Flint Chancellor and Vice President for Development. The Memorandum of Understanding will identify gift processing expectations, prospect research expectations, mentoring services, and other mechanisms by which to improve relationships.

2. Performance Standards -The following performance standards are lacking for the major gift officers:
   - Establishment and review of goals
   - Documented performance metrics
   - Departmental training requirements
   - Approval and monitoring of changing flex schedules

   Without clear standards, regular monitoring, and oversight, major gift officers are not receiving the feedback necessary for continuous improvement.

   Management Plan - When the Executive Director of Development is hired, s/he will work with the Chancellor to establish goals, develop performance metrics, and determine training needs and requirements. Currently the Acting Vice Chancellor of Development and Alumni Relations and the outside fundraising consultant are working with the major gift officers on temporary metrics until the Director is hired. All regularly flexed schedules will be in writing and approved. It will be reemphasized that employee's calendars must be updated daily to reflect their 40 hour workweek.

3. Donor Concerns - A formal process for handling concerns from donors does not exist. Development should establish and document a procedure with the following elements:
   - Responsibility for addressing concerns
   - Guidelines for when to escalate issues to a higher level
   - Process for tracking concerns to help identify potential weaknesses in existing practices
   - Standards for resolving issues and following-up with donors
   - Method for sharing lessons learned/important information with the entire development team

   Management Plan - Flint Development Services will formally document the process for handling donor concerns and maintain it in a central location where it may be accessed and utilized by members of the Flint Development and Alumni Relations team.

4. Prospect Management - Based on a comparison between travel and hosting reports and donor contact reports, the major gift officers are not consistently using the prospect management system in DAC to record and track their contacts with donors. Flint major gift officers do not use reports from DAC to manage their prospects. Each officer has a supplemental system for prospect tracking. The supplemental spreadsheets are not reconciled to DAC on a regular basis. Comparison of the two systems identified several discrepancies with prospect names and addresses.

   OUD's Comprehensive Prospect Coordination Policy states it is the obligation of development staff across the University to utilize the prospect management system in DAC for key elements of prospect management. Updating DAC helps to ensure the best University-wide coordination with respect to donors and clearly states responsibility for managing specific prospects.

   Management Plan - Major gift officers will be reminded to enter donor contact and gift ask information into DAC on a regular basis. Prospect management assignments will be maintained both in DAC and in shadow spreadsheets. To ensure that information in DAC mirrors the information in the spreadsheets, the two programs will be reconciled by Flint Development Services on a quarterly basis beginning in June, 2009.

5. Coordination with Schools - Flint Development works very closely with the Flint campus schools with regard to development efforts; however, there are no clear or standard guidelines for coordination efforts, including prioritizing objectives. Executive management's involvement may be necessary when there are significant conflicting priorities.

   While some basic guidance is provided to the deans and faculty, there is no ongoing education and communication to ensure that key employees across the Flint campus receive training on donor contact protocol.

   Management Plan - The Flint campus will establish a Development Council that will meet at least four times per year. The Development Council will include the academic deans and will be co-chaired by the Provost and the Executive Director of Development.

6. Cash Handling - The cash handling controls for processing gifts received by Flint Development can be strengthened:
   - One individual is responsible for receiving and logging gifts, processing gifts through Gift Administration, preparing deposits, and performing the weekly reconciliation to ensure gifts are accounted for properly. *Note: a separate employee performs a monthly reconciliation.*
   - Checks are not restrictively endorsed "for deposit only" when received.
   - Gifts are deposited three times per week, which does not ensure consistency with the University's daily deposit requirement. Checks not deposited within one day are not secured.

   Management Plan - Gift processing responsibilities will be divided among staff to separate receiving gifts, processing gifts, and reconciling gifts.

   An appropriate deposit stamp will be ordered through the Treasurer's Office and will be used immediately upon receipt.

   Deposits will be made every other day. Gift Administration has recommended that we only deposit funds directly to Mellon Bank and this process runs through a drop box in Ann Arbor. We currently have a courier service to Ann Arbor three days per week and it would not be cost effective for UM-Flint to send a courier daily. On days when deposits are not made, gifts will be secured in a vault or safe.

7. Collecting/Writing Off Pledges - Flint Development does not have documented procedures for following up on uncollected pledges or for writing-off significantly past-due pledges.

   Management Plan - A process for sending pledge reminders and writing-off pledges will be documented. In most cases, pledge payments will be written-off after one year of delinquency. The Executive Director of Development will have authority to make exceptions as appropriate.

Control Issues - Flint Development and Outreach

1. Documented Procedures - Several key office processes for Flint Development and Outreach are not documented. The Flint Development Services Team has a procedures manual which includes Acknowledgement of Donors, Gift Processing, Cash Management, Stewardship, and other business processes; however, the manual has not been updated since 2006. The Flint Development Services Team also provided scholarship guideline manuals for each of the schools to help ensure consistency with donor intent.

   Key operational processes may include, but are not limited to:
   - Annual performance review/setting goals and objectives/establishing performance metrics
   - Conflict of Interest/Conflict of Commitment implementation and management practice
   - Mobile device policies that clarify eligibility criteria and a process to periodically evaluate the program to determine if there is still a business need for each device
   - Gross pay register and statement of activity reconciliation processes
   - Security and integrity of donor information
   - Grant monitoring
   - Reconciliation process for ensuring gifts are entered into the University's system accurately
   - Procurement processes, including the requirement to be fiscally responsible when scheduling travel and hosting by scheduling as many visits/events in one area as possible

- Travel and hosting approval process
- Equipment usage and sign-out, including guidelines for personal usage

Management Plan - A Procedures Manual will be established with procedures reconciled with the Standard Practice Guide.

2. Budget Process - The process for establishing, approving, and monitoring departmental budgets could be improved:
   - Based on the documentation reviewed, it is unclear how the budget for individual units within the office are determined and approved, including the major gift officers' individual budgets.
   - Management reviews monthly budgets based on a system of shadow spreadsheet created by the administrative staff. Shadow systems increase the risk for inaccuracies and inefficiencies and should only be used when the University's system cannot accomplish the unit's objectives.
   - The major gift officers are not monitoring budget reports on a regular basis.
   - There is not a defined method for documenting the explanation for variances.

   Management Plan - The shadow system will no longer be used for the new budget and will be replaced with various U-M systems available to track encumbrances. The budget process detailing how budgets are developed, approved, and monitored will be created with the new Director. Major gift officers will receive their individual budget sheets for each month via email and they will be responsible for reviewing them on a monthly basis.

3. Business Continuity/Disaster Recovery Plan - Flint Development and Outreach do not have business continuity or disaster recovery plans. Business continuity plans help ensure the continuing operation of key business processes within the unit in the event of loss of key personnel or a disaster.

   Management Plan - Management will develop a comprehensive disaster recovery/business continuity plan to define specific procedures required for a timely and orderly resumption of business when faced with a disaster.

4. Separation of Duties - There are some instances where assignments of duties or system access authority provide the opportunity for one individual to perform a complete financial transaction.
   - Procurement: The same person is responsible for initiating purchases, reconciling the statement of activity, and creating the budget sheet for management review.
   - Mobile devices: The same individual is responsible for ordering new equipment, coordinating with vendors, and receiving/tracking equipment.

   Management Plan - A policy to assure that no single individual will initiate, approve, and reconcile procurement transactions will be instituted. A policy to separate the responsibility for ordering mobile devices, coordinating with vendors, receiving/maintaining equipment, and reconciling phone bills will be implemented.

University Audits will conduct a follow-up review in the third quarter of fiscal year 2010 to assess progress on control improvements.

University Unions Focused Review # 2009-809
Report issued June 1, 2009

University Unions (UU) is a student-centered organization within the Division of Student Affairs. It offers a full range of services and amenities needed to support daily campus life. Various UU units provide retail and support services, facilities and programmatic supports, and professional consultations.

In an effort to proactively review control concerns, UU management requested that University Audits assess internal controls related to cash handling and timekeeping. The primary objective of our review was to determine the adequacy of UU policies and procedures to monitor and control the following processes:

- Cash management
- Purchasing
- Inventory
- Payroll

The focus of our testing was limited to two units within UU: Mujo Café and Event Services. Mujo Café is one of 14 stores (referred to as 'self-ops') operated by University Unions. UU Food Services provides administrative oversight to these self-ops. Event Services offers a variety of services to accommodate meetings, conferences, and other events.

The UU Business Office centrally oversees business functions (including cash management, accounts receivable, accounts payable, and payroll) for all UU units. The Cash Office, which is a part of the Business Office, specifically focuses on cash-related oversight (such as imprest cash management and daily cash deposits). During the course of our audit, we also evaluated central imprest cash funds managed by the UU Cash Office to determine whether usage of these funds is appropriate, efficient, and in compliance with University guidelines.

Control Issues:

1. Cash Management
    - University Audits reviewed cash handling controls at a self-op, which has one cash register. In stores with only one cash register, UU Food Services management requires that only one employee operate the register during each shift. Cash register funds are counted and deposited daily; however cash is not counted during the shift change.
    - UU self-ops use imprest cash funds primarily for making change for customer sales and occasionally for incidental purchases. Self-ops keep their imprest cash locked in a vault with a combination lock, and only select employees authorized by UU Food Services can access the fund. Authorized users are not required to count and document the imprest cash balance at the beginning or end of their shifts. UU Business Office suggests that the authorized user(s) count the fund everyday but requires that self-op management audit the fund weekly and submit a report to the UU Business Office. Not counting the cash at the beginning and end of each shift compromises the tracking process so accountability cannot be established for any overages or shortages noted at the end of the day or during weekly audits.
    - UU Cash Office has separate imprest cash funds which are used to provide change to self-ops and reimbursement to UU units for incidental purchases. The Cash Office has also established petty cash funds for some UU units, including Catering Services and the Michigan Union Ticket Office. The Cash Office Manager assigns sub-custodians for these funds and follows departmental procedures for self-op imprest cash oversight to monitor the usage and management of these funds. This practice compromises appropriate accountability for the fund. Standard Practice Guide (SPG) Section 501.02-1,

Imprest Cash Funds, advises against assigning sub-custodians and providing anyone other than the custodian access to any portion of the cash amount.

Management Plan -To address cash management concerns, UU management will:

- Review cash handling procedures for all self-ops that have one cash register, and explore various options (e.g., having more than one cash bag, cash counts at the end of each shift) to tailor cash register handling procedures for each of the self-ops based on their size, number of staff operating the cash register, hours of operation, and daily sales demands.
- Revise the current cash handling procedure to include steps to ensure that the authorized users count and document imprest cash fund balances at the beginning and end of each shift.
- Eliminate sub-custodians and establish separate imprest cash funds for each UU unit based on specific business needs.

2. Payroll Observations - Review of payroll procedures revealed that:
   - University Unions department and store managers do not consistently reconcile the gross pay register (GPR).
   - Twice per week, prior to payroll processing, the UU Payroll Office provides department and store managers with the punch detail report (PDR), an internal report from the electronic timekeeping system, which includes all reported hours for the department and store employees. Managers are expected to verify hours included on the PDR, but the review is not consistent. For instance, Event Services management performed partial reconciliation, by reviewing hours worked for only new employees, rather than reviewing hours worked for all staff.
   - One unit uses a logbook in addition to the electronic timekeeping system to record shift start and end times for all employees. However, supervisors do not consistently reconcile time reported on the PDR with the logbook to ensure report accuracy.
   - Self-op managers are responsible for reconciling the GPR, which includes their personal payroll information. No one with higher authority reviews the reconciliation to ensure accuracy of the managers' payroll information. Such practice allows the opportunity for unauthorized changes, which may compromise payroll accuracy.

   Management Plan - Event Services has implemented procedures to ensure that the GPR is adequately reconciled with the PDR and the logbook. The Event Coordinator reconciles timesheets for all hourly staff and provides explanation to document discrepancies between scheduled and actual work hours. The Event Services Director will also review the GPR for the unit for accuracy and appropriateness. The Food Services Associate Director will ensure that the GPR for all self-ops are being reconciled appropriately and will perform a high-level review of the payroll information for all self-op managers. The reconcilers and reviewers will initial and date the documents to establish accountability, and ensure timeliness, adequate management oversight, and proper segregation of duties.

3. Statement of Activity (SOA) Reconciliation - SPG Section 500.01, *Fiscal Responsibilities,* outlines budget monitoring and fiscal management responsibilities. UU self-op managers are responsible for reconciling the SOA and submitting the reconciled statement and supporting documentation to the UU Food Services Associate Director for review. Self-op managers are not consistently reconciling the SOA.

   Management Plan - UU management will reiterate the SOA reconciliation policy to ensure that the SOAs for all units are being reconciled as suggested by the SPG. UU Food Services Associate Director will perform a high-level review and initial the documents.

During the audit, we noted the following issues external to cash and timekeeping controls:

1. I-9 Form Storage - Copies of I-9 Forms used to verify employment eligibility and identity of employees are stored at the unit level. UU management should coordinate with their University Human Resources representative to determine standard procedures for retaining and storing I-9 Forms for all units within the department. The process should ensure that all I-9 Forms are filed securely and can be accessed only by authorized personnel. Copies of completed I-9 Forms should be stored separate from employee personnel files.

   Management Plan - UU internal policy for record retention suggests that I-9 Forms should be submitted to the UU Human Resources representative and discourages unit level retention of the forms. UU management will send out a memo to all units to reiterate this policy.

2. Computer Access - The Mujo Café Manager performs activities that require regular and ongoing computer use, including ordering inventory, preparing schedules, communicating payroll reports to the UU Payroll Office, and sharing documentation with the UU Business Office and UU Food Services via their shared drive. The Mujo Café is not equipped with a computer. The manager typically uses computers located in the Art, Architecture, and Engineering Library at the Duderstadt Center to perform these activities, which requires the manager to be away from the store.

   Management Plan - The Mujo Café Manager's schedule has time allocated for completion of administrative duties (e.g., ordering inventory, preparing schedules, and communicating payroll reports to the UU Payroll Office). The manager has access to computers at Pierpont Commons. Considering the space limitation at the store, UU management is currently considering the option of purchasing a laptop for the store manager's use that can be stored securely and will use minimal space.

University Audits will conduct a follow-up review during the second quarter FY2010 to assess progress on action plans.

Internal Control Compliance - Employment Process # 2008-122
Report issued June 16, 2009

The Sarbanes-Oxley Act of 2002 brought renewed attention to the importance of a strong internal control environment related to financial reporting. The University of Michigan is not required to meet the specific requirements of Sarbanes-Oxley. However, University of Michigan developed a comprehensive plan to implement Sarbanes-Oxley best practices that are applicable to the University's business environment.

In 2005, University leadership established the Office of Internal Controls (OIC), which was tasked with developing an initiative that would raise awareness of the importance of effective internal controls University-wide. The new office collaborated with many units to identify the greatest risks to the University and was charged with promoting best practices to mitigate these risks.

Due to the significant financial risks associated with salary and benefit expenses, employment process controls were the initial focus of this effort. OIC met with management throughout the University to identify internal control best practices and began developing matrices to define and document the inherent risks and respective mitigating controls associated with key operational processes.

During fiscal year 2007, the Associate Vice President for Finance hired a new Internal Controls Compliance Manager to further develop and roll-out the first phase of an internal control initiative focused specifically on the employment process. Subsequent phases of the initiative include, but are not limited to, risks associated with P-Cards, journal entries, and cash handling.

OIC's implementation strategy for the "Employment Process" included two key aspects. First, units were asked to perform a gap analysis to review their current processes against the employment controls outlined in the matrix. They were also asked to develop action plans to address any gaps identified and estimate time to completion. Key objectives of this self-assessment address the following control elements of the employment process:

- Job opening, selection of candidate, and job offer
- Employment eligibility verification and new appointment
- Promotions and change in appointment
- Additional pay, supplemental pay, and incentive pay
- Time reporting
- Termination of employee

Second, the University's annual Unit Certification Process was expanded to include unit attestation regarding the status of the employment process gap analysis.

The goal of the University's certification process is to develop accountability for financial performance and internal controls at the unit level. Accordingly, unit leadership was asked to certify that they understood and accepted responsibility for assuring proper employment controls within their unit. Specifically, they were asked to answer "yes," "no," or "partially" to the following:

- Gap analysis of employment controls not yet completed
- Gap analysis of employment controls nearly completed; or gap analysis completed but plans not yet developed for addressing control gaps
- Gap analysis completed and plans developed to address control gaps, but it is unlikely that actions to close the gaps can be completed within the next 12 months
- Gap analysis completed and plans in place for addressing controls gaps within the next twelve moths

In the interest of continuous improvement, University Audits conducted a review of this first phase of the internal control initiative. Six units of varying size, complexity, and locale were selected as a review sample.

Discussion and Control Recommendations

<u>OIC's Overall Implementation Strategy – Review Results</u>
OIC's introductory meetings and presentations to unit leadership proved effective in promoting an understanding and positive regard for a strong control environment among this audience. OIC's implementation was particularly effective in that it emphasized face-to-face communication with unit leadership and proactive development of gap analysis tools, which the units appreciated. OIC also identified the most common control gaps units faced and developed work aids to lessen the administrative burden associated with filling those gaps, including documented procedure templates and management oversight reports. A review of OIC's initial implementation strategy identified opportunities for continuous improvement; see *Recommendations for OIC* below.

<u>Unit Implementation and Gap Analyses – Review Results</u>
Senior administrators demonstrated an understanding of the internal control initiative's mission and importance to the financial well-being of the University. Analysis of sample unit implementation strategies and gap analyses revealed that where gap analysis was more thorough, testing showed controls were working effectively. Several areas have been identified for improvement; see *Recommendations for Units* below.

- *Observation:* The key controls highlighted in the internal control matrices and the importance of identifying and correcting control gaps did not always effectively permeate beyond the key administrative levels of the units. Interviews with those involved in the first roll-out of the initiative were very aware, but subsequent testing and questioning revealed the information often did not reach those responsible for employment controls. Testing showed that units that ensured materials reached employees with responsibility for internal controls produced highly accurate gap analyses and their certifications were reflective of actual internal controls. Gap analyses that did not include feedback from this level were not as accurate.

  Recommendation for OIC: Expand the target audience for project updates and training materials to include lower-level managers and key staff throughout the organizational structure of each unit. Alternatively, encourage leadership to disseminate the key learning from the internal control matrices and gap analysis.

  Recommendation for Units: Complete a comprehensive roll-out of training materials and work aids related to the internal control initiative throughout the unit's organization. At a minimum, this information should reach the level of employees responsible for the daily use of the controls.

- *Observation:* The actual internal controls present within unit processes were not always robust. Review of gap analysis tools and documentation often revealed the level of time and attention units gave to the gap analysis process. A thorough self-assessment of internal controls leads to better identification of control gaps and, therefore, a more accurate certification.

  Recommendation for OIC: Proactively review unit implementation practices and provide additional guidance and coaching on best practices. Consider collecting gap analysis documentation which could be useful in consulting with units on best practices as well as determining where common or systemic gaps exist.

  Recommendation for Units: Review internal controls thoroughly and with the appropriate staff, at least to the level of the employee responsible for complying with controls (e.g., departmental manager, administrative staff). Complete gap analyses in a comprehensive and meaningful way to ensure controls are appropriate and the certification process is accurate.

- *Observation:* Units were pleased with the initial roll-out of the initiative. However, when staff changes, new delegation of responsibilities, or sub-certification efforts occur, units were unaware that the OIC could be of assistance, particularly with training.

  Recommendation for OIC: Offer regular training opportunities for staff to assist in educating additional key staff responsible for unit internal controls. Consider adding tools such as videos or Frequently Asked Questions to OIC's website.

- *Observation:* Units are concerned with the perceived administrative burden associated with a thorough gap analysis. Key administrators see the value in the work, but are not sure they are able to complete the gap analyses year after year, especially when the processes is done at a detailed level including all sub-units and critical staff.

  Recommendation for OIC: Partner with Michigan Administrative Information Services and other University resources to identify and develop ways to automate the gap analysis process. The gap analysis process may be streamlined if the tools could be web-based or interactive, allowing information to be easily saved, shared, or updated.

Recommendation for Units: Utilize OIC's services and/or resources as needed to ensure gap analysis work is conducted thoroughly.

- *Observation:* OIC is seen as a resource for identifying control problems; however, OIC's willingness and ability to assist and advise on efforts to correct control gaps is not as well understood. For example, units could identify segregation of duties issues but, when faced with limited resources, did not always know how to fix the gap.

  Recommendation for OIC: Continue to communicate OIC's availability to assist administrators in developing plans and identifying resources to address control gaps that have already been identified.

Based on University Audit's review of the implementation of the first phase of the internal control initiative, it is clear the effort is having a positive impact on awareness of the necessity for strong internal controls across the University community and the initiative is making progress toward its objectives.

University Audits will continue to partner with OIC in its ongoing efforts to promote strong controls across the University.

<u>Chemical Biology Doctoral Program Interdepartmental Degree Program</u> # 2009-812
Report issued June 30, 2009

University Audits completed a review of the internal control structure of the Chemical Biology Doctoral Program, which is an interdepartmental degree program (IDP). An IDP is a doctoral program, leading to a single degree that brings together faculty from two or more departments, schools, or colleges and promotes the University's goal of improving research and teaching by interdepartmental and interdisciplinary collaborations. The program reports to the Dean of the Rackham School of Graduate Studies. An executive committee was established to monitor that the program maintains fiscal integrity, sets admissions targets, and creates appropriate student support. The membership includes the Program Director, the Chairs of Chemistry and Biological Chemistry, the Director of Biophysics, the Dean of Pharmacy, and representatives from the Provost's Office and Rackham Dean's Office.

In 2005, to better serve the needs of today's students, the University established a doctoral program focusing exclusively on chemical biology. The discipline of chemical biology is premised on the view that understanding the molecular mechanisms of biological processes provides an opportunity to manipulate them in a defined and predictable fashion. The Chemical Biology IDP brings together faculty from a number of departments (e.g., Chemistry, Biological Chemistry, Medicinal Chemistry, Biophysics) into a single training unit. The program provides students with over 40 different faculty choices for dissertation research.

To assist in the development of the Chemical Biology Doctoral Program, the Provost committed a financial backstop for the first five years of the program (fiscal years 2006 through 2010). Because of this large financial commitment, the Provost's Office is involved in monitoring some of the financial activities of the program.

Audit procedures focused on evaluating key processes at Chemical Biology to assess whether appropriate controls exist. Our review also included analysis of the financial and organizational structure for this IDP.

Our primary objective was to determine the adequacy of Chemical Biology's policies and procedures to monitor and control the following processes:

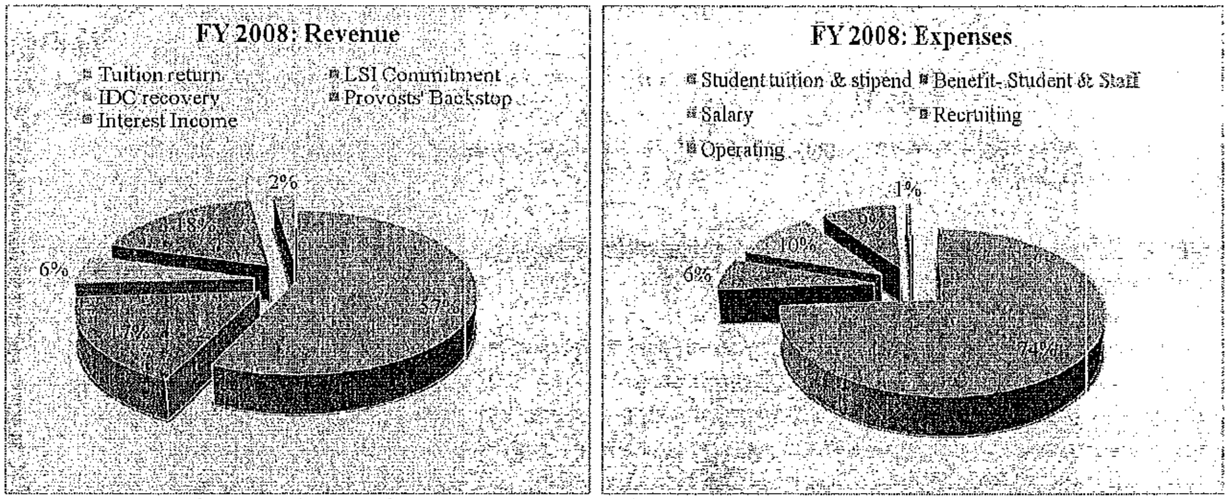
- IDP structure and oversight
- Administration

- Financial reporting
- Budget monitoring
- Recruiting
- Employment
- Information Technology

Control Issues:

Program Reporting and Oversight

1. Program Funding - The following charts display percentages for program revenue and expense sources during fiscal year 2008:



Source: 'Financial Activity by Fiscal Year' report prepared by the Provosts' Office using the M-Pathways data set

- The majority of program funding is provided through tuition return and indirect cost recovery (ICR) from the various participating units. These arrangements have not been formally documented for ongoing support of the program.
- The financial backstop provided by the Provost at the onset of the program expires at the end of fiscal year 2010. The current financial model will require some adjustments to continue program operations without backstop funding.
- To budget for the ICR amount, Chemical Biology estimates the number of students expected to work on sponsored grants within the participating units. At the end of the fiscal year, the program manager calculates the actual ICR amount based on actual student participation. Participating units review Chemical Biology's calculations and transfer the necessary funds to Chemical Biology. However, program expenditures are based on the estimated recovery amount. The resulting difference between actual student participation and projections in any participating unit, has contributed to a shortfall in expected revenue. To date, the overall budget has not been in a deficit position due to the financial backstop provided by the Provost's Office.
- Chemical Biology processes graduate student research assistant (GSRA) appointments for all Chemical Biology students working on participating units' sponsored or training grants. Program management created a form to document each faculty member's commitment to support GSRAs and provide approval to charge the relevant fund for financial support of the students. Signatures are obtained from the chair or director of the participating unit as acknowledgement of the arrangement. The funding department's business manager or grant administrator is not directly involved in this process.

Management Plan - Chemical Biology will work with Rackham and the Provost's Office to update the financial model for the program and establish formal agreements for funding arrangements. Management is currently developing a process to monitor the anticipated ICR amounts on a regular basis based on their students' actual lab selections. As they coordinate with participating units to administer GSRA appointments and fund transfers, management will include the business manager or grants administrator, as appropriate.

2. Budgetary Process - In 2005, at the inception of the program, a financial model was developed based on agreements between program management, various funding units, and the Provost. The model included detailed projected budgets for the first five years of the program, along with any underlying assumptions. Chemical Biology management adjusts the budget annually to reflect actual and updated information, including actual student enrollment, tuition rates, and GSRA appointments. University Audits analyzed Chemical Biology's budget adjustment process and noted the following:
   - The budgeted amounts for some line items on the adjusted budgets for fiscal years 2009 and 2010 differ from the initial financial model and its fundamental assumptions. Explanations for the differences are not formally documented.
   - The program agreement indicates that the budget for each fiscal year should be approved by the Chemical Biology Executive Committee. Program management presents the budget to the Executive Committee during their regular meeting and obtains approval. However, this budget review and approval is not documented.
   - Program management submitted enrollment projection information to the Provost's Office as part of the annual budget process following the same procedures as all schools and colleges. The annual budget is not submitted to Dean of Rackham for approval.

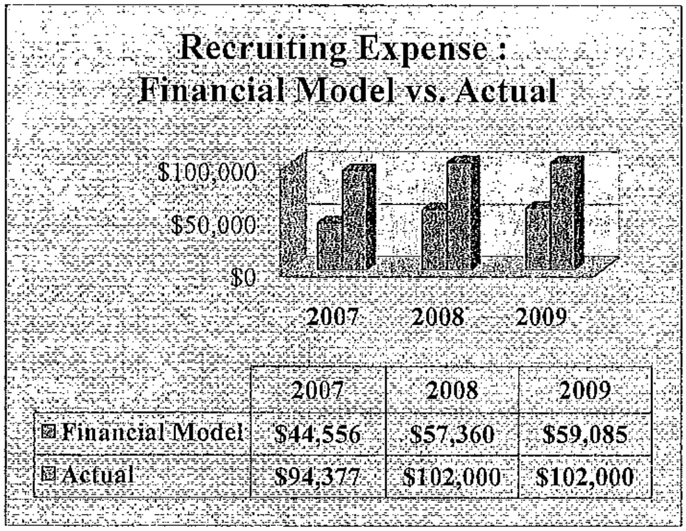
   Management Plan
   - Program management develops the annual budget based on the approved financial model and documents differences between adjusted budget and financial budget models. Management will ensure that the justification is documented appropriately and archived for reference.
   - The budget for each fiscal year will be provided to Rackham for input before submission to the Executive Committee. Program management will submit the final budget to the Dean of Rackham and obtain approval.
   - The Executive Committee meeting minutes will reflect their formal approval of the budget.

3. Financial Monitoring
   - The roles of Rackham management and the Executive Committee include providing oversight to ensure that the program maintains fiscal integrity. Chemical Biology does not provide financial reports to Rackham or the Committee on a regular basis.
   - Chemical Biology management's procedure for monitoring actual expenses against budget line items does not adequately ensure that actual expenses are in line with budgeted expenses. The program manager reviews transactions in total to monitor account usage, but does not review line item detail to identify budget discrepancies.

   Management Plan
   - Program management will prepare an actual to budget report quarterly and submit this report to Rackham and the Executive Committee.
   - Reports will be created to monitor revenues and expenses in detail by budget line item. Periodically, a paper copy of the most recent financial activities will be signed and dated by the director and filed by management.

4. Recruiting Strategy and Expenses - During Chemical Biology's recruiting week, program management supplies funds to selected students to host social outings. Students usually take the visiting perspective students to various establishments around campus following dinner. Faculty is not present at these social outings.

   Recently the Office of Budget and Planning and Rackham prepared a comparative analysis evaluating Chemical Biology's recruiting expenses against recruiting expenditure data for similar University graduate programs. This comparative data indicates that Chemical Biology's recruiting expenses may be higher than some other programs. In 2008, actual recruiting cost per enrollee was approximately $7,460 compared to budgeted amount of $4,500 included in the original financial model. The chart presented below compares the program's recruiting expenses with the initial financial model:



	2007	2008	2009
▨Financial Model	$44,556	$57,360	$59,085
▨Actual	$94,377	$102,000	$102,000

Source: Financial Model prepared by the Provost's Office (July 2008). Actual recruiting expenses were calculated using information provided by Chemical Biology and the M-Pathways Data set.

- Rackham Dean's Office has provided guidance for program recruiting activities. Related procedures, including expense reporting, budget preparation, and faculty involvement should be reiterated with Chemical Biology management.
- Chemical Biology should analyze recruiting strategies to ensure effective use of funds, appropriate reporting, and compliance with Rackham guidelines.

Management Plan - The program has been very successful in recruiting a large number of highly talented students. Program management will continue to obtain and follow procedures specific to recruiting activities from Rackham, consistent with best practices. Program management will evaluate spending patterns related to graduate student recruiting and make necessary adjustments to ensure funds are used appropriately, effectively, and in line with Rackham guidelines.

Program Operations

1. Compliance with Procurement and Hosting Guidelines - Most of Chemical Biology's procurement expenses are related to recruiting. P-Cards are used for all recruiting related travel and hosting expenses. While testing procurement and hosting related samples, University Audits identified some examples of noncompliance with University and Rackham-specific guidelines:
   - During the recruiting week, hosting takes place at multiple locations. Separate attendee lists are not submitted for each hosting receipt to clearly identify which expenses are associated with each guest. As a result, it is difficult to determine whether meal

expenses were reasonable and complied with hosting limit guidelines noted in Standard Practice Guide (SPG) Section 501.04-1, *Travel and Business Hosting Expense Policies and Procedures.*

- Where complete lists of attendees were available, the per person meal expense for recruiting events occasionally exceeded the maximum allowance established by University and Rackham guidelines.
- To comply with federal regulation noted in the *Office of Management and Budget (OMB) Circular A-21*, SPG Section 501.04-1 requires that Indirect Cost Recovery Excluded (ICRX) expenditures are identified by use of the appropriate class ending in "X." For the procurement samples tested, ICRX expenditures were not flagged consistently. A few ICRX expenditures charged to the general fund were not transferred to the designated fund. For example, dinner expense for a recruiting event charged to the general fund included alcohol. This alcohol expense was not deducted from the meal cost or flagged.
- A flower purchase for non-business use, an unallowable expense, was charged to a P-Card.

Management Plan

- Program staff has met with Rackham Business Office staff to review procurement guidelines.
- Program management will obtain periodic feedback from Rackham Business Office to ensure procurement guidelines are followed.
- Program staff will provide appropriate supporting documentation for purchases. Management will continue to review P-Card purchases for adequacy and completeness.

2. Payroll Observations

- Chemical Biology's payroll data submission and approval process was recently restructured. In March 2009, Chemical Biology staff started using Self-Service Time Entry, available via M-Pathways, to report work hours. The Rackham Chief Administrative Officer now approves the Chemical Biology Program Manager's reported time in M-Pathways. Prior to March 2009, the Chemical Biology Director approved the Program Manager's paper timesheet. The Program Manager works from a different location. The Director-approved work schedule or exception time information for the Program Manager was not shared with Rackham. Without adequate information and documentation of the Director's payroll approval, it is difficult for the Rackham Chief Administrative Officer to ensure accuracy, appropriateness, and completeness of the Program Manager's reported time.
- The Program Manager is responsible for approving payroll time data reported by program staff and student employees and reconciling the gross pay register (GPR) to ensure accuracy of payroll transactions. There is no independent review of the GPR reconciliation performed. Such practice may compromise the accuracy of payroll information.
- Documentation of GPR reconciliation performed prior to December 2008 was not available. SPG Section 518.01, *Payroll Controls,* and SPG Section 604.01, *Department Record Retention for Business and Financial Records,* suggest that the GPR and reconciliation documents should be initialed, dated, and retained for two fiscal years plus the current fiscal year.

Management Plan

- The Program Manager is currently sharing the Director-approved work schedule, exception time (e.g. sick, vacation time), and overtime information with the Rackham Chief Administrative Officer on a regular basis.

- Program staff will reconcile the GPR and the Program Manager will review the reconciliation to ensure reliability. To strengthen internal control, management will provide GPR reconciliation information to Rackham for periodic review.
- The Program Manager has started documenting the GPR reconciliation and review as required by the SPG. Additionally, Chemical Biology management is retaining these reconciliation documents as mandated by University policy.

3. Effort Certification - To ensure the University's compliance with federal requirement outlined in *OMB Circular A-21*, SPG Section 501.10, *Policy on Effort Certification* requires that each faculty, staff, and student working on federal and sponsored grants review and sign an Effort Certification Report by the associated deadline. During audit testing, University Audits identified six Chemical Biology students who did not certify their effort in 2008, including the fall, winter, and spring/summer semesters. Management took action during the audit to ensure that these students certify their effort.

   Following the deadline for each term, the Office of Cost Reimbursement provides Chemical Biology with a list of noncompliant students and requires them to contact the students and monitor their effort reporting status. Program management monitors effort reporting, but they do not follow-up to ensure all students have reviewed and signed their Effort Certification Reports by the deadline.

   Management Plan

   - Program management has taken appropriate actions to ensure that all Chemical Biology students are currently in compliance with the federal and University effort certification requirements.
   - The program manager will run the Effort Certification Status report two weeks after students are required to certify their effort for the applicable term to determine the certification status and contact the students who need to certify their efforts. Any email notification received from U-M Cost Reimbursement identifying students who need to either certify or recertify their effort will be forwarded immediately to noncompliant students. Two weeks after the deadline, the program manager will again run the Effort Certification Status report to ensure that all Chemical Biology students are in compliance with the University's effort certification requirements. If the report identifies any exceptions, the program manager will take appropriate measures to resolve the issue.
   - Management will develop a process to ensure that the Effort Certification Report is completed for all students leaving the University, either due to completion of their degree or leaving the program for any other reason.

4. Sensitive Data Record Retention - Chemical Biology retains various student records including admission applications, candidacy information, lab selection forms, graduate student appointment records, I-9 Forms (Employment Eligibility Verification), and W-4 Forms (Employee Withholding Allowance Certificate). Many of these documents contain students' social security numbers and other sensitive data. I-9 Forms, employment files, and academic records are stored together in the Chemical Biology office. Policy for retaining and storing I-9 Forms should ensure that all completed I-9 Forms are stored separate from employee personnel files as required by University policy. Student records should be filed securely and accessible to authorized personnel only.

   Management Plan - All sensitive documents are currently stored in locked file cabinets in a locked office inside the Chemistry Administrative suite. Sensitive documents related to HR (I-9 Forms, W-4 Forms) have been properly disposed of and are no longer stored in student files. Management will retain records as outlined in SPG Section 201.46, *Personnel Records – Collection, Retention, and Release*. The program will keep graduate student records for at least seven years as outlined in the LSA Record Retention Policy (2007). Records will also be kept in compliance with the Family Educational Rights and Privacy Act (FERPA).

5. Service Level Agreement - The Department of Chemistry is the default information technology (IT) service provider for Chemical Biology. Because the Chemical Biology office is physically located in the Chemistry building, and the director and program administrative assistant have partial appointments in Chemistry, they usually seek help from Chemistry IT support when needed. The IT support provided by Chemistry IT includes infrastructure, network, hardware and software support, and data backup. However, Chemical Biology does not have a service level agreement (SLA) with Chemistry IT to formally document the level and quality of services provided. Chemistry IT does not actively monitor Chemical Biology's data backup and recovery process. Moreover, there is no business continuity or disaster recovery plan in place for the program. Additionally, all program computing equipment is not formally registered with Chemistry IT.

   Management Plan - The Chemical Biology program will seek advice from Rackham and work with Chemistry IT to formalize a service level agreement. Adequate measures will be taken to ensure that the agreement adequately describes the level and quality of service provided by Chemistry IT. Chemical Biology's need for adequate disaster recovery and website maintenance will be addressed in the agreement.

6. Conflict of Interest and Conflict of Commitment - The Rackham conflict of interest/conflict of commitment (COI/COC) policy and procedures apply to all Rackham affiliated full-time, part-time, and permanent staff. Faculty and staff members should comply with SPG Section 201.65-1, *Conflicts of Interest and Conflicts of Commitment* and the applicable set of Rackham implementation procedures. Chemical Biology management is responsible for communicating the Rackham COI/COC policy to their faculty and staff members. However, Rackham COI/COC policy and procedures have not been communicated to all Chemical Biology staff.

   Management Plan - The program has contacted Rackham HR to obtain COI/COC policy and procedures and will communicate them to faculty and staff. Management will develop procedures for managing reported conflicts and will annually remind faculty and staff of the policy to ensure compliance.

University Audits will conduct a follow-up review in the third quarter of fiscal year 2010 to assess the effectiveness and adequacy of implemented internal controls identified in management action plans.

Information Technology

Housing Information Technology Office Residential Housing Network # 2009-309
Report issued May 28, 2009

University Audits performed a review of the residential network administered by the Housing Information Technology Office (HITO). This network is the primary means for University Housing residents to connect to networked University resources and the Internet. HITO provides network and computer services to more than 8,000 Ethernet connections in student rooms, thirteen hall residential computing sites, and over 700 staff computers with approximately twenty full-time and eighty student employees.

HITO Network Administrators monitor the functioning of the residential computing network. They respond to networking problems and user actions that appear to violate the Residential Networking Conditions of Use Agreement or University computing policies.

HITO also operates under the ResComp (Residential Computing) name. The ResComp name was created when there were two separate IT groups supporting the housing infrastructure. When the groups combined in 2000, the ResComp name was kept as a brand name for student-facing services because of the familiarity staff and students had with it, and because "Residential Computing" is common terminology used in the industry to describe functions supporting housing networks. HITO also operates the Center for Vulnerability Control (CVC) to assist students in removing viruses and malware from their systems, and patching vulnerabilities.

HITO works in conjunction with ITCOM (Information Technology Communications) to offer network services. HITO maintains everything from the wall jack to just before the connection leaves the building. At this point the connection reaches the border device which is managed by ITCOM, and connects to the University backbone[1]. ITCOM also provides traffic monitoring services to HITO.

To help control internet traffic, HITO uses throttling devices called packet shapers. These devices monitor the traffic flows on the network to keep certain types of traffic that use large amounts of capacity (i.e. peer to peer file sharing, bit torrent downloads, and video game related traffic) from taking up too much of the available bandwidth. To further control traffic, HITO utilizes a vulnerability scanning process for each new device brought onto the network. This prevents infected and vulnerable machines from spreading malicious traffic across the residential network.

This audit included an examination of the Housing residential network. This audit did not address the security (physical or digital) of the servers attached to the network that are not involved in network management or student devices.

The objective of the audit was to evaluate risk relating to the security, availability, and integrity of the Housing residential network by performing the following:

- Assessing processes for managing student interaction with the network
- Assessing overall security of the network
- Assessing availability of the network
- Assessing the health and usability of the network

Control Issues:

- Registration Scans - To help protect the residential network from viruses and other vulnerabilities, HITO employs a registration and vulnerability scanning service to keep insecure systems off the network. Upon connecting to the residential network, a user's web browser is redirected to a registration page that requires the user to log in using their uniqname and Kerberos password. The registration system then logs the uniqname and the MAC[2] (Media Access Control) address of the computer. A security scan is automatically performed on the computer to look for vulnerabilities that may cause problems to other users and the network as a whole. University Audits' review of the registration scanning process found that the system is currently checking user computers for six vulnerabilities.

  In order to provide additional protection to the network against well-known and often-exploited vulnerabilities, University Audits recommends that HITO expand the number of vulnerabilities

[1] The UMnet Backbone is one of three University of Michigan backbone data networks that connect a building's local area networks (LANs) to the Internet. The other two backbone networks are the CAEN (Computer Aided Engineering Network) Backbone operated by the College of Engineering and the UMHS (U-M Health System) Backbone operated by MCIT (Medical Center Information Technology).

[2] A physical hardware address that uniquely identifies a computer by identifying each node of a network where it resides.

scanned for upon connection to the Housing network. An industry-standard list such as the SANS\FBI Top 20 should be used to provide guidance for determining which vulnerabilities need to be included.

Management Plan - HITO will expand the vulnerabilities scanned for using the SANS/FBI Top 20 list for guidance. The expanded list will be tested to ensure scans can still be performed in a timely manner. The list will be reviewed regularly to ensure it is current.

- Patching Through Portal - Systems that do not pass the security scans discussed above are redirected to a network portal page. This page tells the user why their system failed the scan, and provides links to patches the user must apply to bring the system into compliance with minimum security standards prior to connecting to the residential network. To test the effectiveness of the patching process, University Audits connected an insecure system and attempted to access the residential network. The system was properly redirected to the portal page. Two patches were successfully applied but University Audits received errors on multiple attempts to further patch the vulnerable system, leaving the computer unable to successfully connect to the residential network. HITO staff should perform a review of the patching process provided by the portal page. Periodic testing should be employed to ensure its continued effectiveness.

  Management Plan - HITO staff will review, test, and make appropriate changes to the patching function. Because there are so many reasons a patch may fail, and some dependent on the machine that is being patched, HITO will also provide users information on how to get help in the event of a failed patch. This information will be posted on the patching site.

- Vulnerable Systems - HITO underwent a security scan by ITSS to search for vulnerabilities. Multiple systems were identified as containing vulnerabilities including some Housing business application servers. Some of the systems that were identified as vulnerable do not have updates available to secure them at this time because the software provider has not made patches available. HITO has documented these systems and is monitoring them. Other systems identified as vulnerable have not been addressed despite the fact that patches for the identified vulnerabilities do exist.

  Each time a periodic scan is performed, HITO staff should investigate each of the systems identified as vulnerable. Systems that have patches available should be updated and secured. Systems that cannot be patched should be added to a watch list and monitored by the responsible system administrator.

  Management Plan - A process will be put in place to ensure all vulnerable systems are addressed in all future scans. HITO is continuing work with software vendors to get patches for systems that do not currently have patches available.

- Traffic Analysis - ITCom's UMNet group is using PeakFlow to passively monitoring network traffic on the Housing residential network to provide data for analysis. UMNet makes this monitoring data available to network administrators. HITO is not currently reviewing the network monitoring data provided by UMNet.

  During the audit HITO implemented two new methods of monitoring their network using system logs and traffic data from their switches. Data from all these sources can be used to establish network norms, identify trends, and plan for network growth to keep use from outpacing capacity. It can also be used to identify existing and potential problems on systems connected to the network.

Management Plan - HITO will contact ITCom to discuss incorporating PeakFlow data into the network monitoring process.

- Incident Response Procedure - HITO's incident response procedure lists a number of individuals along with their job titles and the roles they play in incident response. Upon review, University Audits found some of these listings to be inaccurate. Inaccuracies in the incident response procedure could cause significant delays in addressing incidents.

  Management Plan - ITO will perform a review of the incident response procedure and update any inaccuracies. Names of individuals in the main document will be placed by titles and an appendix created listing the names currently associated with each title.

- Documentation - Having accurate, up-to-date, documentation helps ensure staff performs their duties accurately and consistently. It also helps new employees learn their job functions rapidly, and helps employees who act as backup for their coworkers complete tasks quickly and more accurately. University Audits reviewed a number of HITO documents that had not been updated with changes, and thus were not accurate.

  Management Plan - HITO is currently in the process of establishing a review cycle for all documentation. HITO staff will review and update documentation as appropriate.

- Signed Service Agreements - While HITO administers the network hardware used for user connections to the Housing residential network, ITCOM administers the devices that connect HITO's hardware to each other and the rest of the University network. A Service Level Agreement (SLA) is in place with ITCOM to govern the management of the border devices. However no signed copies of the SLA could be produced by HITO.

  Management Plan - The rate agreement on file between HITO and ITCom is currently serving as the de facto SLA. HITO will contact ITCom and request a signed copy of a specific SLA document to keep on file. This document will be updated annually in conjunction with the rate agreement.

University Audits will perform a formal follow-up to the outstanding issues during the second quarter of fiscal year 2010.

Data Center and Server Room Reviews # 2009-831
Report Issued May 29, 2009

INTRODUCTION

According to the Vice Provost for Academic Information, information technology (IT) is a $300 million venture at the University of Michigan. It encompasses approximately 88 IT providers, including nine major IT units and twenty-five single-person IT support teams, and as many as 160 locations housing servers.

University IT leaders recently charged management representatives in ITCS (Information Technology Central Services), MAIS (Michigan Administrative Information Service), and MCIT (Medical Center Information Technology) with reviewing the University's computing facilities to help develop a long-term data center strategy. Their objectives were to determine if there is a need for restructuring data facilities and to assess opportunities for expansion and increased efficiency. IT Management[3] requested University Audits assistance in reviewing the facilities and operations of a representative sample of data

[3] This review was requested by director-level representatives from ITCS, MAIS and MCIT collectively referred to in this report as "IT Management."

facilities.

University Audits examined the organization, security, and management at these facilities by:

- Performing full audits of three data centers
- Reviewing findings from recent full audits of two data centers
- Performing limited reviews of nine server rooms using surveys, walkthroughs, and interviews with IT and facilities managers

University Audits analyzed and reported the state of these facilities' control, capacity, and utilization based on these reviews. University Audits also provided recommendations on these facilities future use using the information from the audit and consideration for major trends in the information technology field detailed below.

MAJOR COMPUTING TRENDS

Energy Use

Computing facilities at U-M range in size from small rooms in office and professional buildings (*server rooms*) to large rooms or entire buildings (*data centers*) designed specifically to house computers and networking gear. These data centers and server rooms are major energy users on campus.

According to Gartner Group, a leading IT research firm, data centers are second only to personal computers as an IT device consuming energy. The energy consumed by data center servers and related infrastructure equipment has doubled in recent years:

> *Total power consumed by data center servers in 2005 represented 0.6% of all electricity consumption in the United States in 2005. When you throw in the power consumed by data center's auxiliary infrastructure equipment, including network and cooling gear, that figure jumps to 1.2% of all electricity consumed in the United States*[4].

This trend has continued and is creating a national IT energy crisis.

> *The power needed for a rack of high-density server blades*[5] *can be between 10 and 15 times higher than the power needed for a traditional server environment. Most legacy data centers built 15 to 20 years ago cannot meet this demand. At the same time, a similar amount of additional power will be needed to remove the huge quantity of heat generated by these new machines.*[6]

Virtualization

Virtualization generally means the creation of a conceptual version of an IT resource and dividing it into one or more execution environments housed on a single piece of hardware. Virtualization is changing IT in a number of ways, including:

- *Storage virtualization*: Use of software to amalgamate multiple network storage devices into what appears to be a single storage unit
- *Server virtualization*: Use of software to divide the physical server hardware into multiple virtual environments
- *Network virtualization*: Using network resources through a logical segmentation of a single physical network

[4] "Data Center Energy Consumption Has Doubled Since 2000" by Marianne Kolbasuk McGee. InformationWeek , February 15, 2007

[5] Server blades are high-density machines made up of single circuit boards populated with components such as processors, memory, and network connections that are usually found on multiple boards. Server blades are designed to slide into existing servers. Server blades are more cost-efficient, smaller and consume less power than traditional box-based servers.

[6] "Gartner Urges IT and Business Leaders to Wake up to IT's Energy Crisis," http://www.gartner.com/it/page.jsp?id=496819

- *Application virtualization*: Each application brings down its own set of configurations on-demand, and executes in a way that it sees only its own settings leaving the host operating system and existing settings unaltered. This is sometimes referred to as "sandboxing."

Virtualization can provide significant cost savings. It can reduce the costs of operations of existing infrastructure by making more efficient use of existing computing resources. However, virtualization changes the center of control over hardware and applications by replacing physical boundaries between resources with software-controlled boundaries and by further separating layers of administration. This can result in broader privileges, less effective system audits, and diminished change management. These conditions can weaken internal control and require additional auditing.

Consolidation

Data center consolidation is the process of concentrating computing resources into fewer physical locations. Server consolidation reduces the number of physical servers and may involve the use of virtualization.

Green Computing

Green computing describes the deployment and use of computer resources in an efficient way, encouraging IT managers to consolidate applications onto servers and servers into larger, more environmentally friendly computer rooms. Green computing includes using low-emission building materials, recycling, energy conservation, renewable energy, and other green technologies. "Going Green" can also mean using virtualization technology.

Cloud Computing

Cloud computing is a model for sharing computing resources. Applications, storage, and processing power are made available over the network as services on demand. Using this model, U-M units could take advantage of more advanced, more powerful computing resources than they could afford to purchase outright. They could also eliminate local servers and allow the use of less powerful end-user computing devices. Cloud computing is a growing IT trend:

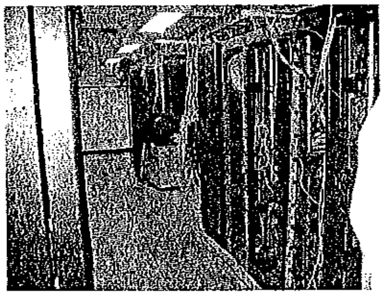
> *Cloud Computing, the long-held dream of computing as a utility, has the potential to transform a large part of the IT industry, making software even more attractive as a service and shaping the way IT hardware is designed and purchased. Developers with innovative ideas for new Internet services no longer require the large capital outlays in hardware to deploy their service or the human expense to operate it. They need not be concerned about over-provisioning for a service whose popularity does not meet their predictions, thus wasting costly resources, or under-provisioning for one that becomes wildly popular, thus missing potential customers and revenue. Moreover, companies with large batch-oriented tasks can get results as quickly as their programs can scale, since using 1000 servers for one hour costs no more than using one server for 1000 hours. This elasticity of resources, without paying a premium for large scale, is unprecedented in the history of IT*[7].

Cloud computing could be implemented within U-M (an *internal cloud*), with other educational and research institutions, or with commercial providers such as Amazon or Google. University units are already beginning to use cloud computing services like Amazon EC2 for data storage, backup, and computation.

[7] *Above the Clouds: A Berkeley View of Cloud Computing*. Armbrust, Fox, Griffith, Joseph, Katz, Konwinski, Lee, Patterson, Rabkin, Stoica, and Zaharia. February 10, 2009. Retrieved from: http://www.eecs.berkeley.edu/Pubs/TechRpts/2009/EECS-2009-28.pdf

DATA CENTERS[8]

Data Center General Information



As part of the project to examine U-M's computing capacity, IT Management in ITCS, MAIS, and MCIT identified certain facilities as data centers. University Audits has performed extensive reviews of five of these facilities. These data centers are generally well managed, well equipped, and reasonably well secured.

Physical Security - All of the facilities control access with magnetic swipe or proximity cards. Each of the data centers employs video surveillance. Two of the data centers have staff that monitor the facility and require guests to sign in and out. Overall physical security is good, but could be improved.

Environmental Concerns - Cooling is well-managed at all but one of the facilities. That data center requires the use of wall-mounted and freestanding fans to assist the CRAC (computer room air conditioner) units. Power is being monitored at all facilities and fire detection and prevention mechanisms are in place.

Hardware Platforms - Only one of the facilities restricts the type of hardware in use.

Network Security - Monitoring, firewalling, and segmentation of traffic differ considerably among the facilities. Network security is correlated to how actively the data center is managed. The more actively managed facilities exhibited greater overall network security. The less actively managed facilities rely on their tenants to handle the security of their own machines.

Incident Handling – As with network security, incident handling is correlated to the level of data center management. In environments where the data center staff control very few (or none) of the machines, incident handling procedures were largely informal and involved removal of network access for problem servers. Detailed incident handling procedures were found at data centers where servers are actively managed by the staff.

Contractors and Third Party Service Providers - All of the data centers employ third parties for maintenance of support systems (e.g., uninterruptible power sources (UPS), generator, air handlers, or chillers). All of the data centers have written agreements with these support providers.

Virtualization - Virtualization is employed to varying degrees. The trend is to move toward virtualization as a solution to power and space limitations. One data center is heavily employing and promoting a virtual server platform as a service offering.

Facility Constraints - Power is the primary constraint for the data centers reviewed. Expansion of some of these data centers is contingent upon upgrades by DTE Energy to expand regional electrical capacity for U-M and other property owners in the area.

Data Center Recommendation

Each data center has its individual strengths and weaknesses. IT management teams should create a development plan for each data center clearly detailing future plans for the facility. Managers should meet regularly to discuss methods and strategies for handling the problems unique to their data center.

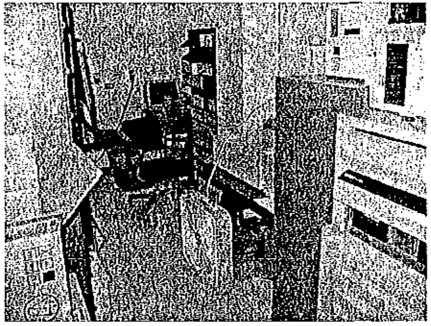
[8] For the purpose of this report, data centers are characterized along Environmental Protection Agency (EPA) guidelines as facilities greater than 500 square feet that house dozens (often hundreds) of servers and have environmental systems designed to support computing equipment. These include under-floor or overhead air distribution systems and multiple computer room air conditioner (CRAC) units.

Managers should identify constraints on the expansion of their facilities and develop plans to address them.

SERVER ROOMS[9]

Server Room General Information

University Audits performed a limited review of nine server rooms using surveys, walkthroughs, and interviews with IT and facilities managers. These reviews did not include the validation steps included in a complete audit. IT management selected the nine sites to be representative of facilities used to house hardware around campus.

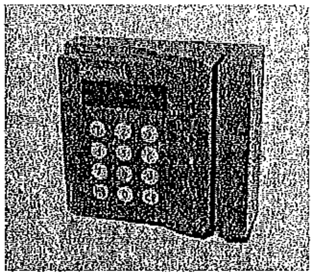


Low staffing levels were reported for the bulk of the server rooms. A number of areas have one person assigned to administration and maintenance. Many are lights-out facilities with no permanent staff. None of the units surveyed indicated that staff regularly worked in the server room.

Most server rooms have an individual specifically assigned to IT security and have submitted IT Security Plans to ITSS (Information Technology Security Services). However, a number of the plans are well over a year old and are in need of update. Less than half the areas surveyed have performed a RECON (Risk Evaluation of Computers on Open Networks). Almost all the facilities surveyed indicated their staff monitors security mailing lists, CERT, and major software vendors' mail groups to stay informed of major vulnerabilities and other security issues.

Approximately one-third of the facilities surveyed are shared facilities. These shared facilities tend to have formal governance committees but the other units do not. Although some units charge back for utilities and maintenance, none of the units reviewed charge for the space.

Based on walkthroughs and discussions with IT personnel, University Audits finds these server rooms to be moderately well-managed, equipped, and reasonably secured.



Physical Security - Overall physical security is good, but could use some improvement. All respondents to the survey reported that their servers were kept in secure areas. Most of the facilities handle access to the actual server rooms via brass keys while access to the main building entrance is controlled by magnetic swipe or proximity cards. More sophisticated mechanisms, such as biometrics, are not used to control access to any of these server rooms. Along with IT personnel, Plant Operations, Department of Public Safety, and departmental facilities staff were commonly identified as having keys to server rooms.

Approximately half the server rooms reported actively reviewing access lists. Two of the facilities employ video surveillance. However, staff does not regularly monitor surveillance footage unless an incident occurs.

Environmental Concerns - Cooling is adequate at the majority of the facilities, even though these rooms were not initially designed as a server room with proper airflow management for housing computing equipment. The size and type of cooling equipment used in server rooms varies widely. Over one-third of the rooms use spot cooling such as portable chillers and fans at least occasionally

[9] For the purpose of this report, server rooms are characterized along EPA guidelines as facilities smaller than 500 square feet that house fewer than 12 servers, and rely on general office cooling and ventilation systems. These systems may be modestly supplemented.

to supplement built-in environmental systems. Only two sites reported having problems with equipment reliability in hot weather, indicating that cooling is functioning adequately at current capacities in most of the facilities reviewed. Only two server rooms reported using high-density servers that present a concentrated source of heat and can lead to hot spots.

None of the server rooms are on a flood plain but several are below ground level and water detection equipment is being used in the majority of the facilities reviewed. Fire detection and prevention mechanisms are in place at the majority of the server rooms.

All of the server rooms reported using battery-operated UPS. Only one of the server rooms has an emergency generator.

Most server rooms reported actively monitoring for target temperatures but not relative humidity. Some sites rely on the Building Automation System (BAS) managed by Plant Operations for environmental monitoring. Power usage is being reviewed at varying levels at all facilities. Larger server rooms tend to employ more complete monitoring systems and could provide guidance for operators of smaller rooms.

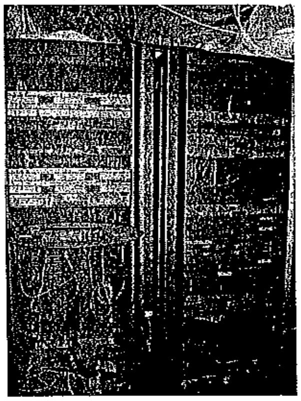
Network Security - Monitoring, firewalling, and segmentation of network traffic considerably differs among the server rooms reviewed. Network security is generally correlated to how actively the server room is managed. The more highly managed facilities exhibited greater overall network security. The less actively managed facilities relied on their tenants to handle the security of each of their machines.

About half the server rooms surveyed are doing some network monitoring. Most use host-based firewalls for network security.

Wireless Security - Half of the facilities reported having wireless access in the server room. All reported instances of wireless connectivity are part of ITCom's UM Wireless Network and not attached to the data center network. Only one area reported testing for rogue wireless access points.

Securing New Systems - About half of the facilities reported that they have guidelines for securing new applications and systems that will be housed in the server room. However, none placed restrictions on the type of hardware used.

Logging and Monitoring - Although most server rooms reported they are monitoring hardware for failures and logging such failures centrally, University Audits did not see evidence of such a coordinated approach to monitoring.



Incident Handling - Incident handling at the examined facilities is largely informal and involves removal of the problem system from the network. All sites but one had a written incident response policy, in accordance with SPG 601.25 - *Information Security Incident Reporting Policy.* Most of these areas indicated they would work with an identified security professional and IT Security Services to resolve incidents.

Disaster Recovery - Disaster recovery procedures were not complete for the server rooms reviewed. None of the server rooms had a detailed disaster recovery procedure. However, development of procedures is either beginning or underway at most of these sites.

Based on survey responses, it would take from several days to a week to restore basic departmental functions from offsite backup tapes. Only one written disaster recovery plan was reported, and it has not been updated in two years.

Contractors and Third Party Service Providers - As expected, most server rooms reported they had no ongoing purchasing contracts or hosting agreements with contractors or other third parties. However, units with infrastructure requiring regular maintenance did have agreements in place.

Virtualization - Virtualization is in the early stages of adoption in these server rooms. The trend is to move toward virtualization to address power and space constraints.

Facility Constraints - The primary constraints on the server rooms reviewed are space and power. Cooling systems are currently adequate, but generally would not support significant expansion.

Other Information - About half the sites indicated that significant changes have occurred or will occur soon in their server rooms. System changes were most frequently predicted.

Server Room Recommendations

Based on our observations and collected data, some of these facilities are well run, but many are not optimal for housing servers. Providing a risk-appropriate level of assurance and reducing the environmental impact of servers in these facilities requires some degree of consolidation. Some units have already banded together to share data facilities in a formal manner. Others are sourcing IT infrastructure from MAIS and ITCS; drastically reducing their need for a local data processing facility. This shows that units are already beginning to recognize the benefits of consolidation and shared infrastructure.

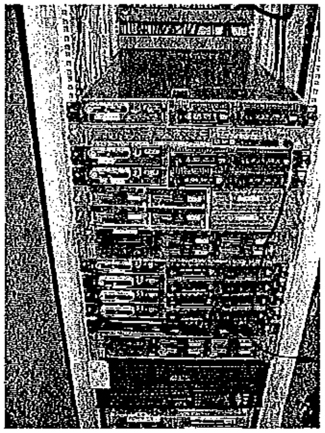
To protect the IT infrastructure at U-M, University Audits considers monitoring of temperature, humidity, power, and the presence of water, smoke, and fire to be essential. Such monitoring should be implemented in all server rooms.

IT Management should encourage server room owners across campus to:

- Eliminate redundant services by migrating to central service offerings
- Virtualize servers where possible
- Consolidate physical servers

Individual units should seek out servers kept in inappropriate spaces and encourage their owners to move them into managed facilities.

Some units present valid arguments for maintaining their own data facilities. These sites should be expected, at least minimally, to conform to the U-M Climate Savers Computing Initiative (CSCI[10] @ U-M) data center best practices for energy efficiency. IT Management should continue reaching out to them with offers of hosting and other central services.



OVERALL RECOMMENDATIONS

Virtualization and Consolidation

University Audits recommends that IT management adopt a plan to virtualize servers and consolidate data facilities. Virtualization and consolidation could translate into hundreds of thousands of dollars in savings campus-wide by reducing space, hardware acquisition, systems management, and utilities costs.

The Environmental Protection Agency (EPA) estimates that consolidation and virtualization can reduce

[10] CSCI is a nonprofit group of eco-conscious consumers, businesses, and conservation organizations.

the energy draw from computing facilities by as much as 25%. Many University units are running only a few underutilized servers in small server rooms which were not designed to support the power and cooling needs of modern computer hardware which generally require dedicated environmental systems. These units would realize significant cost savings and control improvements from consolidation and virtualization.

Campus-Wide Virtualization Service

The foremost server virtualization opportunity is Virtualization as a Service (VaaS), a new campus-wide virtual server service offered to all U-M departments by MAIS. Using this service, units purchase a virtual server with the requested amount of CPU cores, memory, and storage space. The server resides on MAIS-managed hardware in a MAIS-managed data center. Since virtual environments are becoming best practice in data centers, we recommend this service be utilized whenever it meets system requirements. To reach the widest audience, VaaS should be actively marketed both to IT professionals and to faculty and researchers and their staff who maintain computing resources.

The cost advantages, efficiencies, and productivity gains of virtualization are significant. Units usually provision systems for peak load, often leaving servers running at 10% capacity off peak. Virtualization will allow U-M to leverage this excess capacity and mitigate the need for more servers and space to house them.

Analysis of Application Profiles

Management needs to carefully analyze application profiles before proceeding with virtualization. The feasibility and payoff for virtualization depend on application profiles. Many applications are excellent candidates for a virtual environment, especially those with low input/output and central processing unit requirements but some applications, such as large databases, may not be suitable. Systems administrators should be encouraged to explore opportunities for virtualization.

Environmentally Appropriate Server Space

University Audits recommends that departments, schools, and colleges refrain from operating servers in undesignated spaces (e.g., under desks). Servers should be housed in appropriate server closets, server rooms, or preferably in data centers that are environmentally prepared for computer hardware and adhere to energy-saving best practices. Housing servers in other space should be strongly discouraged. IT management should work with schools, colleges, and departments to identify as many servers in undesignated spaces as possible and arrange to have them relocated to controlled facilities.

Matching Server and Site Assurance Levels

University Audits identified three broad classifications of University information systems. Each has its own general level of criticality, requiring different levels of assurance of the security and availability of systems and data. By housing systems in facilities designed to match their required assurance levels, the University would ensure adequate control without over-provisioning or over-securing assets. Therefore, University Audits recommends IT management target existing and new facilities using the following classification-based approach:

Production Administrative/Operational Computing

Many University units rely on specialized systems and applications to carry out their day-to-day operations. For these units and their customers, proper functioning of these systems is very important. A managed data facility can provide greater assurance to these units while relieving them of ancillary IT support duties.

University Audits recommends that IT Management include in their data center strategy the following components supporting administrative/operational computing:

- Maximize use of MAIS data centers for administrative computing
- Mirror all essential systems and data between MAIS Administrative Services Building Data

Center and MAIS Arbor Lakes Parallel Data Center

- Increase the pace of virtualization as VaaS establishes a successful track record
- Strengthen the MACC's (Michigan Academic Computing Center) position as a high availability facility by:
    - Implementing recommended improvements
    - Encouraging efficient and productive use of available capacity
- Measure operation/load down to the rack level (possibly down to the server level)
- Consider relocating high performance computing to another site designed specifically for this function
- Maintain existing use of the ITCS Arbor Lakes Data Facility
- Measure and improve Power Usage Effectiveness (PUE) where the reward is greatest by:
    - Raising temperatures toward the limits of manufacturer warranty to eliminate wasted cooling
    - Upgrading inefficient infrastructure components
    - Reconfiguring and resizing infrastructure to eliminate inefficient design

Patient Care (Clinical) Computing

Clinical computing supports health care professionals in direct care delivery. Clinical systems can involve life-safety issues and often contain Electronic Protected Health Information (EPHI). Therefore, clinical computing resources must be highly secure and continuously available.

The North Campus Data Center under construction by MCIT will provide the means for delivering these assurances. All essential systems and data will be mirrored between the new site and the MCIT Arbor Lakes Computing Facility.

However, clinical computing at U-M extends beyond the Health System. It encompasses the Dental School, Health Service, School of Kinesiology, and other units. The clinical systems and data in these units warrant similar assurances of security and availability. The most efficient way to provide them is to utilize the Health System data facilities that were designed with those needs in mind.

University Audits recommends that IT Management collaborate with the Health System to develop a University-wide hosting service for clinical systems or other systems with life-safety implications. The cost model may be difficult to establish, but focusing the University's effort on a single set of life-safety data facilities is the most efficient and economical approach.

Research Computing

Research activities can require exceptional amounts of computing power or data storage space in addition to everyday record keeping and collaboration. The infrastructure required for this high performance computing (HPC) is in short supply at the University and is already the subject of a major initiative by the Provost's Office.

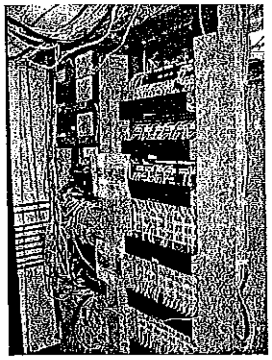
Research often depends less on high or continuous availability than operational and clinical computing do, especially when research is done in the HPC environment, which relies primarily on providing processor power.

Shared HPC computer and storage resources should be centrally managed by technical staff with research support experience in controlled, secure facilities. The MACC, though designed as a research computing facility, is not ideally suited to fulfill the HPC demand. Power is inadequate, and its high-availability assurance would be better spent on systems that actually require high availability.

University Audits recommends that IT Management include in their data center strategy the following components supporting HPC:

- Acquisition of containerized data centers, the advantages of which include:

- Placement wherever sufficient power is available
    - Highly efficient construction and operation
    - Lower capital investment than a brick-and-mortar data center
    - Avoidance of HPC-created hot spots in standard data centers



- Facilitate use of cloud computing by:
    - Directing researchers to cloud computing resources, including grids, government agencies, commercial providers, and peer educational institutions
    - Vetting third-party providers
- Upgrade fire systems, alarms, monitoring systems, and cooling/humidification systems and expand use of SI North as a research computing center by:
    - Implementing recommended improvements
    - Maintaining SI oversight and MOU (Memo of Understanding), or transferring to MAIS/ITCS management

Data Center Best Practices

The CSCI @ U-M Data Center/Server Room Team has created a set of data center best practices for the University environment relating to air flow management, humidification, equipment selection, electrical infrastructure, and lighting.

These best practices are tailored to the computing site size classifications established by the EPA. University Audits recommends that these best practices be adopted by all U-M data centers and server rooms.

Energy Usage Benchmarking

To optimize energy usage within a data center, current energy usage must be measured and benchmarked against peer facilities. University Audits recommends that IT management work with schools, colleges, and departments to evaluate energy efficiency and energy-saving opportunities in each data facility. This could be accomplished through any of the following:

- Self-assessment using the CSCI @ U-M best practice guide
- Planet Blue Team review
- Peer review by a group of U-M data center managers and staff

The assessment should include calculation of the site's Power Usage Effectiveness (PUE) ratio with the assistance of Plant Operations. IT management should measure and improve PUE where the reward is greatest by:

- Raising room temperature toward the limits of manufacturer warranty to eliminate wasted cooling
- Upgrading inefficient infrastructure components
- Reconfiguring and resizing infrastructure to eliminate inefficient design

Availability of Centrally Managed Computing Space

Smaller schools and colleges have a perception that space in centrally managed data facilities is unattainable. This concern should be addressed by IT management in cooperation with the Provost's Office. If space is available in the MACC or other centrally managed facilities, the Provost's Office should revisit their process for allocating space and marketing it to small schools and colleges. If space is not available, the Provost's Office should work with IT Management on behalf of these units to identify or obtain centrally managed server space.

SUMMARY

Detailed examination of nine server rooms and five large data centers by University Audits revealed that the design and condition of facilities housing computing resources on campus varies widely. Units rely on the servers housed in these facilities for purposes with diverse risk profiles such as teaching, research, patient care, and administration. U-M computing needs are diverse and need to be addressed with a variety of approaches combining "green computing" approaches such as consolidation and virtualization of existing University assets with creation of new capacity through provision of new University facilities or acquisition of network services on demand.

Health System

University of Michigan Health System Cardiovascular Center Supply Chain Audit # 2009-105
Issued May 15, 2009

The Cardiovascular Center (CVC) is part of the University of Michigan Health System (UMHS). The CVC opened in June 2007. The CVC is a nationally recognized leader in the diagnosis and treatment of heart and vascular diseases. It offers programs to patients in cardiac medicine, interventional radiology, and cardiac and vascular surgery.

The CVC expenses totaled $121.9 million in fiscal year 2008. Of that total, $45 million was supply related. Of the $45 million, $40.7 million (90.5%) was medical supplies and $2.96 million (6.6%) was pharmacy expenses. Currently, supply chain management in the CVC is a combination of manual and automated systems decentralized by functional area. The CVC is comprised of the following functional procedure areas:

Operating Rooms:

- Eight licensed procedure rooms
- 3,227 procedures conducted in fiscal year 2008
- Supply spend in fiscal year 2008 was $12 million

Electrophysiology (EP) /Catheterization (Cath):

- Five EP procedure rooms and four Cath procedure rooms
- 5,196 EP procedures and 5,231 Cath procedures conducted in fiscal year 2008
- Supply spend in fiscal year 2008 was $14.8 million for EP and $3 million for Cath

Interventional Radiology (IR):

- Two dedicated procedure rooms and one operating room that can be used for IR procedures
- 1,799 procedures in fiscal year 2008
- Supply spend in fiscal year 2008 was $6.7 million

University Audits examined the following processes to evaluate the adequacy and effectiveness of controls governing supply chain management for the EP, Cath, and IR procedure areas:

- Purchasing, receiving, and invoicing
- Drug and device inventory management
- Consigned inventory management
- Investigational and clinical trial devices management
- Device recall management
- Patient billing
- Vendor access
- Conflicts of interest management

Control Issues:

1. Supply Chain Management
   a) Blanket Purchase Orders - Blanket purchase orders (PO) are routinely used to purchase EP implantable devices from vendors. EP implantable device inventory is

managed manually and requires the use of blanket POs to support the current process. While no inappropriate activity was found, University Procurement discourages the use of blanket purchase orders for these reasons:

- Blanket POs are not tied to the MPathways item master to ensure that approved contract pricing is used when purchasing supplies
- Spending on items purchased through blanket POs cannot be tracked and quantified to leverage purchase discounts with vendors
- Blanket POs provide the purchaser with potentially too much latitude in purchasing decisions and may lead to inappropriate purchases
- Blanket POs are difficult to budget as the actual amount spent may not be known for some time after the commitment is made to the vendor

Management Plan - The supply chain team will begin to compile the list of the items required to support the EP implantable device inventory. The listing of the implantable devices will coincide with the implementation of Qsight in the EP lab and the functionality of the requisition loader. The requisition loader will provide the end user with the ability to create product demand in Qsight and then convert the demand to a purchase order in MPathways, which will eliminate the need for blanket purchase orders. The tentative go-live date for Qsight in the EP lab is July 1, 2009. The tentative go-live date for the requisition loader in the EP lab is September 1, 2009. All items required to support the EP implantable device inventory will be complete by August 31, 2009.

b) <u>EP/Cath Inventory Shrinkage Tracking</u> - The EP/Cath inventory management does not conduct periodic physical counts of inventory on hand to reconcile the inventory records and does not track inventory losses or adjustments. Reconciling inventory records with a periodic physical count of the inventory on hand will assist in monitoring any inventory losses, obsolescence, and/or expired product.

Management Plan - A physical count of inventory and reconciliation of inventory records will be conducted at least annually to monitor inventory. Inventory adjustments, shrinkage, and aging reports will be monitored frequently to identify any unusual loss, slow moving items, or adjustments that require follow-up.

c) <u>Drug Management</u> - Omnicell drug storage units are used by University of Michigan Hospital Pharmacy to store, dispense, and track drugs at the unit level. Discrepancy reports are produced by Omnicell whenever drugs have not been properly logged out to a specific patient ID. As part of the discrepancy resolution process, clinic personnel are required to provide explanations for unaccounted for drugs. The explanations provided by CVC personnel for discrepancies between physical drug inventory and Omnicell records are sometimes vague and do not provide adequate explanation for department management to monitor discrepancies of controlled substances. Reconciling personnel use general, pre-programmed reasons provided by Omnicell from a drop down menu instead of inputting specific reasons for the discrepancies. Free-text entries can be made in Omnicell to explain discrepancies. Specific explanations for drug inventory discrepancies will ensure appropriate patient billing, discourage misuse, and identify any unusual patterns of waste.

Management Plan - The Director of Clinical Operations and/or the nursing supervisor will continue to review discrepancy reports daily and address any discrepancies with the nursing staff. Employees who reconcile the discrepancy reports will be trained to provide sufficient, detailed explanations for variances in Omnicell.

d) Concentration of Duties - EP Implantable Devices - The accountant for the Cardiac Procedures Unit, whose responsibilities include EP implantable device inventory management, has a concentration of duties which include ordering, receiving, tracking, and approving the device invoices before forwarding the invoices on to Accounts Payable for payment. Also, the job description of the employee does not adequately describe his duties and responsibilities, is not compliant with UMHS employee file content standards, and may be a contributing factor in the employee's concentration of duties. Concentration of employee duties may lead to error, potential misappropriation, and a disruption in business continuity due to critical employee absence or reassignment.

Management Plan - The accountant's duties will be realigned to ensure appropriate segregation of duties and the job description will be updated to reflect current job duties. Also, other employees will be adequately cross-trained to ensure business continuity.

2. Patient Billing

a) Patient Procedure Charges - A review of fifteen patient accounts related to CVC chargeable supplies identified two instances (IR and Cath) of patient charges that were entered late and not resolved, and therefore ultimately not billed to the payer. The unbilled charges were $14,272 and $20,983, and were posted by the procedure unit after charge posting deadlines. Timely charge posting will ensure complete and accurate billing.

Management Plan - In addition to providing Hospital Billing with a copy of the late charge posting reversal reports, a copy will be provided to the Cardiac Procedures Unit (CPU) and IR Operations Managers, effective immediately. Management will review the late charge posting reversal reports and remediate any significant late charging activity that is impacting revenue recognition.

b) Bill Coding Errors - A review of fifteen patient accounts related to CVC chargeable supplies identified the following bill coding errors:

- One instance (EP) of a $6,200 over-charge to the patient's account due to an incorrect CDM code input by a coder
- One instance (EP) of incorrect supply count used during the procedure. Four guide wires were used in the procedure, though only two were charged to the patient's account.

Appropriate coding and timely resolution of errors will ensure accurate charge capture and reimbursement.

Note: The Department of Internal Medicine Professional Billing Office handles both professional and facility coding for the cardiovascular procedure units.

Management Plan - System improvements have been made to reduce errors in CDM and quantity selection; manual input by the coding staff is no longer required. A request to correct the coding errors noted above has been submitted.

c) Cath-related Codes Not in QSight - CDM billing codes for Cath lab chargeable supplies are not currently maintained in QSight. As a result, chargeable supply items must be manually coded by billing personnel who may not have sufficient knowledge of item descriptions to determine the correct billing code. Loading and maintaining CDM codes in QSight will lead to fewer billing errors, increased billing efficiency, and will positively impact revenue.

Management Plan - QSight will be implemented to full functionality by July 1, 2009. CDM codes will be loaded into QSight by April 30, 2009, and updated timely.

3. Systems Access - QSight and Omnicell contain sensitive patient information and, in the case of Omnicell, direct access to drugs, including controlled substances. A review of QSight and Omnicell security administration in IR and EP/Cath identified the following opportunities to control user access:
   - A departmental security administrator is not identified for Omnicell. Additionally, there is no hospital-wide guidance for Omnicell access control and monitoring.
   - Management does not conduct formal, periodic user access reviews for either QSight or Omnicell
   - There is no formal process for managers to determine when users have left the unit or department to promptly delete staff access to the systems

   Department management is in the best position to monitor access to systems and applications to detect unidentified and/or inappropriate user access.

   Management Plan - Health system management will develop hospital-wide procedures for Omnicell access control and monitoring, including identifying security administrators in each department. The Nursing Medication Safety Committee could conduct quarterly Omnicell user access reviews. Also, a more formal notification process of employee transfers and terminations will be developed so that user access can be updated timely.

   The department security administrators for QSight will conduct formal user access reviews at least quarterly by June 30, 2009.

4. Supply Chain Policy and Procedures - A review of Cath/EP/IR supply chain procedures identified that written, formal procedures for managing the supply chain generally do not exist at the unit level. Maintaining formal, written policies and procedures will strengthen process integrity, define staff roles and responsibilities, ensure business continuity, and improve management oversight.

   Management Plan - Formal written procedures will be developed for each unit by December 31, 2009.

The CVC procedure units have good controls over ordering, receiving, consignment, and investigational devices. University Audits will conduct a follow-up review in the third quarter of fiscal year 2010 to assess progress on the management action plans.

Continuous Monitoring

Continuous Monitoring – Split P-Card Transactions # 2009-803
Original report issued June 16, 2009

Management is responsible for establishing monitoring processes to help ensure policies and procedures are effective and assess the adequacy of business controls. Continuous monitoring is a method that automates these processes, allowing management to monitor on a more frequent basis. Continuous auditing is a similar method to help automate control and risk assessments, assisting auditors in meeting their responsibilities. Continuous auditing changes the audit paradigm from the periodic review of a sample of transactions to the ongoing audit testing of 100 percent of transactions. University Audits is using Audit Command Language (ACL) to help improve and increase continuous monitoring and continuous auditing at the University of Michigan.

ACL is analytical software used by organizations worldwide, including the Big Four accounting firms. ACL reads and compares data from multiple systems and formats, maintains the integrity and quality of data with its read-only feature, contains numerous pre-programmed commands and functions for data analysis, processes infinite amounts of data, and includes scripting. A script is a series of commands that can be executed repeatedly and automatically; scripts are particularly useful for continuous monitoring.

University Audits is committed to identifying opportunities where continuous monitoring and auditing can be used to decrease potential risks and improve efficiencies across the University.

PROJECT SUMMARY

Split P-Card Transactions

Objective: Use ACL to help automate the process to identify departments and/or P-Card holders that may be splitting P-Card transactions to avoid the competitive bidding process.

Background Information: University P-Card holders are permitted to use their card for authorized purchases up to a limit of $5,000 per transaction. Transactions above that amount must go through Procurement Services to ensure the most competitive rates are obtained, unless an exception has been granted. One way for individuals to bypass this limit is to split the purchase into multiple transactions.

Procedures and Results: To accomplish the objective, University Audits:

1. Met with Accounts Payable to discuss which account numbers are not subject to the $5,000 transaction limit (Travel & Hosting).
2. Identified potential split P-Card transactions, using ACL
3. Built two ACL scripts, which can be run in minutes and produce the following reports:
    a. List of P-Card transactions to the same merchant, within the user-defined number of days, charged to the same P-Card, that exceeds $5,000. This report can be run for an individual department or University-wide.
    b. List of P-Card transactions to the same merchant, within the user-defined number of days, charged to the same department ID, using more than one P-Card, that exceed $5,000. This report can be run University-wide and filtered for an individual department, if necessary.

Each month, within a week of the P-Card cycle end-date, University Audits will run the ACL script that identifies transactions that may have been split using more than one P-Card within the same department. This script is designed to automatically email the report to management within Accounts Payable for review and follow-up with individual units as necessary. This process complements their existing exception reporting for monitoring P-Card transactions.

Going forward, University Audits will use both Split P-Card Transactions scripts in departmental audits to help assess risk and identify areas across the University that could benefit from additional training regarding the appropriate usage of P-Cards.

Follow-up

Intercollegiate Athletics Business Office Fiscal Responsibility Audit - Follow-up Review # 2008-210
Original report issued December 23, 2008 Follow-up Report issued May 29, 2009

University Audits recently conducted a follow-up review to assess the status of management action plans. Intercollegiate Athletics (ICA) management has taken appropriate measures to strengthen controls as discussed during the audit. University Audits encourages the Business Office to continue efforts to formally document the newly implemented policies, procedures, and controls. Details regarding internal control improvements are noted below. **This audit is closed.**

1. Statements of Activity Reconciliations

   The Business Office has started to distribute hard copies of the Statement of Activities (SOA) to each cost center budget manager. Budget managers review the SOA, sign it, and return it to the Business Office in a timely manner. The Business Office has communicated expectations for proper review of the SOA to all budget managers and continues to assist them as needed. University Audits encourages the Business Office to continue efforts to formally document the policy and expectations for the SOA reviewers.

2. Procurement Observations

   ICA management has taken measures to strengthen controls and enhance staff education regarding procurement processes by:

   - Requiring supervisory sign-off on all P-Cards, with the exception of the facility managers. Facility Managers' P-Cards are reviewed by the Business Office Manager and unusual items are discussed with the Facilities Director.
   - Documenting P-Card holders and approvers responsibilities and communicating them to all cardholders and approvers.
   - Reiterating University procurement policies, especially proper procurement methods for purchases over $5,000, to all ICA staff.
   - Working with Procurement Services to identify opportunities for improving procurement approaches, i.e., establishing contracts or purchase orders with vendors when appropriate.

3. Cash Controls

   The Business Office has taken a more active role in oversight of cash handling procedures at ICA off-site locations. The Business Office has reviewed the procedures, including segregation of duties, physical security, and accountability, and has verified the imprest cash fund balances. The Business Office will continue to perform periodic reviews of cash controls at the off-site locations and specifically, University Audits encourages the Business Office to continue their efforts to monitor cash variances and educate units regarding timely cash deposits. The Business Office is preparing to complete the cash handling controls gap analysis for the annual certification process and believes this will result in further improvements.

4. Overtime

   ICA management has implemented several overtime controls, including:

   - Flexible scheduling to reduce overtime hours
   - Formal documentation of explanations for overtime variances
   - Continuous education of supervisors and staff through regular meetings and timekeeping policy updates
   - Documentation of approved overtime schedules in the facilities directors' Outlook Calendars

   ICA management will continue to monitor overtime trends and fluctuations. Management has indicated they will analyze hiring needs based on how the newly implemented controls affect overtime usage.

5. Check Writing

   The Business Office Manager now reconciles the list of checks to source documentation before distribution to ensure checks are written for approved amounts.

6. Mobile Devices

   ICA has taken appropriate steps to significantly improve internal controls over mobile equipment and reduce departmental expenses. Specifically:

   - ICA has reassigned duties for ordering, receiving, and reconciliation of mobile devices to establish proper segregation of duties.

- The Business Office has documented general eligibility criteria for departmental cell phones or stipends in a formal policy. According to the policy, a higher management authority approves exceptions.
- ICA management has established staff co-pays for replacing lost or damaged phones and for model upgrades above standard departmental models.
- ICA management has implemented a new policy to convert a portion of the cell phone program to a taxable stipend approach. The new policy is expected to reduce departmental costs and administrative burden.

7. Equipment Disposition
   The following improvements were made regarding disposition of old athletic equipment:
   - ICA and Property Disposition have reached an agreement regarding the sale of used hockey equipment. ICA is responsible for managing the equipment sale, including pricing and cash controls, and Property Disposition is responsible for processing the sales proceeds and calculating the sales tax.
   - Crew boat values are properly listed in the University asset management system. The Business Office will notify Property Disposition on future trades.

8. Hiring and Termination (On-boarding and Off-boarding) Procedures
   The new Human Resources (HR) Officer in ICA has initiated draft checklists for on-boarding and off-boarding procedures. The HR Officer is actively working with the appropriate ICA departments, such as the Business Office and the Compliance Services Office, to ensure checklists include HR related items (i.e., training, orientation, and I-9 documentation) as well as assets and business logistics items (i.e., cell phones, travel advances). ICA is making good progress toward this effort.

Plant Operations – Construction Services Audit Follow-up Review # 2008-602
Original report issued November 4, 2008 Follow-up Report issued June 23, 2009

A follow-up review was conducted to determine the status of management's action plans. The following plans are successfully implemented:

- Work Coded Estimates – Implementation of the new WinEstimator application was completed in April 2009. Standard job codes are now associated with each estimate line item. Since April, time and materials projects of $15,000 or more and all fixed price projects are estimated using the WinEstimator application. **This issue is closed.**

- Customer Feedback Regarding Estimates – In February 2009, Construction Services began sending a survey regarding the estimating process to customers. Twenty-three survey responses have been received. A baseline will be developed using the first six months survey results. Subsequent survey results will be compared with the baseline to assist in planning improvements and changes to the new estimating process. **This issue is closed.**

System related changes have been rescheduled for completion by December 2009 because resources have been focused on the recent implementation of a new Plant Operations facilities management system. University Audits will reexamine the status of the following plans in February 2010:

- WinEstimator Comparison to FMAX – FMAX is a new facilities management system implemented by Plant Operations Information Technology (IT) staff in March 2009. Due to the focus on this primary project, technical assistance for the Construction Services system-generated job cost analysis program has been rescheduled for completion by the end of December 2009. In the interim, Construction Services has performed several project costs analyses by manually matching WinEstimator estimates to FMAX system actual costs.

- Project Management Reports and Procedures – System reports comparing estimated to actual labor and materials costs by work group or work type across projects will be completed when the system-generated job cost analysis program is completed. This reports will assist in identifying best practices and support continuous improvement, replacing detailed manual tracking with system-generated variance reports. Uniform job cost analysis procedures will be developed and distributed to all department employees.

- IT Manager Support – Plans are underway for the Construction Services IT Manager to provide support for system report development and to promote technology skills among the Construction Services department managers.

University of Michigan Hospitals and Health Centers Hospital Cashier's Office Follow-up Review # 2008-205
Original report issued October 17, 2008 Follow-up Report issued June 30, 2009

Management has fully implemented corrective action plans for all but one of the control recommendations identified during the audit. Details regarding corrective action plan implementation are noted below. University Audits will conduct a second review in the second quarter of fiscal year 2010 to follow up on the open item.

Segregation of Duties
The audit identified opportunities to strengthen controls by segregating duties related to cash receipt, payment posting, and check writing duties. To segregate duties:

- Management considered moving the daily check upload responsibility from the Hospital Cashier's Office (HCO) to the UMH Business Office. However, management subsequently determined that inconsistent holiday schedules between the two departments made this option unfeasible.
- Management reassigned duties previously performed by HCO personnel to different departments:
    - UMH Business Office personnel are now responsible for reconciling HCO's Daily Cash and Posting Journal Reports to the UMH Online Cash Posting Report
    - UMH Accounting Office personnel are now responsible for reviewing positive pay exception reports
- HCO supervisors and cashiers continue to follow HCO's policy regarding separating duties between accepting and posting payments to patient accounts
- HCO supervisors contacted personnel in Billing and Third Party Collections to discuss a process to restrict the responsibility for posting credit card payments to management. Discussions are still in progress.

Bank Statement Reconciliation and Check Writing Practices
HCO resolved travel documentation turnaround issues with Accounts Payable personnel. Subsequent reviews of HCO's check register and other documentation (i.e., non-PO vouchers and travel advance forms) indicated HCO records all check numbers, refrains from accepting documents with unauthorized crossed out information, and double checks travel advance forms to ensure checks are not distributed after the departure date.

UMHHC Accounting Office personnel are in the process of developing procedures for completing the bank statement reconciliation. **University Audits will continue to follow up on their progress.**

HCO Check Writing
In fiscal year 2008, HCO created and distributed over $7 million in checks. Management collaborated with other departments to move approximately 80% of the check writing responsibility out of HCO. During the third quarter of fiscal year 2009, the Hospital Payroll Office assumed responsibility for

vacation advances. HCO anticipates the Accounts Payable Office will take over check writing responsibilities for facility refunds during the first quarter of fiscal year 2010. HCO will continue to write other types of checks, including travel advances and small, infrequent customer service reimbursements requested through the Office of Patient Relations.

Recharging Patient Accounts for Voided Credit Card Payments

During the audit, University Audits noted HCO did not have a process to post charge backs (refunds initiated by credit card providers) to patient accounts. HCO promptly implemented a process to manage charge backs for voided MasterCard and VISA payments and subsequently enhanced the process to include Discover and AMEX charge backs when the University started including charge back information on Statements of Activity. University Audits noted the following regarding charge back activity in other UMHHC departments:

- The Faculty Group Practice Professional Billing Office, which manages approximately 90 merchant codes, has a process in place to manage charge backs
- In April 2009, the Treasurer's Office completed a review of charge back activity for a one year period ending February 2009 and concluded that UMHHC did not have a significant amount of MasterCard/VISA unresolved charge back activity and decided not to retrospectively research and correct
- In summer 2009, the Treasurer's Office will issue a new Merchant Policy to all departments with merchant codes. The guide will include information pertaining to departments' responsibilities for reconciling bank statements and managing charge back activity.

Follow-up of Outstanding Vouchers

University Audits recommended HCO staff follow-up on outstanding (unpaid) reimbursements more frequently. A subsequent review of outstanding vouchers showed HCO staff is following up on unpaid vouchers that are outstanding 60 days or more.

Reconciliation of Patient Receipts

Patient receipts from hospital and professional fee billing are now appropriately reconciled.

Duplicate Facility Refunds

UMHHC Billing and Third Party Collections personnel addressed concerns about duplicate facility refund checks. To enhance controls over this function, management:

- Discussed established check authorization practices with personnel who were responsible for duplicate check identified during the audit
- Reiterated check authorization practices and the need to thoroughly review patient account transaction detail at a staff meeting and via e-mail communication
- Developed a process for stop payment requests
- Initiated contact with MCIT to develop a workflow module for credits

University of Michigan-Flint Chancellor's Office Follow-up Review # 2008-205

Original report issued September 30, 2008 First Follow-up Report issued April 16, 2009

Second Follow-up Report issued June 30, 2009

Initial follow-up work was performed in April 2009. At that time, management had successfully addressed eleven control weaknesses identified in the original audit and those items were closed. A subsequent follow-up was completed recently by University Audits to assess the status of the remaining internal control improvement initiatives. Management has implemented positive changes as detailed below. **This audit is closed.**

- Policies and Procedures: Procedure manuals tailored to specific job roles have been created. General policy and procedure documentation related to activities such as event hosting have also

- Employment Procedures: Management is in the process of implementing new procedures for measuring employee performance and sharing constructive feedback. Thorough self-appraisals by employees and comprehensive performance evaluations by supervisors are key elements of the process. Completed performance evaluations signed by both the employee and supervisor will be retained as part of the employee's file in accordance with SPG Section 201.46, *Personnel Records – Collection, Retention and Release.*

- Disaster Recovery/Business Continuity Plan: A formal plan has been created and approved by management. The plan will continue to be revised as personnel changes occur and campus or unit needs arise.

- Address Databases: Shadow systems containing constituent address information have been consolidated and reconciled against Office of University Development data. Communication strategies and procedures for maintaining the accuracy of data in both systems have been developed.

- Large Position Searches: Management has formalized a policy to address budgeting and expense monitoring related to large position searches. The policy details steps for initial budget approval as well as the communication and authorization of budget variances, if they occur.

Transportation Services Audit Follow-up # 2008-210
Original report issued January 28, 2008 First Follow-up Report issued April 6, 2009
Second Follow-up Review issued June 30, 2009

University Audits completed a follow-up review in April 2009 and determined that management had implemented changes to address three of eight issues discussed in the original audit report. While action plans had been developed or updated for the remaining issues, additional time was necessary to demonstrate implementation. Implementation of the remaining action plans has been completed as described below. **This audit is closed.**

- Controls over Physical Access
  Transportation Services installed an electronic access control on the main gate to the parking lot where Transportation Services vehicles are located. Other University departments access this area for vehicle storage and fuel. A mechanical key lock to the gate, which overrides the electronic device, is still in use. Transportation Services plans to change the mechanical lock. Many keys to the existing lock have been distributed to other University departments, but a comprehensive key inventory has not been compiled. The lock change will be discussed at the Facilities Operations Lead Team meeting on July 8, 2009. Managers representing departments that use the parking lot will be asked to develop policies regarding key issuance and usage for their units.

- MAXIMUS User Access Levels
  Transportation Services management has removed Parts Staff access for deleting parts directly from work orders and replaced it with access to return parts to inventory or to the vendor. Both transactions will require support documentation and can be tracked. Transportation Services management has developed procedures for managing the risk associated with access to add parts to a work order and thus eliminate them from inventory counts. At least one closed work order will be randomly selected and audited each month. The mechanic that performed the work will review the work order to ensure the accuracy of the parts listed and report any discrepancies to the General Manager of Fleet and Garage Operations for follow up.

- Commercial Driver's License Testing
  A meeting with Transportation Services, the Office of the General Counsel, the Tax Department, the Office of Financial Analysis, and University Audits resulted in a new customer cost and examiner payment model that differentiates between cost per test and payment to examiners. Revenue and expense for services to external customers will be reconciled annually to identify any margin that would prompt recharge rate analysis or tax consideration.

- Fuel Inspection upon Delivery
  Fuel testing policy and procedures were developed, requirements for fuel testing are incorporated into the services procurement process, and a project commitment has been made with Architecture, Engineering and Construction to install a spill control mechanism at the Baxter Road facility.

- Gross Pay Register Review Process
  Transportation Services developed procedures for their payroll review process. Responsibilities are assigned to ensure separation of duties for time entry, approval, and monitoring of payroll information.

Open Audits Follow-up Table
June 30, 2009

Audit Title	Report Date	Issues	Expected Completion
University Health Service HIPAA IT Security 2008-309	9/2/08	Practice management system; verification of internet access; intranet tools server; data access procedures; security policy	July 2009
College of Engineering Research Computing 2008-302	10/29/08	Vulnerable systems; unnecessary services; unknown ports and services; unknown systems; unsupported devices; users with system administrator privileges; updating firewalls; procedural documentation	July 2009
Michigan Administrative Information Services Grade System: Web-based Grade Changes 2008-114	12/23/08	Role assignments; customization; two-factor authentication	July 2009
Information Technology Central Services Active Directory UMROOT Domain 2008-310	2/16/09	Telnet service, inactive accounts and operating agreements, privileged accounts, host hardening, caching credentials, and change management	August 2009
Housing Information Technology Office Residential Housing Network 2009-309	5/28/09	Registration scans; patching through portal; vulnerable systems; traffic analysis; incident response procedure; signed service agreements	November 2009
University of Michigan Hospitals and Health Centers Cashier's Office 2008-206	10/17/08	Segregation of duties; bank statement reconciliation and check writing practices; follow-up of outstanding vouchers; duplicate facility refunds	First Follow-up June 2009 December 2009
UMHHC Payroll and Timekeeping 2008-110	1/30/09	Human Resource Management System access; systematic data integrity; payroll expenditure analysis; roles and responsibilities	October 2009
Medical School Administrative Internal Control Review 2008-208	1/30/09	IT strategic planning; reconciliations; gift fund usage; IT security; fire drill regulations	September 2009
Resident Duty Hours 2008-102	1/30/09	Duty hours compliance	September 2009
Children's and Women's Hospital Construction Audit 2009-601	4/02/09	Establishing guaranteed maximum price; sales and use tax; retaining payment documentation	December 2009
University of Michigan Health System Cardiovascular Center Supply Chain Audit 2009-105	5/15/09	Blanket purchase orders; inventory tracking; drug management; patient billing; system access; policies and procedures	January 2010

Plant Operations Construction Services 2008-602	11/4/08	Project management reporting	First Follow-up June 2009 February 2010
Sponsored Programs Subrecipient Monitoring 2008-501	11/21/08	Written guidance for PIs; subcontract template	July 2009
School of Music, Theatre & Dance Fiscal Responsibilities 2008-815	11/26/08	Financial oversight and monitoring; several procurement and payroll observations; documented procedures; written delegation of authority; imprest cash management	July 2009
William L. Clements Library 2008-212	1/26/09	Grant compliance; endowment agreements; collection management; insurance coverage; physical safety and security; reconciliations; recharge rates	September 2009
University Press Inventory and Receivables 2008-203	1/30/09	Accounts receivable; inventory	September 2009
Department of Public Safety Fiscal Responsibilities 2008-201	3/19/09	Fiscal responsibilities; IT control environment; regulatory compliance; asset management; handling of seized evidence and forfeited property	September 2009
School of Kinesiology Fiscal Responsibilities 2009-203	4/14/09	Effort reporting; SOA and gross pay register reconciliation and review; credit card terminal placement; time reporting review; imprest cash fund; deposits; record retention; background checks; hiring documentation	December 2009
Benefits Administration Office 2009-101	4/30/09	Logical access to benefits data; addition to discrepancy reporting; invoice error reporting; flexible spending account payment reconciliation; compliance monitoring	September 2009
University of Michigan – Flint Office of Development and Alumni Relations and University Outreach 2009-811	5/15/09	Relationship with University Development; performance standards; prospect management; coordination with Schools; cash handling; pledges; budget process; business continuity/disaster recovery plan	February 2010
University Unions Focused Review 2009-809	6/01/09	Cash management; payroll observations; statement of activity reconciliation; computer access	October 2009
Chemical Biology Doctoral Program Interdepartmental Degree Program 2009-812	6/30/09	Program reporting and oversight; compliance with procurement and hosting guidelines; effort certification; record retention; service level agreement; conflict of interest and conflict of commitment	February 2010