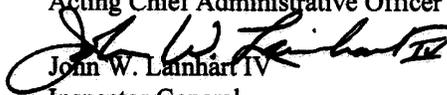


John W. Lainhart IV
Inspector General

Office of Inspector General
U.S. House of Representatives
Washington, DC 20515-9990

MEMORANDUM

TO: Jeff Trandahl
Acting Chief Administrative Officer

FROM: 
John W. Lainhart IV
Inspector General

DATE: March 24, 1997

SUBJECT: Audit Report - Proactive Management Approach Can Improve House
Telecommunications Services And Operations (Report No. 97-CAO-08)

This is our final report on the audit of the management of the telecommunications function at the U.S. House of Representatives (House). This audit is the fifth, and last, of five audits performed on the House telecommunications environment. The objective of this audit was to assess the effectiveness of management controls over the telecommunications services and operations at the House. In this report, we identified management controls and functions which can be improved, and made five recommendations for corrective actions.

In response to our January 29, 1997 draft report, your office generally concurred with all the findings and recommendations. Your formal written response is incorporated in this report and included in its entirety as an appendix. The corrective actions, completed, in process, and planned by your office are appropriate and, when fully implemented, should adequately respond to the recommendations. We consider the milestone dates provided for implementing the corrective actions reasonable.

We appreciate your office's positive attitude and cooperation throughout this audit. If you have any questions or require additional information regarding this report, please call me or Craig Silverthorne at (202) 226-1250.

cc: Speaker of the House
Majority Leader of the House
Minority Leader of the House
Chairman, Committee on House Oversight
Ranking Minority Member, Committee on House Oversight
Members, Committee on House Oversight

PROACTIVE MANAGEMENT APPROACH CAN IMPROVE HOUSE TELECOMMUNICATIONS SERVICES AND OPERATIONS

*Report No. 97-CAO-08
March 24, 1997*

RESULTS IN BRIEF

CONCLUSIONS

Within the House Information Resources (HIR) organization, the Communications Group is responsible for the data, voice, and video communications (telecommunications) needs of the U.S. House of Representatives (House). The Group manages and provides network connectivity, and telephone and voice mail services to Member, Committee, and other House offices. The Group oversees the Campus Data Network, which includes all House offices, is comprised of approximately 7,000 microcomputers on two backbones using Fiber Distributed Data Interface (FDDI¹) and Ethernet² technologies. In July 1996, off campus networks total about 540, consisting of 288 telecommunications frame relay networks and 252 WAN private telecommunications lines to connect Members Washington, D.C. and district offices. They also oversee the Washington, D.C. telephone system which has over 19,000 extensions operated from over 11,500 multi-button instruments (telephones and faxes). The district office telephone systems are comprised of about 900 locations. Voice mail facilities consist of over 5,600 mail boxes. Group and desktop video technology as well as computer telephony integration (CTI³) are in the early phases of deployment. By any standards, this environment would be considered one of the most diverse and complex telecommunications environments in use today.

The Communications Group has been very successful in accomplishing a number of initiatives and projects, which they can take pride in. To name a few, the Group has successfully implemented the frame relay services, which has resulted in a monthly savings of \$8,000 to the House since January 1996. Continuing efforts to migrate all Members offices will reap further savings to the House. Further, based on our computer-assisted analysis of detailed call records of Member offices, the House's long distance voice telecommunications rates are less expensive in comparison to other government entities as well as private sector companies. Considering the diverse and complex telecommunications environment at the House, the Communications Group has been very

¹FDDI is a high speed fiber optic transmission technology that was first deployed with the start of the 103rd Congress. Within the House Campus Network, the House's FDDI Network is also known as BUDnet.

²Ethernet is a networking scheme that allows microcomputers to be connected to a network. It physically consists of cabling, which connects all the machines on a network.

³CTI is the merging of computers and telephones which makes possible fax-back systems, interactive voice response implementations, and a number of other specialized applications.

successful in negotiating the best possible rates and terms for the House. Additionally, the House's contract with Lucent Technologies (formerly AT&T), which was negotiated by HIR, contains extremely rigid requirements for vendor performance, which has resulted in dependable and reliable voice services to the House. Furthermore, by implementing a network management system to manage and monitor the backbone and wide area network components, network reliability has averaged over 99 percent, which exceeds industry standards. In the network problem management area, the Group's response time is better than the typical response time in the private sector. Other projects and initiatives are either planned or underway to improve data, voice, and video telecommunications in meeting the Speaker's CyberCongress vision.

In short, the Group has provided more than adequate operational support and services. This is consistent with the results compiled from the Customer Satisfaction Survey administered by the Office of Inspector General in conjunction with this comprehensive telecommunications audit. The results of that survey indicated that users were generally "satisfied" to "very satisfied" with the quality of telecommunications services provided by HIR (see OIG Report No. 97-CAO-03, entitled *Results of The House Telecommunications Customer Satisfaction Survey*, dated March 24, 1997).

Notwithstanding the above, based on the security, costs, economy, efficiency, and effectiveness, and contingency and disaster planning weaknesses identified in the four separate telecommunications reports, HIR can improve telecommunications operations at the House through a proactive management approach. Opportunities exist for the CAO to take the initiative or "champion" HIR's proposals related to telecommunications projects and activities through better communications with the Committee on House Oversight (CHO). Furthermore, HIR needs to consistently conduct cost-benefit analyses of its major telecommunications acquisitions, upgrades, and services and address staffing constraints within the Communications Group to assure effective operation and services. The following is a synopsis of the specific weaknesses detailed in this report:

- The CHO is not always fully informed by the CAO of important telecommunications projects and activities. Without adequate communication, the CHO will not be aware of long-term implications of significant projects or could be making decisions based on incomplete information. In addition, because of inadequate information being provided to the CHO, the CAO has been unable to gain approval from the CHO for certain important telecommunications security and other telecommunications policies and initiatives to improve security, controls, and service of the House telecommunications environment. Without establishing an approach to ensure that project objectives, actions, and ramifications are sufficiently understood by the CHO and concerns or questions are addressed, approval of proposed telecommunications-related efforts and initiatives may be unnecessarily delayed. These deficiencies, in turn, hamper the CAO's ability to effectively and expeditiously achieve its telecommunications goals and overall mission.
- HIR does not consistently and thoroughly conduct cost-benefit analyses of its telecommunications acquisitions, upgrades, and services resulting in the

implementation of telecommunications systems and services that may not be as cost-effective as they could be. Although a House SDLC policy which promoted the performance of cost-benefit analyses was drafted in June 1996 and approved by the CHO in January 1997, the policy has not been implemented. Furthermore, guidance and procedures for performing cost-benefit analyses have not been developed.

- Consistent with management's concern regarding the sufficiency of staffing resources, our preliminary audit work in this area disclosed indicators suggesting that the Communications Group may be understaffed. Further, we noted that management's ability to hire, retain, and promote qualified, experienced staff is being hampered. Indicators of these problems include: (1) inadequate backup staff designated to support key telecommunications operations; (2) limited personnel practices, including hiring and promotional practices; and (3) lack of a competitive salary structure. The resources problems, including the continuing departures of highly experienced and productive staff and difficulties in hiring qualified and experienced personnel, have taxed the workload of the remaining staff. As a result, the Group's ability to proactively and effectively meet the House's long term telecommunications goals, such as those of the CyberCongress vision, could be severely hampered.

In addition, as part of the overall telecommunications audit, we reviewed the House's progress in implementing prior audit and third party recommendations related to telecommunications. Our audit follow-up work encompassed a review of a total of 53 prior report recommendations from prior OIG and third party reports. We found that the CAO has made some progress in implementing the recommendations. Based on our follow-up work, 26 recommendations are fully implemented, 11 are partially implemented, 14 are not implemented, and 2 are no longer applicable.

RECOMMENDATIONS

We are making a total of five recommendations to the CAO to improve various management-related areas specific to telecommunications. We recommend that the CAO (1) attend Computer Working Group meetings and thoroughly brief that group on the status, importance, and ramifications of current and proposed short- and long-range telecommunications projects and activities, (2) take the initiative to fully inform the CHO on important telecommunications projects and activities to ensure that project objectives, actions, and ramifications are sufficiently understood, and follow up on the status of all proposed projects and activities, (3) develop detailed guidance and procedures, for approval by the CHO, to require HIR to perform cost-benefit analyses, in accordance with its recently approved SDLC policy, for major information systems, which includes major telecommunications acquisitions, upgrades, and services to justify decisions and expenditures, and (4) develop a position management plan, for approval by the CHO, to adjust the staffing resources and/or salary levels for Communications Group positions, as appropriate. In addition, we also recommend that the CAO establish or update target dates for all unimplemented prior audit recommendations.

MANAGEMENT RESPONSE

On February 5, 1997, the Acting CAO concurred with the findings and all five recommendations (see Appendix). According to the response, the Acting CAO is implementing and plans to implement a variety of corrective actions to improve the management of telecommunications operations and services at the House. Examples of current and planned actions include: (1) coordinating the attendance of the Computer Working Group meetings with the CHO and the Chairman of the Computer Information Systems Working Group to assure that they are regularly provided with the status of telecommunications projects and activities; (2) holding regular meetings with the CHO staff and agreeing that he, the HIR Associate Administrator, and HIR Communications management, will be proactive in following up on the status of all proposed projects and activities; (3) developing detailed guidance and procedures, for approval by the CHO no later than May 1, 1997, to perform cost-benefit analyses as part of the approved SDLC policy; and (4) ensuring that the appropriate departments develop a position management plan for HIR's Communications Group and submit the plan to the CHO for review and/or approval by the end of FY 1997.

Although the Acting CAO's February 5, 1997 response did not formally comment on the recommendation made in the "Other Matters" section of this report, based on recent discussions, actions are already underway to implement this recommendation. The Acting CAO's audit follow-up official has already begun contacting key House officials, including the OIG official responsible for tracking the status of prior audit report recommendations, to set up meetings to discuss implementation progress, planned actions, and new target dates for completion.

OFFICE OF INSPECTOR GENERAL COMMENTS

The Acting CAO's actions are responsive to the issues we identified and, when fully implemented, should satisfy the intent of our recommendations. The milestone dates provided for selected actions appear reasonable.

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I. INTRODUCTION

Background

The U. S. House of Representatives (House) is committed to the Speaker's CyberCongress vision for using information systems and voice, data, video, and wireless communications (i.e., telecommunications) technology to (1) increase access to the House by the American people, (2) enhance decision making and the effectiveness of the legislative process, and (3) improve communications, staff productivity, and reduce costs. This vision is primarily tasked to the Chief Administrative Officer (CAO) and, in particular, the House Information Resources (HIR) organization under his purview.

HIR is the major provider of information technology services to the Members, Committees, and other offices of the House. HIR is responsible for the voice, data, and video infrastructures used within the House, with the exception of the office level systems in the Members' suites.

Two of the four groups within HIR, the Communications Group and Client Services Group, have responsibilities for providing and maintaining the telecommunications function and services. Further, the Communications Group and the HIR Security staff—one of four staff offices under the Associate Administrator—have telecommunications security responsibilities. This audit evaluated telecommunications management issues at the House and identified opportunities for improving oversight and direction in this area to meet current and future telecommunications requirements.

The Communications Group provides voice, data, and video telecommunications needs to all Member, Committee/Subcommittee, and other House offices. This group's functional areas include voice and video telecommunications operations and services; network systems engineering; network configuration management; network installation and maintenance; and network control center operations. This group manages networks and connectivity for all Washington, D.C. and district offices, providing telecommunications access and services to all Member, Committee, and other House offices. It also provides and manages telephone and voice mail facilities, and supports video conferencing capabilities. Internet⁴ connectivity and administration is another aspect of this group's responsibilities facilitating Member and staff research and providing for dissemination of House information to the public.

⁴The Internet is a large international network that connects many computer systems, providing network services including electronic mail (i.e., E-mail), remote terminal sessions, and multi-media services such as the world-wide web.

The Communications Group oversees a large telecommunications arena. The Campus Data Network, which includes all House offices, is comprised of approximately 7,000 microcomputers on two backbones using Fiber Distributed Data Interface (FDDI⁵) and Ethernet⁶ technologies. In July 1996, off campus networks total about 540, consisting of 288 telecommunications frame relay networks and 252 WAN private telecommunications lines to connect Members' Washington, D.C. and district offices. Internet access has been provided to 553 Member, Committee/Subcommittee, and other House offices. The Group oversees the Washington, D.C. telephone system which has over 19,000 extensions operated from over 11,500 multi-button instruments (telephones and faxes). The district office telephone systems are comprised of about 900 locations. Voice mail facilities in use consist of over 5,600 mail boxes. Group and desktop video technology as well as computer telephony integration (CTI) are in the early phases of deployment.

The Client Services Group provides the client interface for voice, data, and video telecommunications resources. The Group is responsible for providing complete and timely office automation and telecommunications support to all Member, Committee/Subcommittee, and other House offices. The Group's functional areas include technical support; systems engineering; training; graphics; and telecommunications support. With respect to telecommunications support, the Group is charged with providing assistance and advice in the design and effective use of microcomputers and local area network (LAN) technology, and advice on wide area network (WAN) and LAN configuration issues. They also coordinate requests for new telecommunications service and changes in existing service; process all telephone invoices; provide telephone training; and administer over 540 calling cards and 650 cellular phones. The Capitol Telephone Exchange operation is also under the purview of the Client Services Group and provides operator services for the House and Senate. This operation handles approximately 25,000 calls daily and provides support for teleconferencing.

The Security staff is responsible for security policies, planning, and administration of information resources and telecommunications technology. The newly re-established House Security function primarily supports user access to International Business Machines (IBM) mainframe systems. The data security function within HIR is in the process of taking over responsibilities for administering, monitoring, and maintaining the Computer Associates' Access Control Facility 2 (ACF2) security software. However, not all data or applications operating on the IBM mainframe are currently under the protection of ACF2. Alternatives to ACF2 are employed to provide protection over other IBM mainframe system resources. These alternatives provide varying levels of security. Other responsibilities of HIR Security include involvement in the system development life cycle (SDLC) process of major telecommunications development projects. The Security staff's involvement and input are critical early in the design phases of all

⁵FDDI is a high speed fiber optic transmission technology that was first deployed with the start of the 103rd Congress. Within the House Campus Network, the House's FDDI Network is also known as BUDnet.

⁶Ethernet is a networking scheme that allows microcomputers to be connected to a network. It physically consists of cabling, which connects all the machines on a network.

telecommunications projects to effect meaningful security designs for subsequent implementation. HIR Security also has security training and review responsibilities for House and district offices, including those areas related to telecommunications.

HIR's Fiscal Year (FY) 1997 telecommunications budget was approved at \$8.2 million, which included funds for existing telecommunications operations and services, as well as new initiatives, such as migrating to a network-centric computing environment, creating a paper-less environment, and upgrading the telecommunications system. Further, HIR's long-range telecommunications plan entitled *Five Year Investment Plan for the Infrastructure and Operations of the U.S. House of Representatives Communications* called for a total of \$85.2 million between 1996-2000. This figure has since been reduced to \$77.7 million, which reflects a \$7.5 million budget reduction by the Subcommittee on Legislative Appropriations for FY 1997. Of the \$77.7 million, \$43.2 million (55.6 percent) is for equipment, operations, and maintenance, and district to Washington, D.C. data services for Members; \$15.5 million (19.9 percent) is for continuing switch and telephone upgrades; and the remaining \$19 million (24.5 percent) is required to continue major enhancements to the House telecommunications infrastructure and services. Examples of infrastructure initiatives include campus data networking, switches, video and teleteaching, wiring, cables, fiber optics, voice processing, voice mail, cellular and wireless telecommunications, CTI, security, and disaster recovery.

In addition to HIR's FY 1997 budget, the FY 1997 budgets for Members, Committees, and other House offices account for telecommunications service expenses totaling \$11.7 million. This total represents Members' expenses of \$9.6 million, Committees' expenses of \$.9 million, and other House offices' expenses of \$1.2 million.

Objectives, Scope, And Methodology

This review is the fifth, and last, of five audits aimed at evaluating the House's telecommunications environment. The five audits, all performed concurrently, focused separately on telecommunications security; telecommunications costs; economy, efficiency, and effectiveness of telecommunications; contingency planning, backup, and disaster recovery; and telecommunications management. (The results of the four preceding telecommunications audits are addressed in four separate audit reports, which are summarized in the *Prior Audit Coverage* section of this report.) In addition, we performed a telecommunications customer satisfaction survey.

This review focused on the management of the telecommunications functions encompassing voice, data, video, and wireless telecommunications. This overall objective of this review was to assess the effectiveness of telecommunications management oversight, planning, and design and acquisition practices within the House. In completing this audit, we also performed follow-up work on telecommunications management issues identified in prior reports (see Exhibit).

This report addresses the underlying telecommunications management issues related to telecommunications acquisition and planning practices identified during the course of our audits. The report also discusses staffing constraints that surfaced during the audits. While our audit

focused on issues specific to telecommunications management, we did not address in this report various management issues, such as top management oversight, HIR organization, strategic planning, business process policies and procedures, and other high level management issues which affect telecommunications and HIR as a whole. The results of our work related to these issues will be included as part of the Office of Inspector General's (OIG) HIR Management Audit currently underway and will be discussed in the audit report resulting from that audit effort. Some of these management issues also have been identified and discussed at a high level in a recently issued OIG report entitled *Improvements Are Needed In The Management And Operations Of The Office Of The Chief Administrative Officer*, dated December 31, 1996.

We conducted our review in accordance with *Government Auditing Standards*, issued by the Comptroller General of the United States. Our audit of the House's telecommunications environment and HIR telecommunications operations and functions covered the period of August 1995 through July 1996 and the fieldwork was primarily performed during May 1996 through July 1996. Additional follow-up field work was conducted intermittently between August 1996 and January 1997 prior to issuance of our draft report. In conducting this review, we performed the following specific tasks:

- Gathered and reviewed documentation and conducted interviews;
- Identified business objectives and control techniques consistent with sound telecommunications management standards based on current industry standards;
- Gained an understanding of the internal control environment surrounding the management of the telecommunications function; and
- Assessed compliance with Federal government/private industry guidelines and policies relative to the House's telecommunications environment and management policies and practices.

In addition, we applied applicable information systems audit guidelines used in the Federal government and private industry in evaluating the effectiveness of the management and oversight function of the House telecommunications operations and services. While we realize that the House is not mandated to comply with existing standards and guidelines governing the Executive Branch agencies, these standards and guidelines represent sound management practices that should be beneficial and followed by all Federal agencies. Furthermore, they are representative of those followed by private industry and are described in government and private industry documents and publications, such as:

- Office of Management and Budget (OMB) Circular No. A-109 Revised, *Major Systems Acquisitions* (April 5, 1976);
- OMB Circular A-123 Revised, *Internal Control Systems* (June 21, 1995);

- OMB Circular No. A-130 Revised, *Management of Federal Information Resources* (February 1996);
- National Institute of Standards and Technology's (NIST):
 - Federal Information Processing Standards (FIPS) Publication 64, *Guidelines for Documentation of Computer Programs and Automated Data Systems for the Initiation Phase* (August 1, 1979), and
 - Special Publication 500-153, *Guide to Auditing for Controls and Security: A System Development Life Cycle Approach* (April 1988);
- Information Systems Audit And Control Foundation, *Computerized Information Systems (CIS) Audit Manual* (August 1992); and
- The Institute of Internal Auditors Research Foundation - *Systems Auditability and Control, Module 8—Telecommunications* (December 1991).

Internal Controls

This review evaluated internal controls related to telecommunications management of data, voice, video, and wireless telecommunications technology. The audit disclosed opportunities for improving internal controls related to conducting cost-benefit analyses for telecommunications acquisitions, upgrades, and services and is described in Finding B of this report.

Prior Audit Coverage

As discussed earlier, the overall evaluation of the House's telecommunications environment consisted of five audits, all performed concurrently. The results of the four preceding telecommunications audits—related to security; costs; economy, efficiency, and effectiveness; and contingency planning, backup, and disaster recovery—are addressed in four separate audit reports issued in March 1997. These four reports are summarized as follows:

Weak Telecommunications And Information System Security Controls Compromise House Information Resources (Report No. 97-CAO-04, March 24, 1997): This report identified opportunities for further improving telecommunications as well as information systems-related security within the House to ensure integrity, confidentiality, and availability of information and systems at the House. The security weaknesses identified encompassed the areas of information systems security architecture; security staffing, tools, and training requirements; security administration; computer and telecommunications security training and awareness; dial-in security; logical security access; Private Branch Exchange (PBX⁷) security; telecommunications physical security; Committee and Subcommittee room wiring infrastructures; and Internet-related procedures. The report contains 33 recommendations for improving telecommunications

⁷PBX is an automatic or manual private telephone exchange for transmission of calls to and from the public telephone network.

security at the House. The CAO agreed with the report's findings and recommendations and has implemented or is in the process of implementing all of the recommendations.

Opportunities Exist For The House To Save Over \$1 Million Annually Through Better Telecommunications Cost Management (Report No. 97-CAO-05, March 24, 1997): This report identified opportunities for saving over \$1 million per year in telecommunications service and operation costs at the House. Telecommunications service costs, such as local exchange, voice conferencing, and private lines, were reasonably priced when the services were initially contracted but, due to market competition, can be further reduced as discussed in this report. The report contains 13 recommendations addressing various telecommunications-related costs that could be potentially reduced. The CAO agreed with the report's findings and recommendations, and has implemented or is in the process of implementing all of the recommendations.

Changes In Operating Practices Needed To Improve The Economy, Efficiency, And Effectiveness Of House Telecommunications Functions (Report No. 97-CAO-06, March 24, 1997): This report identified opportunities for improving telecommunications operations and activities at the House. Various voice and data network functions/processes can be enhanced by adding additional monitoring steps and system capabilities, and improving documentation. The report contains 10 recommendations for corrective actions. The CAO agreed with the report's findings and recommendations and is in the process of implementing all of the recommendations.

Improvements Needed In The House's Contingency And Disaster Recovery Planning For Telecommunications (Report No. 97-CAO-07, March 24, 1997): This report identified contingency and disaster recovery planning weaknesses that may impair the House's ability to react to an unforeseen disaster and restore telecommunications service to users in a timely manner. The report identified the need for (1) fully developing, documenting, and testing an up-to-date, comprehensive contingency/disaster recovery plan; (2) implementing adequate off-site storage and rotation procedures for PBX and telecommunications system software backup tapes; and (3) improving the House's telecommunications wiring infrastructure. The report contains 14 recommendations for corrective action. The CAO agreed with the report's findings and recommendations and is in the process of implementing all of the recommendations.

In addition, as part of the OIG's 1995 comprehensive House audit, the OIG issued two audit reports addressing issues that either relate or impact telecommunications management. While the reports contained many recommendations dealing with information systems-related issues, we identified two recommendations not previously closed⁸ dealing specifically with management issues related to information systems or resources affecting telecommunications for follow-up work. Based on our follow-up results, we concluded that the CAO fully implemented one recommendation and partially implemented the other. (The Exhibit at the end of this report provides a summary of the implementation status of each of these recommendations.) The two

⁸The term "closed" means that the recommendation is considered fully implemented or no longer applicable by the OIG.

reports are summarized below and provided the basis of our follow-up work on telecommunications management issues.

The Management And Control Of The House's Information Systems Operations Should Be Improved To Better Meet Members' Needs (Report No. 95-CAO-19, July 18, 1995): This report identified the need to develop and implement a strategic information systems plan for the House, including a formal process to identify, document, channel, analyze, prioritize, and manage a core set of common Member requirements. The report further addressed the need to document critical processes and develop a training program for HIR employees to build a knowledge base of the critical processes that support Member needs and services. The report contained eight recommendations to correct the internal control weaknesses and prevent recurrence. The CAO agreed to implement our recommendations to correct these deficiencies. We followed up on one recommendation related to implemented a comprehensive training program. That recommendation was partially implemented.

The House Needs To Follow A Structured Approach For Managing And Controlling System Development Life Cycle Activities Of Its Computer Systems (Report No. 95-CAO-20, July 18, 1995): This report identified the need to adopt a formal SDLC methodology that meets the requirements of NIST's FIPS Publications for all systems development efforts. The report also addressed the need to adhere to Federal government guidelines and use commercial software packages in lieu of in-house systems whenever cost-beneficial. The report contained two recommendations to correct the internal control weaknesses and prevent recurrence. The CAO agreed to implement our recommendations to correct these deficiencies. We followed up on one recommendation related to adopting an SDLC methodology. That recommendation was partially implemented.

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II. FINDINGS AND RECOMMENDATIONS

Finding A: Proactive Communications Between The Chief Administrative Officer And The Committee On House Oversight Are Needed

The Committee on House Oversight (CHO) is not always fully informed by the CAO of important telecommunications projects and activities. Without adequate communication, the CHO will not be aware of long-term implications of significant projects or could be making decisions based on incomplete information. In addition, because of inadequate information being provided to the CHO, the CAO has been unable to gain approval from the CHO for several important telecommunications security and other telecommunications policies and initiatives to improve security, controls, and service of the House telecommunications environment. Without establishing an approach to ensure that project objectives, actions, and ramifications are sufficiently understood by the CHO and concerns or questions are addressed, approval of proposed telecommunications-related efforts and initiatives may be unnecessarily delayed. These deficiencies, in turn, hamper the CAO's ability to effectively and expeditiously achieve its telecommunications goals and overall mission.

The CHO needs to be fully informed of telecommunications projects and activities

During our telecommunications audits, we noted that the CHO was not always fully informed by the CAO of important telecommunications projects and activities. For example:

- The ongoing House PBX switch upgrade plan is not supported by a formal, detailed user needs document or an adequate cost-benefit analysis. This switch upgrade, in turn, required HIR to set aside \$3 million in FY 1997 and another \$3 million in FY 1998 to upgrade the House's telephone handsets in order to utilize the features associated with the implementation of the new PBX switches. As a result, the House may prematurely spend millions of dollars in the future for upgrading its voice telecommunications equipment, which is neither necessary nor cost-justified. (See OIG audit report entitled *Opportunities To Save Over \$1 Million Annually Through Better Telecommunications Cost Management—Report No. 97-CAO-05, March 24, 1997.*)
- The CAO inappropriately paid \$3.2 million of FY 1995 funds to three specific vendors for network services and equipment in advance of actually receiving any equipment or services. In September 1995, \$10.9 million from the FY 1995 budget was reprogrammed to provide for ten specific projects/procurements designed to upgrade the House's telecommunications infrastructure. For one of the ten telecommunications projects, the House issued purchase orders in September 1995, establishing credit accounts (pre-paying contract amounts in advance) with three vendors totaling \$3,200,000: Sprint for \$1,720,000; MCI for \$1,148,000; and Cisco Systems for \$332,000. However, the CAO did not request and receive appropriate approval from the CHO for this advance payment arrangement. (See OIG audit report entitled *Opportunities To Save Over \$1 Million Annually Through Better Telecommunications Cost Management—Report No. 97-CAO-05, March 24, 1997.*)

Without adequate communication, the CHO may not be aware of long-term implications of significant projects or could be making decisions based on incomplete information.

The CAO needs to more actively follow-up with the CHO on telecommunications-related proposals

During the course of our telecommunications audits, we noted that--because of inadequate information being provided to the CHO--the CAO has been unable to gain approval from the CHO for certain important telecommunications security and other telecommunications policies and initiatives to improve security, controls, and services of the House telecommunications environment. The following are examples of these policies and procedures:

- In May 1996, the CAO submitted to the CHO a decision memorandum entitled *Proposal to Establish and Implement Comprehensive Data Security Provisions into Contractual Agreements*, which contained guidelines for improving security over the use of modems in the House.
- In December 1996, the CAO submitted to the CHO the *U.S. House of Representatives Information Security Reference Manual* which is a comprehensive policies and procedures manual covering telecommunications and information security with the House.

During 1996, key members of the Communications Group and the Associate Administrator for HIR provided seven major briefings to the CHO on various telecommunications projects and activities. However, we learned that the CAO not only did not show support for his activities by attending any of these briefings, but also prohibited his staff from continuing to hold such meetings. Effective leadership would dictate that the CAO take the initiative or the lead to "champion" their cause. At the very least, the CAO should show support for his activities by attending key briefings with the CHO. Absence of such leadership and support may diminish the perceived significance of telecommunications projects and activities.

Without establishing an approach to ensure that project objectives, actions, and ramifications are sufficiently understood by the CHO and concerns or questions are addressed, approval of proposed telecommunications-related efforts and initiatives may be unnecessarily delayed. These deficiencies, in turn, hamper the CAO's ability to effectively and expeditiously achieve its telecommunications goals and overall mission.

The CAO should work closely with the CHO's Computer and Information Services Working Group on telecommunications initiatives

The Computer and Information Services Working Group (Computer Working Group) was formed at the beginning of the 104th Congress and is comprised of three Members of the CHO, who serve as the principal members. The Vice-Chairman of the CHO serves as Chairman of the Computer Working Group. The Computer Working Group meets about six times a year and reports directly to the CHO. While the Associate Administrator of HIR participates in most of the Computer Working Group meetings, the CAO has not attended. Furthermore, the primary focus of the meetings has

been related to computer technology and infrastructure. Telecommunications has not been a focus of the meetings.

The CAO needs to take a more proactive role in keeping the CHO fully informed and gaining support for and approval of telecommunications-related projects and activities. The Computer Working Group is an excellent forum for keeping the CHO fully informed and promoting telecommunications projects and activities. Since these projects and activities are often complex and highly technical in nature, the need for the CAO to work closely with the CHO, through the Computer Working Group, and foster open lines of communication is essential to the success of telecommunications objectives and goals in meeting the needs of Members, Committees, and other House offices.

Recommendations

We recommend that the Chief Administrative Officer:

1. Attend Computer Working Group meetings and thoroughly brief the group on the status, importance, and ramifications of current and proposed short- and long-range telecommunications projects and activities.
2. Take the initiative to fully inform the CHO on important telecommunications projects and activities to ensure that project objectives, actions, and ramifications are sufficiently understood as well as proactively follow-up on the status of all proposed projects and activities.

Management Response

On February 5, 1997, the Acting CAO concurred with this finding and both recommendations (see Appendix). The response stated that the CAO will coordinate the attendance of the Computer Working Group meetings with the CHO and the Chairman of the Computer Information Systems Working Group to assure that they are regularly provided with the status of telecommunications projects and activities. It further stated that the Acting CAO has already met with CHO staff and, indicated that he, the HIR Associate Administrator, and HIR Communications management, will proactively follow-up on the status of all proposed projects and activities.

Office of Inspector General Comments

The Acting CAO's actions are responsive to the issues we identified and satisfy the intent of our recommendations. We consider both recommendations closed.

Finding B: Cost-Benefit Analyses For Telecommunications Acquisitions, Upgrades, And Services Need Improvement

HIR does not consistently and thoroughly conduct cost-benefit analyses of its telecommunications acquisitions, upgrades, and services resulting in the implementation of telecommunications systems and services that are not as cost-effective as they could be.

Although a House SDLC policy was drafted in June 1996 which promoted the performance of cost-benefit analyses, the policy has not been implemented. Furthermore, guidance and procedures for performing cost-benefit analyses have not been developed.

The need for cost-benefit analyses is well-established

Best practices include conducting a cost-benefit analysis addressing each identified requirement. This analysis should evaluate and compare various alternatives for meeting those requirements. It should also include a description of each of the alternatives and its costs, a description of quantifiable and non-quantifiable benefits, a description of the weighted decision criteria reflecting the specific environment of the organization, and a decision matrix comparing each alternative.

Specifically, OMB Circular A-130, Revised, *Management of Federal Information Resources*, February 8, 1996, requires that cost-benefit analyses be prepared and updated, as necessary, throughout the information system life cycle for each information system—which includes telecommunications systems⁹—at a level of detail appropriate to the size of the investment. In addition, the following Federal requirements and standards reinforce the need to perform and update cost-benefit analyses to support ongoing management oversight processes that maximize return on investment and minimize financial and operational risks.

- OMB Circular A-109, *Major Systems Acquisitions*, April 5, 1976.
- OMB Circular A-123 Revised, *Internal Control Systems*, June 21, 1995.
- NIST FIPS Publication 64, *Guidelines for Documentation of Computer Programs and Automated Data Systems for the Initiation Phase*, August 1, 1979.

According to the above Federal criteria, the analysis should include the identification of all recurring and non-recurring costs and benefits of each alternative being considered. The criteria requires the performance of cost-benefit analyses to provide managers, users, designers, and auditors with adequate cost and benefit information to analyze and evaluate alternative approaches. It also provides the information for management to make decisions to initiate or continue the development, procurement, or modification of acquisitions, upgrades, and services.

In addition, on January 14, 1997, the CHO adopted the June 28, 1996 draft *U.S. House of Representatives Management Policy for System Development Life Cycle* (SDLC policy) as House policy. This policy adopts the SDLC processes as outlined in the NIST Special Publication 500153, *Guide to Auditing for Controls and Security: A System Development Life Cycle Approach*, April 1988. The SDLC policy and this publication require cost-benefit analyses as part of the House's SDLC process to provide managers, users, designers, systems

⁹OMB Circular A-130 defines information systems as a discrete set of information resources **in any medium or form** for the collection, processing, maintenance, transmission, and dissemination of information, in accordance with defined procedures, whether automated or manual.

security specialists, and auditors with adequate cost and benefit information to make decisions to initiate or continue the development, procurement, or modification of information system projects.

Cost-benefit analyses are not being consistently performed

While HIR management does perform some cost-benefit analyses and periodic reevaluations of telecommunications acquisitions, upgrades, and services, these processes are not consistently performed. For example, recent OIG audit reports cited the following instances where cost-benefit analyses should be performed:

- The ongoing House PBX switch upgrade plan is not supported by a formal, detailed user needs document or an adequate cost-benefit analysis. This switch upgrade, in turn, required HIR to set aside \$3 million in FY 1997 and another \$3 million in FY 1998 to upgrade the House's telephone handsets in order to utilize the features associated with the implementation of the new PBX switches. As a result, the House may prematurely spend millions of dollars in the future for upgrading its voice telecommunications equipment, which is neither necessary nor cost-justified. (See OIG audit report entitled *Opportunities Exist For The House To Save Over \$1 Million Annually Through Better Telecommunications Cost Management*, Report No. 97-CAO-05, March 24, 1997.)
- The House needs to re-evaluated its telecommunications maintenance services contract for moves, adds, and/or changes to determine whether the current contract is still cost-effective. We estimate that the House can save \$92,000 by changing to a "per station" option in its current contract. (See OIG audit report entitled *Opportunities Exist For The House To Save Over \$1 Million Annually Through Better Telecommunications Cost Management—Report No. 97-CAO-05*, March 24, 1997.)
- Presently, the House does not conduct periodic analyses of its full service maintenance contract for small electronic key systems¹⁰ for use in the Member's district offices at a cost of \$25,000 per month. Full service contracts are usually a more expensive option than other options such as time and materials contracts. Therefore, re-evaluations of maintenance contracts need to be performed periodically. (See OIG audit report entitled *Changes In Operating Practices Needed To Improve The Economy, Efficiency, And Effectiveness Of House Telecommunications Functions—Report No. 97-CAO-06*, March 24, 1997.)
- Although the House local exchange and voice conferencing services may have been cost-effective during the audit period, we learned that the costs of these services may not be competitive in the near future considering the increasing competition in the telecommunications arena. Without re-evaluating the contract costs of these services, the House could unnecessarily be paying significantly more per year for local exchange and

¹⁰An electronic key system is similar to a small PBX and is a specialized system that provides voice communications services. This system supports handsets and provides features, such as hold, transfer, and call forwarding.

voice conferencing services. (See OIG audit report entitled *Opportunities Exist For The House To Save Over \$1 Million Annually Through Better Telecommunications Cost Management*—Report No. 97-CAO-05, March 24, 1997.)

The aforementioned conditions exist because the House SDLC policy has not been implemented, and guidance and procedures on conducting cost-benefit analyses have not been developed. Furthermore, HIR management's position is that SDLC techniques, such as cost-benefit analyses, only apply to information systems and do not apply to the telecommunications products and services. HIR management takes the position that upgrades and services are mainly usage driven and that within this realm, it is an inexact science to quantify the efficiencies realized. However, they agree that the benefits derived from expenditures can be clearly documented. In addition, as indicated in Finding C of this report, HIR lacks staff to perform detailed cost-benefit analyses. Nevertheless, according to Telecommunications experts and established Federal criteria, the SDLC process clearly applies to telecommunications acquisitions, upgrades, and services. Furthermore, the performance of cost-benefit analyses is a critical SDLC process to ensure that management makes the most appropriate and cost-effective decisions, and therefore, should be performed for major telecommunications acquisitions, upgrades, and services.

Recommendation

We recommend that the Chief Administrative Officer develop detailed guidance and procedures, for approval by the Committee on House Oversight, to require HIR to perform cost-benefit analyses, in accordance with its recently approved SDLC policy, for major information systems, which includes major telecommunications acquisitions, upgrades, and services to justify decisions and expenditures.

Management Response

On February 5, 1997, the Acting CAO concurred with this finding and recommendation (see Appendix). According to the response, the Acting CAO will develop detailed guidance and procedures requiring the performance of cost-benefit analyses as part of the approved SDLC policy, for approval by the CHO, no later than May 1, 1997.

Office of Inspector General Comments

The Acting CAO's action is responsive to the issue we identified and, when fully implemented, should satisfy the intent of our recommendation. The milestone date provided appears reasonable.

Finding C: Staffing Constraints Could Hamper The Communications Group's Effectiveness

In response to the OIG's four audit reports issued as part of this overall telecommunications audit effort, HIR management agreed with the report recommendations but indicated that full implementation of several report recommendations would be contingent upon the availability of additional resources. Consistent with management's concern with staffing resources, our preliminary audit work in this area disclosed indicators suggesting that the Communications Group may be understaffed. Further, we noted that management's ability to hire, retain, and promote qualified, experienced staff is being hampered. Indicators of these problems include: (1) inadequate backup staff designated to support key telecommunications operations; (2) limiting personnel practices, including hiring and promotional practices; and (3) lack of a competitive salary structure. The resource problems, including the continuing departures of experienced and productive staff and difficulties in hiring and retaining qualified, experienced personnel, have taxed the workload of the remaining staff. As a result, the Group's ability to proactively and effectively meet the House's long term telecommunications goals, such as those of the CyberCongress vision, could be severely hampered. Furthermore, many of the administrative and operational weaknesses identified in this series of telecommunications audit reports are likely to go unaddressed by the Communications Group.

Telecommunications weaknesses resulting from staffing constraints

As part of the overall telecommunication audits, we issued four reports containing numerous weaknesses related to: (1) telecommunications security; (2) telecommunications costs; (3) economy, efficiency, and effectiveness; and (4) contingency planning and disaster recovery. Although management concurred with the report findings and agreed to take action to implement the report recommendations, the corrective actions planned for several recommendations were contingent upon the availability of additional resources. The following is a summary of the areas by report where implementation of planned corrective actions is dependent upon the availability of additional resources.

- OIG Report No. 97-CAO-04, *Weak Telecommunications And Information System Security Controls Compromise House Information Resources* (March 24, 1997). This report identified opportunities for further improving telecommunications as well as information systems-related security within the House to ensure integrity, confidentiality, and availability of information resources. The report contains 33 recommendations for improving telecommunications security at the House, all of which were agreed to by the CAO. Although the CAO's completed and planned corrective actions are responsive to the issues we identified, HIR Security's and the Communications Group's abilities to effectively implement many of our recommendations are dependent upon the availability of additional resources. The CAO intends to prepare and submit a position management plan, for approval by the CHO, to adequately staff the House's information security function. In addition, in a

subsequent discussion with HIR, they plan to seek contractor assistance for monitoring toll fraud at the House.

- Report No. 97-CAO-05, *Opportunities To Save Over \$1 Million Annually Through Better Telecommunications Cost Management*, (March 24, 1997). This report identified opportunities for saving over \$1 million per year in telecommunications service and operation costs at the House. The report contains 13 recommendations where costs could be potentially reduced, all of which were agreed to by the CAO. Although the completed and planned corrective actions proposed by the CAO are responsive to the issues we identified, HIR Communication Group's ability to implement actions for three recommendations is dependent upon the availability of additional resources. The actions include: (1) conducting market competition analyses to compare the alternatives for local exchange services; (2) conducting market competition analyses to compare the alternatives for voice conferencing services; and (3) analyzing all operations, and ensuring that policies and procedures and other information are fully documented in HIR's Operations Manual.
- Report No. 97-CAO-06, *Changes In Operating Practices Needed To Improve The Economy, Efficiency, And Effectiveness Of House Telecommunications Functions* (March 24, 1997). This report identified opportunities for improving telecommunications operations and activities at the House. The report contains 10 recommendations for corrective actions, all of which were agreed to by the CAO. Although the CAO's completed and planned corrective actions are responsive to the issues we identified, HIR Communication Group's ability to implement several actions is dependent upon the availability of additional resources. Examples of these actions include: (1) initiating a proactive performance monitoring plan for each of the identified key points in the network; (2) utilizing the network management system (NMS¹¹) to automate the process, and collect historical data for trending and forecasting analyses; (3) establishing and documenting the critical switch measurements, establishing top performance benchmarks, and grading the health of the entire House switching platform on a monthly basis; (4) establishing formal processes and procedures for implementing trending and forecasting analyses by transferring the information from the monthly switch analysis process into a software tool with graphing capabilities; (5) identifying and procuring a Customer Tracking System; and (6) conducting a user needs analysis for identifying and implementing CTI within the House.
- Report No. 97-CAO-07, *Improvements Needed In The House's Contingency And Disaster Recovery Planning For Telecommunications* (March 24, 1997). This report identified contingency and disaster recovery planning weaknesses that may impair the House's ability to react to an unforeseen disaster and restore telecommunications service to users in a timely manner. The report contains 14 recommendations for corrective action, all of which were

¹¹NMS is a system used to perform several critical management functions—problem management, performance management, and configuration management—within a data network.

agreed to by the CAO. The planned corrective actions proposed by the CAO are responsive to the issues we identified, however, HIR Communications Group plans to seek contractor assistance to implement six of these recommendations. Examples of corrective actions include: (1) conducting telecommunications risk assessments; (2) updating procedures for off-site storage of backup tapes at a secure location; (3) modifying the current HIR House-wide contingency plan to add the PBX platforms and include them in testing; and (4) transferring responsibility for the demarcation rooms to the HIR Communications Group.

Current Communications Group staffing levels may be insufficient to handle additional required tasks

The Communications Group is responsible for the telecommunications needs of all House offices. To carry out these duties and responsibilities, the Group has a total of 40 positions, 36 of which are allocated among 5 subgroups: Network Systems Engineering—6 positions; Network Installation and Maintenance—6 positions; Network Control Center—5 positions; Network Configuration Management—11 positions; and Voice and Video—8 positions. In addition, three managers oversee these subgroups and one staff assistant provides administrative support to the Group. According to management, the current staff resources are primarily dedicated to keeping the House's voice and data operations and services "alive"—i.e., maintaining operational support and services. Because of the demands associated primarily with day-to-day voice and data operations, other initiatives or proactive work for improving operations and services, such as those identified in our telecommunications audit reports, can only be accomplished as availability of resources and time permits.

While some Communications subgroups are adequately staffed, not all critical positions within these subgroups have personnel that are sufficiently cross-trained to serve as back ups and other subgroups simply appear to be understaffed. Management views cross-training for critical positions an important precautionary measure. However, they stated that cross-training is not always possible because time is rarely available given the diverse operational responsibilities and the demands of the House user community. In the area of Network Systems Engineering, Network Installation and Maintenance, and Network Control Center operations, Communications management believes that the number of staff assigned to these areas are sufficient and they have personnel who have been crossed-trained to serve as backups for critical positions.

However, in the area of Network Configuration Management, Communications management believes that at least three additional positions, including a manager, are necessary to provide sufficient backup and supervision of critical positions. The Network Configuration Management team of 11 people is primarily responsible for maintaining the House's telecommunications hardware and software releases. They also trouble shoot and manage the 7,000 microcomputer infrastructure, 700 subnets, 36 workgroup routers, 250 workgroup hubs, and 400 routers for frame relay services. Of the 11 team members, only two communications specialists oversee the current FDDI backbone, which serves as the campus WAN. These individuals also have responsibility for migrating the House to a new Asynchronous Transfer Mode (ATM) multimedia network backbone for supporting the House network infrastructure. The new ATM

network backbone is much more configuration intensive because it provides multi-media capabilities to all Member, Committee, and other House offices. In addition, one communications specialist is responsible for administering the Flagship WAN Services, which offers 56 kilobyte frame relay lines connecting Member and district offices for over 400 Members. Administration involves router and circuit configuration at the Member district office, trouble shooting, and interfacing with the WAN carrier. These responsibilities are critical to telecommunications operations and services and, therefore, additional positions are needed to provide adequate backups for these positions. In addition, proactive efforts in these areas are essential to the future of the House's telecommunications environment.

Similarly, in the area of Voice and Video, Communications management believes that at least two additional positions are needed to sufficiently support and provide backup for critical positions. During the audit, we noted that one communications specialist is serving as the system administrator for the House's PBX system with no backup personnel for emergencies. Considering that the House's PBX system is one of the largest systems in the world (i.e., 4 switches and 20,000 lines), the House is taking a great risk in relying on one person for its entire telephone system operations. Equally as deficient, there is only one staff member serving as the Voice Mail Administrator. This individual oversees 5,735 voice mail boxes and is also responsible for the Interactive Voice Response applications. Further, there is only one communications specialist who is the Administrator of the telecommunications accounting system, the Monies software system developed by Stonehouse Corporation. She also has no backup support for reviewing and issuing telephone bills to Member and district offices. Similarly, Communications has no backup support for video calling and desktop video operations. Currently, one network systems engineer is knowledgeable of and handles video call operations for all Members.

Prudent management practices dictate that adequate resources are allocated and sufficiently trained to assure the overall success of the House telecommunications operations. Designating and cross-training personnel to provide backup support for essential telecommunications areas is a must for operational continuity. A sufficient resource level is also a key ingredient to the House's telecommunications initiatives and proactive work for improving operations and services, such as those identified in our telecommunications audit reports, and meeting the long term needs of the House.

Personnel hiring and retention problems

The overall success of telecommunications operations and services at the House is greatly dependent upon the hard work, dedication, and quality of the Communications staff. The caliber of the staff is dependent on management's ability to attract, retain, and reward productive employees. This objective cannot be achieved if management does not have sufficient latitude to do this.

The July 1995 reorganization of HIR resulted in a more flat line organization; functional areas were reorganized; salaries for selected upper management positions were reduced; and the ratio of staff per manager increased. As part of this reorganization, various HIR positions were downgraded. Further, employees no longer had a career path in the position they held. This change limits the career advancement of HIR employees and, over time, can prove counterproductive to the Communications Group's efforts to hire and retain employees.

In filling telecommunications vacancies within the Communications Group, management has little or no problems generating interest and inquiries from potential candidates for House positions. However, according to management, the difficulties lie in hiring qualified, experienced personnel once they became aware of the House's salaries and benefits and limited promotional opportunities. Demand for experienced telecommunications personnel is very high in the marketplace. From this perspective, HIR's hiring practices have not been flexible enough to compete with the private sector. The fixed grade position approach does not permit managers sufficient latitude to offer a candidate an appropriate position grade that would be consistent with the person's qualifications and experience level. As a result, the Communications Group has encountered several declinations in job offers resulting from salary inequities. On occasion, Communications managers have had to resign themselves to hiring less experienced people which requires more extensive on-the-job training. In an already understaffed environment, the need to provide additional on-the-job training can be particularly burdensome on existing staff.

To add to this problem, over the last two years, the Communications Group has experienced a steady loss of productive staff (see Table 1, page 19). During Calendar Year (CY) 1995, the Group lost 6 of 39 employees (or 15 percent) for varying reasons. According to management, they were told that three of these six people accepted higher paying positions within the private sector. Of the remaining three people, one made a career advancement move by accepting a position with the Architect of the Capitol, one retired, and the third left the workforce to return to school. In CY 1996, the Group lost 5 of 40 employees (or 12.5 percent) to positions in the private sector. All five people accepted higher paying positions with various companies. These turnover rates appear to be an average attrition rate expected in any organization. However, in the House's case, 8 of these 11 employees were highly qualified and productive employees; therefore, their loss adversely affected operations.

Former employees provide a key indicator that telecommunications salaries and other benefits at the House may not be competitive

With the exception of the two employees who either retired or resigned his position to attend school, we attempted to interview the 9 remaining former Communications Group employees who left the House during CYs 1995 and 1996. Because we could not obtain current information on or were unable to reach all 9 former employees, the information we collected is based on interviews with 4 people (employees 6, 9, 10, and 11 in Table 1). Based on the information we obtained, it appears that employees were able to obtain salaries ranging from 10 to 100 percent higher in the private sector. One former network configuration management employee went

from a salary of \$58,356 at the House to \$64,191 with a private sector company—an increase of 10 percent. Another former network configuration management employee went from a salary of \$47,198 at the House to \$56,638 with a private sector company—a total increase of 20 percent. One former network systems engineer went from a salary of \$54,115 at the House to \$73,055 with a private sector company—an increase of 35 percent. A former network systems manager went from a salary of \$48,105 at the House to \$96,210 with a private sector company—an increase of 100 percent. Although we were unable to reach the remaining five former employees (i.e., employees 1, 3, 4, 7, and 8), HIR management told us that four employees (i.e., Employees 1, 4, 7, and 8) indicated that higher pay was one factor in their decision to resign.

As depicted in Table 1, the higher private sector salaries were not localized to just certain positions, but were evident across multiple disciplines within the Communications Group. While we cannot extrapolate that all HIR Communications employees who have left in the last two years obtained salary increases, this information certainly serves as an indicator that HIR Communications salaries may not be competitive with the private sector, at least, in the Washington, D.C. metropolitan area.

**Table 1. HIR Communications Group Staff Departures
CY 1995 And CY 1996**

Employees	Departure Date	Position Vacated	House Salary	New Salary	Percent Change	New Employer	New Position	Fringe Benefits
CY 1995:								
Employee 1	03/29/95	Network Sys. Eng.	\$65,310	--, #	--	Private		
Employee 2	06/07/95	Network Config. Mgmt.	\$45,385	--	--	N/A^		
Employee 3	06/10/95	Network Sys. Eng.	\$44,572	--	--	AOC		
Employee 4	06/30/95	Network Control Center	\$34,922	--, #	--	Private		
Employee 5	09/30/95	Voice and Video	\$53,715	--	--	N/A^^		
Employee 6	10/31/95	Network Config. Mgmt.	\$58,356	\$64,191	10%	Private	Sr. Sec. Eng.	Yes
CY 1996:								
Employee 7	01/19/96	Network Sys. Eng.	\$67,633	--, #	--	Private		
Employee 8	04/26/96	Network Control Center	\$36,679	--, #	--	Private		
Employee 9	06/28/96	Network Config. Mgmt.	\$47,198	\$56,638	20%	Private	Telecommuni- cations Analyst	Yes
Employee 10	09/13/96	Network Sys. Eng. Mgr.	\$48,105	\$96,210	100%	Private	Network Mgr.	Yes
Employee 11	11/15/96	Network Sys. Eng.	\$54,115	\$73,055	35%	Private	Network Eng.	Yes

Legend: -- Unable to reach former employee for information.
According to HIR management, employee indicated that higher pay was one factor for leaving.
^ Employee returned to school. ^^ Employee retired.

To compound the potential non-competitive salary structure at the House, all four former employees we were able to contact told us that the fringe benefits provided by their new employers were equal or superior to the House. Employees 6, 9, 10, and 11 received stock options, annual bonuses, health benefits, and 100 percent tuition reimbursement. According to Employee 6, factoring the value of the stock options into the salary would result in an increase in salary from 10 percent to, at the very least, 70 percent. In addition, these employees received one or more other fringe benefits, such as free use of cellular phones, 100 percent matching on 401K plans, 3 weeks of starting vacation, and free use of a gym.

Recent departures affect House telecommunications operations to some extent and burden the workload of the remaining staff. In some cases, certain employees had to be trained to sufficiently carry out new responsibilities. Should departures of employees continue within the Communications Group, the quality of the House's telecommunications operations and service could noticeably deteriorate.

We recognize that the Federal government cannot match the salaries and fringe benefits of the private sector. Nevertheless, considering the size and magnitude of the House's telecommunications operations and the expertise and operational quality expected, we believe that the House should consider more competitive salaries by increasing the grade levels of Communications Group positions.

Personnel promotion practices limit employee advancement

Another factor that has been counterproductive in the Communications Group's efforts to hire and retain employees is HIR's personnel promotion practices. HIR was of the understanding that personnel promotions to the next grade were subject to vacancies at that level. That is, if a person at an HS-7 level was performing beyond their job description, that person had to wait until a vacancy occurred at the HS-8 level. Within the Communications Group, a vacancy could occur in any one of the five communications subgroups. That meant, employees had to compete for higher graded positions and often had to leave one subgroup and become familiar with operations in another subgroup.

Aside from the limited promotional opportunities through higher graded vacancies, the other option available to HIR in terms of promotional opportunities is to reclassify positions. This process is labor intensive and time consuming. It requires a desk audit by the Human Resources office and sufficient documentation to support a significant increase in responsibilities and workload for this personnel action to be approved. Once approved, the position is advertised and the employee must apply for the new position. Since January of 1995, the Communications Group has reclassified at least three positions at a higher grade. A Communications manager stated that the entire process normally takes about two months to complete. The last reclassification, however, took about six months to complete, because of delays by the CAO. Currently, they are initiating efforts to reclassify another Communications position.

The Communications Group's hiring and retention problems can be attributed, in large part, to two reasons. First, HIR was unaware of all available and acceptable personnel practices, such as the multi-grade career ladder approach that would provide managers some latitude in filling vacancies. Further, HIR was operating under misperceptions of House Rules with respect to the staffing area. Second, HIR did not perform an in-depth review of Communications staffing resources, responsibilities, and workload. The steady exodus of employees and the recurring need to reclassify positions within the Communications Group strongly suggest that the Group's positions are undergraded. An in-depth, group-wide staffing assessment would provide the Communications Group the opportunity to reclassify job positions at appropriate levels. Without exploring these issues and devising solutions to resolve the staffing problems, the Group's ability to proactively and effectively meet the House's long term telecommunications goals could be severely jeopardized.

Recommendation

We recommend that the Chief Administrative Officer develop a position management plan, for approval by the Committee on House Oversight, to adjust the staffing resources and/or salary levels for Communications Group positions, as appropriate, by:

- Conducting an in-depth review of the existing staffing resources, including a detailed workload analysis for positions within the Communications Group. The review should also identify essential positions (e.g., video operation, PBX system administration function, voice mail administration function, and telecommunications administration) requiring sufficiently trained back ups.
- Evaluating HIR's hiring and retention practices and exploring options for improving the Communications Group's ability to attract and retain qualified, experienced staff.
- Evaluating HIR's promotion practices and bringing practices in line with House procedures and practices.
- Reviewing the salaries for the Communications Group's positions against those in the telecommunications field for reasonableness. In comparing the House salary structure with the private sector, Communications Group salaries should take into account any disparities between House and private sector fringe benefits.

Management Response

On February 5, 1997, the Acting CAO concurred with this finding and recommendation (see Appendix). The Acting CAO intends to have the appropriate departments develop a position management plan for HIR's Communications Group and submit the plan to the CHO for review and/or approval by the end of FY 1997. In preparing the plan, the CAO intends to perform an in-depth review of the existing staffing resources; proposals for hiring, retention, and promotion options; and a salary structure that permits reasonable competition with the private sector for

qualified job candidates.

Office of Inspector General Comments

The Acting CAO's actions are responsive to the issues we identified and, when fully implemented, should satisfy the intent of our recommendation. The milestone date provided appears reasonable.

III. OTHER MATTERS

Follow-up To Prior Office of Inspector General Audit Report Recommendations

As part of the overall telecommunications audit, we reviewed the House's progress in implementing prior audit and third party recommendations that directly relate to or could impact telecommunications. Our audit follow-up work encompassed a review of a total of 53 prior report recommendations from the following OIG and third party reports:

- OIG Report No. 95-CAO-01: *Member Computer Systems Security Weaknesses* (July 18, 1995)
- OIG Report No. 95-CAO-03: *Internet Security Weaknesses* (July 18, 1995)
- OIG Report No. 95-CAO-18: *House Computer Systems Were Vulnerable To Unauthorized Access, Modification and Destruction* (July 18, 1995)
- OIG Report No. 95-CAO-19: *The Management And Control of The House's Information Systems Operations Should Be Improved To Better Meet Members' Needs* (July 18, 1995)
- OIG Report No. 95-CAO-20: *The House Needs To Follow A Structured Approach For Managing And Controlling System Development Life Cycle Activities Of Its Computer Systems* (July 18, 1995)
- Computer Emergency Response Team Coordination Center: *Report on HIS Internet Connectivity Issues* (March 1994)
- Trusted Information Systems Inc.: *Report on CapNet Network Security* (February 1994)

The table on the next page summarizes the results of our follow-up work for the 53 prior report recommendations related to telecommunications, which were not previously closed. These recommendations spanned the areas of:

- Telecommunications and information systems security (see Exhibit A of OIG Report No. 97-CAO-04, *Weak Telecommunications And Information Systems Security Controls Compromise House Information Resources*, dated March 24, 1997 for a detailed discussion of each recommendation)
- Telecommunications contingency planning and disaster recovery (see the *Other Matters* section of OIG Report No. 97-CAO-07, *Improvements Needed In The House's Contingency and Disaster Recovery Planning For Telecommunications*, dated March 24, 1997 for a detailed discussion of each recommendation)
- Telecommunications management (see the Exhibit in this audit report for a detailed discussion of each recommendation)

As depicted in the table, we followed up on 47 recommendations related to telecommunications security; 4 related to contingency planning and disaster recovery; and 2 related to

telecommunications management issues. Recommendation implementation status is segmented in the table below in the four following categories:

- **Full**--fully implemented. To be considered fully implemented, all of management's planned actions agreed to in its response to a recommendation must be completed.
- **Part**--partially implemented. If significant action addressing the recommendation has occurred, the recommendation is classified as partially implemented.
- **Not**—not implemented. If no action has been taken toward completion of the recommendation, or if the action taken is insignificant, the recommendation is classified as not implemented.
- **N/A**—no longer applicable. In the event conditions have changed to make the recommendation no longer viable, the recommendation is classified as N/A.

Follow-up Audit Results	Implementation Status				Total
	Full	Part	Not	N/A	
Related to Telecommunications Security (Report No. 97-CAO-04)	29	14	1	3	47
Related to Contingency Planning, Backup, and Disaster Recovery (Report No. 97-CAO-07)	0	2	2	0	4
Related to Management Issues (See Exhibit in this Report)	0	2	0	0	2
Total	<u>29</u>	<u>18</u>	<u>3</u>	<u>3</u>	<u>53</u>

As the statistics indicate, the CAO has made significant progress in implementing the recommendations. However, we noted that current target dates for completion have not been established for 4 of the 25 unimplemented recommendations (i.e., recommendations that are partially or not implemented), which are needed to ensure timely corrective actions.

Recommendation

We recommend that the Chief Administrative Officer establish or update target dates for all unimplemented prior audit recommendations.

Management Response

Although the Acting CAO's February 5, 1997 response did not comment on this recommendation, actions are already underway to implement this recommendation. The Acting CAO's audit follow-up official has already begun contacting key House officials, including the OIG official responsible for tracking the status of prior audit report recommendations, to set up meetings to discuss implementation progress, planned actions, and new target dates for completion.

Office of Inspector General Comments

The Acting CAO's actions are responsive to the issue we identified and, when fully implemented, should satisfy the intent of our recommendation. The recommendation will remain open until the Acting CAO's office provides us an update of planned actions and target dates for completing all unimplemented recommendations.

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EXHIBIT

Status Of Implementation Of Prior Telecommunications Related Audit Report Recommendations

We identified and followed up on two telecommunications management-related recommendations, which were not previously closed. The two recommendations are individually listed in the following table and grouped by report, with the implementation status, comments on corrective actions taken and/or planned, and the scheduled date of completion.

Audit Report/Recommendations	Implementation Status	Comments on Corrective Actions Taken And/Or Planned	Scheduled Date of Completion
Audit Report No. 95-CAO-19, entitled <i>The Management And Control Of The House's Information Systems Operations Should Be Improved To Better Meet Members' Needs</i>, dated July 18, 1995:			
C.2. The CAO should identify and document critical processes and develop a comprehensive training program for the HIR employees to build a knowledge base of the critical processes that support Member needs and services.	Partially Implemented	Each Group has a documented training plan for its personnel that is tied to the defined skill levels needed to fulfill the mission of the Group. However, the Security Group is creating guidelines for establishing minimum training requirements for security personnel.	March 31, 1997
Audit Report No. 95-CA0-20, entitled <i>The House Needs To Follow A Structured Approach For Managing And Controlling System Development Life Cycle Activities Of Its Computer Systems</i>, dated July 18, 1995:			
A. The CAO should direct the Associate Administrator of HIR to adopt a formal SDLC methodology that meets the requirements of NIST's FIPS Publications and Special Publication 500-153 for all systems development efforts.	Partially Implemented	The interim SDLC policy was approved by the Committee on House Oversight on January 14, 1997. However, the recommendation cannot be considered completed until HIR fully implements the SDLC methodology.	No date scheduled

**Office of the
Chief Administrative Officer
U.S. House of Representatives
Washington, DC 20515**

APPENDIX
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Memorandum

To: Robert B. Frey III
Deputy Inspector General

From: Jeff Trandahl
Acting Chief Administrative Officer 

Subject: Draft Audit Report - Proactive Management Approach Can Improve
House Telecommunications Services and Operations

Date: FEB 03 1997

Thank you for the opportunity to comment on this draft audit report. We have carefully reviewed the draft audit report and the recommendations contained therein, and are in general agreement. Specific comments on each recommendation follow.

**Finding A:
Recommendations**

1. **Concur:** The CAO will coordinate the attendance of the Computer Working Group meetings with the Committee On House Oversight and the Chairman of the Computer and Information Systems Working Group to assure that regular status of telecommunications projects and activities is provided.
2. **Concur:** The CAO has already met with CHO staff and agreed to regular briefings on telecommunications projects and activities. Further, the CAO, HIR Associate Administrator and HIR Communications management will proactively follow-up on the status of all proposed projects and activities.

**Finding B:
Recommendations**

1. **Concur:** The CAO will develop detailed guidance and procedures, for approval by the Committee on House Oversight, to perform cost-benefit analysis as part of the approved SDLC policy. These procedures will be submitted to the CHO no later than May 1, 1997.

Finding C:
Recommendations

1. **Concur:** The CAO will have appropriate departments develop a position management plan for HIR Communications. This will include an in-depth review of the existing staffing resources; proposals for hiring, retention and promotion options; and a salary structure that permits reasonable competition with the private sector for qualified job candidates. This plan will be submitted to the CHO for review and/or approval prior to the end of Fiscal Year 1997.